The complete IFRA Standards

Up to and including the 51th Amendment

January 2024
# Index of IFRA Standards

## 51st Amendment

<table>
<thead>
<tr>
<th>Name of Ingredient</th>
<th>CAS Number</th>
<th>Standard</th>
<th>Publication Year</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene</td>
<td>144020-22-4 28371-99-5</td>
<td>Restriction</td>
<td>2020</td>
<td>1</td>
</tr>
<tr>
<td>Acetylated Vetiver oil</td>
<td>84082-84-8 68917-34-0 73246-97-6 62563-80-8</td>
<td>Restriction</td>
<td>2020</td>
<td>4</td>
</tr>
<tr>
<td>3-Acetyl-2,5-dimethylfuran</td>
<td>10599-70-9</td>
<td>Prohibition</td>
<td>2023</td>
<td>705</td>
</tr>
<tr>
<td>Acetyl ethyl tetramethyl tetralin (AETT)</td>
<td>88-29-9</td>
<td>Prohibition</td>
<td>2006</td>
<td>312</td>
</tr>
<tr>
<td>Acetyl hexamethyl indan (AHMI)</td>
<td>15323-35-0</td>
<td>Restriction</td>
<td>2020</td>
<td>256</td>
</tr>
<tr>
<td>Acetyl isovaleryl</td>
<td>13706-86-0</td>
<td>Prohibition</td>
<td>2006</td>
<td>314</td>
</tr>
<tr>
<td>Alantroot oil</td>
<td>84012-20-4 97676-35-2</td>
<td>Prohibition</td>
<td>2006</td>
<td>316</td>
</tr>
<tr>
<td>Allyl 3-cyclohexylpropionate</td>
<td>2705-87-5</td>
<td>Restriction Specification</td>
<td>2023</td>
<td>621</td>
</tr>
<tr>
<td>Allyl esters</td>
<td>Not applicable.</td>
<td>Specification</td>
<td>2009</td>
<td>486</td>
</tr>
<tr>
<td>Allyl heptine carbonate</td>
<td>73157-43-4</td>
<td>Prohibition</td>
<td>2008</td>
<td>318</td>
</tr>
<tr>
<td>Allyl isothiocyanate</td>
<td>57-06-7</td>
<td>Prohibition</td>
<td>2020</td>
<td>320</td>
</tr>
<tr>
<td>Allyl phenoxyacetate</td>
<td>7493-74-5 863306-60-9</td>
<td>Restriction Specification</td>
<td>2020</td>
<td>7</td>
</tr>
<tr>
<td>alpha-Amyl cinnamic alcohol</td>
<td>101-85-9</td>
<td>Restriction</td>
<td>2020</td>
<td>10</td>
</tr>
<tr>
<td>alpha-Amyl cinnamic aldehyde</td>
<td>122-40-7</td>
<td>Restriction</td>
<td>2020</td>
<td>13</td>
</tr>
<tr>
<td>alpha-Amylecinnamaldehyde diethyl acetal</td>
<td>60763-41-9</td>
<td>Restriction</td>
<td>2023</td>
<td>624</td>
</tr>
<tr>
<td>Name of Ingredient</td>
<td>CAS Number</td>
<td>Standard</td>
<td>Publication Year</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>alpha-Amylcinnamaldehyde dimethyl acetal</td>
<td>91-87-2</td>
<td>Restriction</td>
<td>2023</td>
<td>627</td>
</tr>
<tr>
<td>Amylcyclopentenone</td>
<td>25564-22-1</td>
<td>Prohibition</td>
<td>2008</td>
<td>322</td>
</tr>
<tr>
<td>Angelica root oil</td>
<td>8015-64-3 84775-41-7</td>
<td>Restriction</td>
<td>2020</td>
<td>260</td>
</tr>
<tr>
<td>Anisyl alcohol</td>
<td>105-13-5 1331-81-3</td>
<td>Restriction</td>
<td>2020</td>
<td>16</td>
</tr>
<tr>
<td>Anisylidene acetone</td>
<td>943-88-4</td>
<td>Prohibition</td>
<td>2006</td>
<td>324</td>
</tr>
<tr>
<td>cis-and trans-Asarone</td>
<td>494-40-6 2883-98-9 5273-86-9</td>
<td>Prohibition Restriction</td>
<td>2006</td>
<td>326</td>
</tr>
<tr>
<td>Benzaldehyde</td>
<td>100-52-7</td>
<td>Restriction</td>
<td>2020</td>
<td>19</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Prohibition Specif</td>
<td>2004</td>
<td>329</td>
</tr>
<tr>
<td>Benzyl alcohol</td>
<td>100-51-6</td>
<td>Restriction</td>
<td>2020</td>
<td>22</td>
</tr>
<tr>
<td>Benzyl benzoate</td>
<td>120-51-4</td>
<td>Restriction</td>
<td>2020</td>
<td>25</td>
</tr>
<tr>
<td>Benzyl cinnamate</td>
<td>103-41-3</td>
<td>Restriction</td>
<td>2020</td>
<td>28</td>
</tr>
<tr>
<td>Benzyl cyanide</td>
<td>140-29-4</td>
<td>Prohibition Restriction</td>
<td>2004</td>
<td>331</td>
</tr>
<tr>
<td>Benzyl salicylate</td>
<td>118-58-1</td>
<td>Restriction</td>
<td>2020</td>
<td>31</td>
</tr>
<tr>
<td>Benzyldiene acetone</td>
<td>122-57-6</td>
<td>Prohibition</td>
<td>2006</td>
<td>334</td>
</tr>
<tr>
<td>Bergamot oil expressed</td>
<td>8007-75-8 89957-91-5</td>
<td>Restriction</td>
<td>2020</td>
<td>263</td>
</tr>
<tr>
<td>Birch wood pyrolysate</td>
<td>8001-88-5 68917-50-0 84012-15-7 85251-66-7 85940-29-0 91745-85-6</td>
<td>Prohibition Specif</td>
<td>2013</td>
<td>336</td>
</tr>
<tr>
<td>alpha-Bisabolol</td>
<td>515-69-5 23089-26-1 23178-88-3 78148-59-1 76738-75-5 72691-24-8</td>
<td>Restriction</td>
<td>2020</td>
<td>496</td>
</tr>
<tr>
<td>Bitter orange peel oil expressed</td>
<td>68916-04-1 72968-50-4</td>
<td>Restriction</td>
<td>2020</td>
<td>266</td>
</tr>
<tr>
<td>Boldo oil</td>
<td>8022-81-9 84649-96-7</td>
<td>Prohibition</td>
<td>2009</td>
<td>338</td>
</tr>
<tr>
<td>Name of Ingredient</td>
<td>CAS Number</td>
<td>Standard</td>
<td>Publication Year</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>Bromostyrene</td>
<td>103-64-0</td>
<td>Prohibition</td>
<td>2008</td>
<td>342</td>
</tr>
<tr>
<td>3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one</td>
<td>76-29-9</td>
<td>Prohibition</td>
<td>2008</td>
<td>340</td>
</tr>
<tr>
<td>alpha-Butylcinnamaldehyde</td>
<td>7492-44-6</td>
<td>Restriction</td>
<td>2020</td>
<td>34</td>
</tr>
<tr>
<td>4-tert-Butylcyclohexanone</td>
<td>98-53-3</td>
<td>Restriction</td>
<td>2023</td>
<td>696</td>
</tr>
<tr>
<td>1-(2-tert-Butylcyclohexyloxy)-2-butanol</td>
<td>139504-68-0</td>
<td>Restriction</td>
<td>2023</td>
<td>576</td>
</tr>
<tr>
<td>p-tert-Butyldihydrocinnamaldehyde</td>
<td>18127-01-0</td>
<td>Restriction</td>
<td>2020</td>
<td>40</td>
</tr>
<tr>
<td>p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)</td>
<td>80-54-6</td>
<td>Restriction Prohibition</td>
<td>2020</td>
<td>43</td>
</tr>
<tr>
<td>p-tert-Butylphenol</td>
<td>98-54-4</td>
<td>Prohibition</td>
<td>2006</td>
<td>344</td>
</tr>
<tr>
<td>3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)</td>
<td>62518-65-4</td>
<td>Restriction</td>
<td>2020</td>
<td>37</td>
</tr>
<tr>
<td>Cade oil</td>
<td>8013-10-3 90046-02-9</td>
<td>Prohibition Specification</td>
<td>2013</td>
<td>346</td>
</tr>
<tr>
<td>Carvomenthone</td>
<td>499-70-7 59471-80-6</td>
<td>Restriction</td>
<td>2023</td>
<td>693</td>
</tr>
<tr>
<td>Carvone</td>
<td>99-49-0 2244-16-8 6485-40-1</td>
<td>Restriction</td>
<td>2020</td>
<td>46</td>
</tr>
<tr>
<td>Carvone oxide</td>
<td>33204-74-9</td>
<td>Prohibition</td>
<td>2004</td>
<td>348</td>
</tr>
<tr>
<td>Carvyl acetate</td>
<td>97-42-7 1205-42-1 1134-95-8</td>
<td>Restriction</td>
<td>2023</td>
<td>636</td>
</tr>
<tr>
<td>Cedrene</td>
<td>11028-42-5 469-61-4 546-28-1</td>
<td>Restriction</td>
<td>2020</td>
<td>508</td>
</tr>
<tr>
<td>Chenopodium oil</td>
<td>8006-99-3 8024-11-1 89997-47-7</td>
<td>Prohibition</td>
<td>2008</td>
<td>350</td>
</tr>
<tr>
<td>Cinnamic alcohol</td>
<td>104-54-1</td>
<td>Restriction</td>
<td>2020</td>
<td>49</td>
</tr>
<tr>
<td>Cinnamic aldehyde</td>
<td>104-55-2</td>
<td>Restriction</td>
<td>2020</td>
<td>52</td>
</tr>
<tr>
<td>Cinnamic aldehyde dimethyl acetal</td>
<td>4364-06-1</td>
<td>Restriction</td>
<td>2020</td>
<td>55</td>
</tr>
<tr>
<td>Name of Ingredient</td>
<td>CAS Number</td>
<td>Standard</td>
<td>Publication Year</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------</td>
<td>-------------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>Cinnamylidene acetone</td>
<td>4173-44-8</td>
<td>Prohibition</td>
<td>2008</td>
<td>352</td>
</tr>
<tr>
<td>Cinnamyl nitrile</td>
<td>1885-38-7&lt;br&gt;4360-47-8</td>
<td>Restriction</td>
<td>2020</td>
<td>58</td>
</tr>
<tr>
<td>Citral</td>
<td>5392-40-5&lt;br&gt;141-27-5&lt;br&gt;106-26-3</td>
<td>Restriction</td>
<td>2020</td>
<td>61</td>
</tr>
<tr>
<td>Citronellal</td>
<td>106-23-0&lt;br&gt;5949-05-3</td>
<td>Restriction</td>
<td>2020</td>
<td>532</td>
</tr>
<tr>
<td>Citronellol</td>
<td>106-22-9&lt;br&gt;1117-61-9&lt;br&gt;26489-01-0&lt;br&gt;6812-78-8&lt;br&gt;141-25-3&lt;br&gt;7540-51-4</td>
<td>Restriction</td>
<td>2020</td>
<td>64</td>
</tr>
<tr>
<td>Citronellyl acetate</td>
<td>150-84-5&lt;br&gt;67601-05-2&lt;br&gt;141-11-7</td>
<td>Restriction</td>
<td>2023</td>
<td>651</td>
</tr>
<tr>
<td>Citrus oils and other furocoumarins containing essential oils</td>
<td>Not applicable.</td>
<td>Restriction</td>
<td>2020</td>
<td>269</td>
</tr>
<tr>
<td>Colophony</td>
<td>8050-09-7</td>
<td>Prohibition</td>
<td>2006</td>
<td>354</td>
</tr>
<tr>
<td>Costus root oil, absolute and concrete</td>
<td>8023-88-9&lt;br&gt;90106-55-1</td>
<td>Prohibition</td>
<td>2006</td>
<td>356</td>
</tr>
<tr>
<td>Coumarin</td>
<td>91-64-5</td>
<td>Restriction</td>
<td>2020</td>
<td>67</td>
</tr>
<tr>
<td>p-Cresol</td>
<td>106-44-5&lt;br&gt;1319-77-3</td>
<td>Restriction</td>
<td>2023</td>
<td>687</td>
</tr>
<tr>
<td>Cumin oil</td>
<td>8014-13-9&lt;br&gt;84775-51-9</td>
<td>Restriction</td>
<td>2020</td>
<td>272</td>
</tr>
<tr>
<td>Cuminaldehyde</td>
<td>122-03-2</td>
<td>Restriction</td>
<td>2020</td>
<td>70</td>
</tr>
<tr>
<td>Cyclamen alcohol</td>
<td>4756-19-8</td>
<td>Prohibition</td>
<td>1980</td>
<td>358</td>
</tr>
<tr>
<td>Cyclamen aldehyde</td>
<td>103-95-7</td>
<td>Restriction</td>
<td>2020</td>
<td>73</td>
</tr>
<tr>
<td>Cyclohexadecanone</td>
<td>2550-52-9</td>
<td>Restriction</td>
<td>2023</td>
<td>654</td>
</tr>
<tr>
<td>Cyclohexadecanone</td>
<td>88642-03-9&lt;br&gt;5365-06-0&lt;br&gt;2550-59-6&lt;br&gt;3100-36-5&lt;br&gt;5120-20-7&lt;br&gt;854373-71-0&lt;br&gt;854373-70-9</td>
<td>Restriction</td>
<td>2023</td>
<td>657</td>
</tr>
<tr>
<td>Cyclohexanemethanol, 2,4-dimethyl-</td>
<td>68480-15-9</td>
<td>Restriction</td>
<td>2020</td>
<td>544</td>
</tr>
<tr>
<td>Name of Ingredient</td>
<td>CAS Number</td>
<td>Standard</td>
<td>Publication Year</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------</td>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>alpha-Cyclohexylidene benzeneacetonitrile</td>
<td>10461-98-0</td>
<td>Restriction</td>
<td>2023</td>
<td>630</td>
</tr>
<tr>
<td>2-Cyclohexylidene-2-orthotolyacetonitrile</td>
<td>916887-53-1</td>
<td>Restriction</td>
<td>2023</td>
<td>585</td>
</tr>
<tr>
<td>Cyclopentadecanolide</td>
<td>106-02-5</td>
<td>Restriction</td>
<td>2020</td>
<td>76</td>
</tr>
<tr>
<td>Dibenzyl ether</td>
<td>103-50-4</td>
<td>Restriction</td>
<td>2020</td>
<td>79</td>
</tr>
<tr>
<td>2,2-Dichloro-1-methylcyclopropylbenzene</td>
<td>3591-42-2</td>
<td>Prohibition</td>
<td>2008</td>
<td>364</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>764-40-9</td>
<td>Prohibition</td>
<td>2013</td>
<td>366</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>142-83-6</td>
<td>Prohibition</td>
<td>2006</td>
<td>368</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>80466-34-8</td>
<td>Prohibition</td>
<td>2006</td>
<td>370</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>5910-85-0</td>
<td>Prohibition</td>
<td>2006</td>
<td>372</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>30361-28-5</td>
<td>Prohibition</td>
<td>2006</td>
<td>376</td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>6750-03-4</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
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<td>2,4-Dienals</td>
<td>2363-88-4</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
<tr>
<td>2,4-Dienals</td>
<td>13162-46-4</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>21662-16-8</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>25152-84-5</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
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<td>2,4-Dienals</td>
<td>30361-29-6</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
<tr>
<td>2,4-Dienals</td>
<td>4313-03-5</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
<tr>
<td>2,4-Dienals</td>
<td>20432-40-0</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>4488-48-6</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>2,4-Dienals</td>
<td>5577-44-6</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
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<td>5910-87-2</td>
<td>Prohibition</td>
<td>2006</td>
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<td>142-83-6</td>
<td>Prohibition</td>
<td>2006</td>
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<td>80466-34-8</td>
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<td>2006</td>
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<td>5910-85-0</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
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<td>30361-28-5</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
<tr>
<td>2,4-Dienals</td>
<td>6750-03-4</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
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<td>2006</td>
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<td>13162-46-4</td>
<td>Prohibition</td>
<td>2006</td>
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<td>Prohibition</td>
<td>2006</td>
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<td>25152-84-5</td>
<td>Prohibition</td>
<td>2006</td>
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<td>30361-29-6</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
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<td>4313-03-5</td>
<td>Prohibition</td>
<td>2006</td>
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<td>20432-40-0</td>
<td>Prohibition</td>
<td>2006</td>
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</tr>
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<td>4488-48-6</td>
<td>Prohibition</td>
<td>2006</td>
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<td>5577-44-6</td>
<td>Prohibition</td>
<td>2006</td>
<td></td>
</tr>
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<td>Standard</td>
<td>Publication Year</td>
<td>Page</td>
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**Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene**

| CAS-No.:          | 144020-22-4  
|                  | 28371-99-5  
| This substance was previously erroneously identified as CAS 28371-99-5, however this CAS number is still used on certain commercial qualities today and as such this Standard is also applicable to that CAS number, which is an isomer of CAS 144020-22-4.  
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.  
| Synonyms:         | Methyl trimethylcyclododecatrienyl ketone (mixture of isomers)  
|                  | Trimofix O (commercial name)  
|                  | Fixamber (commercial name)  
| History:          | Publication date: 2020 (Amendment 49)  
|                  | Previous Publications: 2015  
| Implementation dates: | For new creation*: February 10, 2021  
|                  | For existing creation*: February 10, 2022  
| *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.  
| RECOMMENDATION:   | RESTRICTION  
| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  
| Category 1        | 0.00016 %  
| Category 2        | 0.13 %  
| Category 3        | 0.40 %  
| Category 4        | 2.4 %  
| Category 5A       | 0.60 %  
| Category 5B       | 0.52 %  
| Category 5C       | 0.60 %  
| Category 5D       | 0.17 %  
| Category 7A       | 0.87 %  
| Category 7B       | 0.87 %  
| Category 8        | 0.17 %  
| Category 9        | 2.2 %  
| Category 10A      | 2.2 %  
| Category 10B      | 4.4 %  
| Category 11A      | 0.17 %  
| Category 11B      | 0.17 %  

2020 (Amendment 49) 1/3
Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.00016 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene in the various product categories.

**REFERENCES:**

The IFRA Standard on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene is based on at least one of the following publications:

- The RIFM Safety Assessment on Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Acetic acid, anhydride, reaction products with 1,5,10-Trimethyl-1,5,9-cyclododecatriene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Acetylated Vetiver oil

**CAS-No.:**
- 84082-84-8
- 68917-34-0
- 73246-97-6
- 62563-80-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Vetiveria zizanioides, extract, acetylated Oils, vetiver, acetylated
- Acetic acid, esters with vetiver oil alcohols
- Vetiverol, acetate
- Vetivert acetate (commercial name)
- Vetivert acetate (Haiti) (commercial name)
- Vetyveryl acetate (commercial name)

**History:**
- Publication date: 2020 (Amendment 49)
- Previous Publications: 2009, 2015

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**Recommendation:**

**Restriction**

**Maximum Acceptable Concentrations in the Finished Product (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.90 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.033 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.8 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.033 %</td>
</tr>
</tbody>
</table>
Acetylated Vetiver oil

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.033 %</th>
<th>Category 11B</th>
<th>0.033 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.098 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Acetylated Vetiver oil, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Acetylated Vetiver oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetylated Vetiver oil in the various product categories.

**REFERENCES:**

The IFRA Standard on Acetylated Vetiver oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Acetylated Vetiver oil if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Acetylated Vetiver oil


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available in www.ifraorg.org.
Allyl phenoxyacetate

CAS-No.: 7493-74-5
863306-60-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
- Acetic acid, phenoxy-, 2-propenyl ester
- 2-Propenyl phenoxyacetate
- Prop-2-enyl 2-phenoxyacetate
- Acetate PA

History:
- Publication date: 2020 (Amendment 49)
- Previous Publications: 2009

Implementation dates:
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.016 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.30 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.59 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.59 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>52 %</td>
</tr>
</tbody>
</table>
FRAGRANCE INGREDIENT SPECIFICATION:

According to the IFRA Specification Standard of Allyl esters, Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol. Please also refer to the IFRA Specification Standard Allyl esters.

FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Allyl phenoxyacetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl phenoxyacetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Allyl phenoxyacetate in the various product categories. In addition, they recommend to use Allyl phenoxyacetate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Allyl phenoxyacetate is based on at least one of the following publications:
• The RIFM Safety Assessment on Allyl phenoxyacetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
alpha-Amyl cinnamic alcohol

**CAS-No.:** 101-85-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
Amylcinnamyl alcohol  
α-Amylcinnamyl alcohol  
2-Amyl-3-phenyl-2-propen-1-ol  
2-Benzylideneheptanol  
1-Heptanol, 2-(phenylmethylene)-α-Pentylcinnamyl alcohol

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>2007</td>
</tr>
</tbody>
</table>

**Implementation dates:**

For new creation*:

February 10, 2021

For existing creation*:

February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 7A</th>
<th>0.27 %</th>
<th>0.64 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>Category 7B</td>
<td>0.080 %</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>Category 8</td>
<td>0.64 %</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>Category 9</td>
<td>1.5 %</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>Category 10A</td>
<td>0.38 %</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>Category 10B</td>
<td>0.32 %</td>
<td>3.5 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>Category 11A</td>
<td>0.38 %</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>Category 11B</td>
<td>0.11 %</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>Category 12</td>
<td>0.32 %</td>
<td>79 %</td>
</tr>
</tbody>
</table>
**alpha-Amyl cinnamic alcohol**

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amyl cinnamic alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amyl cinnamic alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amyl cinnamic alcohol in the various product categories.

**REFERENCES:**

The IFRA Standard on alpha-Amyl cinnamic alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Amyl cinnamic alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**alpha-Amyl cinnamic aldehyde**

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>122-40-7</th>
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<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Amyl cinnamal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amyl cinnamic aldehyde</td>
<td></td>
</tr>
<tr>
<td>α-Amylcinnamaldehyde</td>
<td></td>
</tr>
<tr>
<td>α-Amyl β-phenylacrolein</td>
<td></td>
</tr>
<tr>
<td>Heptanal, 2-(phenylmethylene)</td>
<td></td>
</tr>
<tr>
<td>α-Pentylcinnamaldehyde</td>
<td></td>
</tr>
<tr>
<td>α-Pentyl-β-phenylacrolein</td>
<td></td>
</tr>
<tr>
<td>2-(Phenylmethylene)heptanal</td>
<td></td>
</tr>
<tr>
<td>Flomine (commercial name)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>2009</th>
</tr>
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<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
<td></td>
</tr>
<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**RECOMMENDATION:**

**RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
</tbody>
</table>
**alpha-Amyl cinnamic aldehyde**

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.064 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY MANAGEMENT:</th>
<th>DRIVING RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amyl cinnamic aldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Amyl cinnamic aldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Amyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
alpha-Amyl cinnamic aldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Anisyl alcohol

| CAS-No.: | 105-13-5  
|          | 1331-81-3  
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well. |

| Synonyms: | Anisalcohol  
|          | Anise alcohol  
|          | Anisic alcohol  
|          | Benzyl alcohol, p-methoxy  
|          | p-Methoxybenzyl alcohol |

| History: | Publication date: | 2020 (Amendment 49) |
|          | Previous Publications: | 2007  
|          | 2015 |

| Implementation dates: | For new creation*: | February 10, 2021 |
|                       | For existing creation*: | February 10, 2022 |

These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:  
**RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>
### Anisyl alcohol

#### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

#### INTRINSIC PROPERTY DRIVING RISK

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
</tr>
</tbody>
</table>

#### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Anisyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Anisyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Anisyl alcohol in the various product categories.

#### REFERENCES:

The IFRA Standard on Anisyl alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Anisyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Benzaldehyde

CAS-No.: 100-52-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Benzenecarbonal
Benzenecarbonaldehyde
Benzenecarboxaldehyde
Benzenemethylal
Benzoic aldehyde
Bitter almond oil, synthetic
Phenylformaldehyde
Phenylmethanol aldehyde

History:
Publication date: 2020 (Amendment 49)
Previous Publications: 2009
2013

Implementation dates:
For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>0.045 %</th>
<th>Category 7A</th>
<th>0.52 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td></td>
<td>Category 7A</td>
<td></td>
</tr>
<tr>
<td>Category 2</td>
<td>0.014 %</td>
<td>Category 7B</td>
<td>0.52 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.27 %</td>
<td>Category 8</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.25 %</td>
<td>Category 9</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.064 %</td>
<td>Category 10A</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.064 %</td>
<td>Category 10B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.064 %</td>
<td>Category 11A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.021 %</td>
<td>Category 11B</td>
<td>0.021 %</td>
</tr>
</tbody>
</table>
**Benzaldehyde**

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.15 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Benzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzaldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on Benzaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Benzaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Benzyl alcohol

**CAS-No.:** 100-51-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Benzenemethanol  
- Benzylic alcohol  
- α-Hydroxytoluene  
- Phenylcarbinol  
- Phenyl carbinol  
- Phenylmethanol  
- Phenylmethyl alcohol  
- α-Toluenol

**History:**  
- **Publication date:** 2020 (Amendment 49)  
- **Previous Publications:** 2007

**Implementation dates:**  
- For new creation*: February 10, 2021  
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.68 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.68 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>8.5 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.057 %</td>
</tr>
</tbody>
</table>
Benzyl alcohol

<table>
<thead>
<tr>
<th>Category 6</th>
<th>1.5 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl alcohol in the various product categories.

**REFERENCES:**
The IFRA Standard on Benzyl alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Benzyl alcohol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Benzyl benzoate

**CAS-No.:** 120-51-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Benylate  
- Benzoic acid, benzyl ester  
- Benzoic acid, phenylmethyl ester  
- Benzy1 phenylformate  
- Phenylmethyl benzoate

**History:**  
- **Publication date:** 2020 (Amendment 49)  
- **Previous Publications:** 2007

**Implementation dates:**  
- **For new creation:** February 10, 2021  
- **For existing creation:** February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.*

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>1.7 %</td>
<td>Category 7A</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>1.4 %</td>
<td>Category 7B</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.41 %</td>
<td>Category 8</td>
<td>0.070 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>4.8 %</td>
<td>Category 9</td>
<td>1.9 %</td>
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<tr>
<td>Category 5A</td>
<td>4.3 %</td>
<td>Category 10A</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.21 %</td>
<td>Category 10B</td>
<td>12 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.83 %</td>
<td>Category 11A</td>
<td>0.070 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.070 %</td>
<td>Category 11B</td>
<td>0.070 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.41 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY</th>
<th>DRIVING RISK MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl benzoate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl benzoate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl benzoate in the various product categories.

**REFERENCES:**

The IFRA Standard on Benzyl benzoate is based on at least one of the following publications:


Benzyl benzoate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Amendment 49**

### Benzyl cinnamate

**CAS-No.:** 103-41-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**

- Benzyl γ-phenylacrylate
- Benzyl 3-phenylpropenoate
- Cinnamein
- Cinnamic acid, benzyl ester
- Phenylmethyl 3-phenyl-2-propenoate
- 2-Propenoic acid, 3-phenyl-phenylmethyl ester

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>2007</th>
</tr>
</thead>
</table>

**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.36 %</td>
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<tr>
<td>Category 2</td>
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<tr>
<td>Category 3</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>3.9 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.9 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>14 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
Amendment 49

Benzyl cinnamate

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl cinnamate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cinnamate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl cinnamate in the various product categories.

**REFERENCES:**

The IFRA Standard on Benzyl cinnamate is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzyl cinnamate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

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2020 (Amendment 49)
Benzyl cinnamate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Benzyl salicylate

**CAS-No.:** 118-58-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Benzoic acid, 2-hydroxy-, phenylmethyl ester  
Benzyl 2-hydroxybenzoate  
Benzyl o-hydroxybenzoate  
2-Hydroxybenzoic acid, benzyl ester  
Phenylmethyl 2-hydroxybenzoate  
Salicylic acid, benzyl ester

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2007

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.39 %</td>
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<tr>
<td>Category 3</td>
<td>7.8 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>7.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>1.9 %</td>
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<tr>
<td>Category 6</td>
<td>4.3 %</td>
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<tr>
<td>Category 7A</td>
<td>15 %</td>
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<td>15 %</td>
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<td>Category 8</td>
<td>0.77 %</td>
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<td>Category 9</td>
<td>14 %</td>
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<tr>
<td>Category 10A</td>
<td>51 %</td>
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<tr>
<td>Category 10B</td>
<td>51 %</td>
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<td>Category 11A</td>
<td>28 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>28 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
Benzyl salicylate

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Benzyl salicylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl salicylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Benzyl salicylate in the various product categories.

**REFERENCES:**
The IFRA Standard on Benzyl salicylate is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzyl salicylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49)
**Benzyl salicylate**


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
alpha-Butylcinnamaldehyde

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>7492-44-6</th>
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</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | 2-Benzylidenehexanal  
Butyl cinnamic aldehyde  
α-Butyl-β-phenylacrolein  
Hexanal, 2-(phenylmethylen)α-butylcinnamaldehyde |

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date: 2020 (Amendment 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Publications: 2011</td>
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<table>
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<tr>
<th>Implementation dates:</th>
<th>For new creation*: February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*: February 10, 2022</td>
<td></td>
</tr>
<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
<td></td>
</tr>
</tbody>
</table>

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.077 %</th>
<th>Category 7A</th>
<th>0.88 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
<td>Category 8</td>
<td>0.036 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
<td>Category 10A</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
<td>Category 11A</td>
<td>0.036 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.036 %</td>
<td>Category 11B</td>
<td>0.036 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
alpha-Butylcinnamaldehyde

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY</th>
<th>DRIVING RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Butylcinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Butylcinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Butylcinnamaldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on alpha-Butylcinnamaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Butylcinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

alpha-Butylcinnamaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

**CAS-No.:** 62518-65-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Benzenepropanal, 3-(1,1-dimethylethyl)-α-methyl-3-(3-tert-Butylphenyl)-2-methylpropanal m-BMHCA

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020 (Amendment 49)</td>
<td>2015</td>
</tr>
</tbody>
</table>

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0086 %</td>
</tr>
<tr>
<td>2</td>
<td>0.094 %</td>
</tr>
<tr>
<td>3</td>
<td>0.21 %</td>
</tr>
<tr>
<td>4</td>
<td>1.8 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.45 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.28 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.42 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.094 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0086 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.37 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.37 %</td>
</tr>
<tr>
<td>8</td>
<td>0.094 %</td>
</tr>
<tr>
<td>9</td>
<td>0.96 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.96 %</td>
</tr>
<tr>
<td>10B</td>
<td>3.1 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.094 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.094 %</td>
</tr>
<tr>
<td>12</td>
<td>64 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA)

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) in the various product categories.

REFERENCES:

The IFRA Standard on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-(m-tert-Butylphenyl)-2-methylpropionaldehyde (m-BMHCA) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

3-(2-methylpropionaldehyde (m-BMHCA)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# p-tert-Butyldihydrocinnamaldehyde

**CAS-No.:** 18127-01-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Benzene propanal, 4-(1,1-dimethylethyl)-3-(4-tert-Butylphenyl)propionaldehyde  
Bourgeonal (commercial name)  
Liliphenal (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0041 %</td>
</tr>
<tr>
<td>2</td>
<td>0.025 %</td>
</tr>
<tr>
<td>3</td>
<td>0.025 %</td>
</tr>
<tr>
<td>4</td>
<td>0.47 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.029 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.037 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.0096 %</td>
</tr>
<tr>
<td>6</td>
<td>0.087 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.029 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.029 %</td>
</tr>
<tr>
<td>8</td>
<td>0.0096 %</td>
</tr>
<tr>
<td>9</td>
<td>0.099 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.099 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.0096 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.0096 %</td>
</tr>
<tr>
<td>12</td>
<td>6.9 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of...
p-tert-Butyldihydrocinnamaldehyde

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-tert-Butyldihydrocinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyldihydrocinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-tert-Butyldihydrocinnamaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-tert-Butyldihydrocinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-tert-Butyldihydrocinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49)  2/3
p-tert-Butyldihydrocinnamaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)**

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>80-54-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | Benzenepropanal, 4-(1,1-dimethylethyl)-alpha-methyl-p-t-Bucinal 2-(4-tert-Butylbenzyl)propionaldehyde p-t-Butyl-alpha-methylhydrocinnamaldehyde Butylphenyl methylpropional alpha-Methyl-β-(p-t-butylphenyl)propionaldehyde Lilestralis (commercial name) Lilial (commercial name) Lysmeral (commercial name) |

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date: 2020 (Amendment 49)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*: February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:**

p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) should not be used for any finished product application included under IFRA Categories 1 and 6 (lipsticks and oral care products).

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0 % (Prohibited)</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.090 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.060 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.017 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.10 %</td>
</tr>
</tbody>
</table>
p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B</td>
<td>0.050 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.050 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.017 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0 % (Prohibited)</td>
</tr>
<tr>
<td>10B</td>
<td>0.63 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.017 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.017 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Recommended concentration levels are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA), which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) and recommends the limits for the 12 different product categories, which provide the acceptable use levels of p-tert-Butyl-α- methylhydrocinnamic aldehyde (p-BMHCA) in the various product categories.

In addition, they recommend not to use p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) in any finished product application included in Categories 1 and 6.

**REFERENCES:**

The IFRA Standard p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is based in at least one of the following publications:
p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA)

- The RIFM Safety Assessment on p-tert-Butyl-α-methylhydrocinnamic aldehyde (p-BMHCA) is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- SCCS (Scientific Committee on Consumer Safety), Opinion on the safety of Butylphenyl methylpropional (p-BMHCA) in cosmetic products - Submission II, preliminary version of 14 December 2017, final version of 10 May 2019, SCCS/1591/2017

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available in www.ifraorg.org.
# Carvone

**CAS-No.:**
- 99-49-0
- 2244-16-8
- 6485-40-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 99-49-0
- Carvone
- p-Mentha-6,8-dien-2-one
- 1-Methyl-4-isopropenyl-6-cyclohex-2-en-1-one
- 2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-
- 5-Isopropenyl-2-methylcyclohex-2-en-1-one
- 6,8(9)-p-Menthadien-2-one

- 2244-16-8
d-Carvone
dextro-Carvone
(S)-2-Methyl-5-(1-methylvinyl)cyclohex-2-en-1-one
(S)-2-Methyl-5-(prop-1-en-2-yl)cyclohex-2-en-1-one
d-p-Mentha-6,8(9)-dien-2-one
d-1-Methyl-4-isopropenyl-6-cyclohex-2-en-1-one
2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (5S)-
5-Isopropenyl-2-methylcyclohex-2-en-1-one

- 6485-40-1
l-Carvone
laevo-Carvone
l-p-Mentha-1(6),8-dien-2-one
l-p-Mentha-6,8(9)-dien-2-one
l-1-Methyl-4-isopropenyl-6-cyclohex-2-en-1-one
2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)-, (5R)-
5-Isopropenyl-2-methylcyclohex-2-en-1-one

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2008

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

2020 (Amendment 49)
### Carvone

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.060 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.59 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.039 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.059 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.66 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
The natural contribution of Carvone is determined by the sum of the natural contributions of each of its isomers.

**INTRINSIC PROPERTY MANAGEMENT:**

<table>
<thead>
<tr>
<th>Property</th>
<th>Driving Risk</th>
<th>Dermal Sensitization and Systemic Toxicity</th>
</tr>
</thead>
</table>

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center:
Carvone

http://fragrancematerialsafetyresource.elsevier.com/

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Carvone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvone in the various product categories.

REFERENCES:

The IFRA Standard on Carvone is based on at least one of the following publications:

• The RIFM Safety Assessment on Carvone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Cinnamic alcohol

### CAS-No.:
104-54-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- Cinnamyl alcohol
- 3-Phenylallyl alcohol
- 3-Phenyl-2-propen-1-ol
- 2-Propen-1-ol, 3-phenyl-
- Styrone
- Styryl alcohol
- Zimtalcohol
- Styryl carbinol

### History:
- Publication date: 2020 (Amendment 49)
- Previous Publications:
  - 1987
  - 1992
  - 2002
  - 2007
  - 2008

### Implementation dates:
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation: Restriction

### Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.22 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.067 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.085 %</td>
</tr>
</tbody>
</table>
### Cinnamic alcohol

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.13 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 12</td>
<td>51 %</td>
</tr>
</tbody>
</table>

#### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

#### INTRINSIC PROPERTY DRIVING RISK:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

#### RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic alcohol in the various product categories.

#### REFERENCES:
The IFRA Standard on Cinnamic alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Cinnamic alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Cinnamic alcohol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cinnamic aldehyde**

**CAS-No.:** 104-55-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Cinnamal  
- Cinnamaldehyde  
- Phenylacrolein  
- 3-Phenyl-2-propena  
- 3-Phenyl-2-propen-1-a  
- Cassia aldehyde

**History:**  
- Publication date: 2020 (Amendment 49)  

**Implementation dates:**  
- **For new creation:** February 10, 2021  
- **For existing creation:** February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.045 %</td>
<td>7A</td>
<td>0.17 %</td>
</tr>
<tr>
<td>2</td>
<td>0.014 %</td>
<td>7B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>3</td>
<td>0.021 %</td>
<td>8</td>
<td>0.014 %</td>
</tr>
<tr>
<td>4</td>
<td>0.25 %</td>
<td>9</td>
<td>0.49 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.064 %</td>
<td>10A</td>
<td>0.49 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.042 %</td>
<td>10B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.064 %</td>
<td>11A</td>
<td>0.014 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.014 %</td>
<td>11B</td>
<td>0.014 %</td>
</tr>
</tbody>
</table>
Cinnamic aldehyde

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.15 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic aldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on Cinnamic aldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Cinnamic aldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Cinnamic aldehyde dimethyl acetal

**CAS-No.:** 4364-06-1
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
Benzene, (3,3-dimethoxy-1-propenyl)-
(3,3-Dimethoxypropen-1-yl)benzene
(3,3-Dimethoxyprop-1-en-1-yl)benzene
3-Phenyl-2-propenal dimethyl acetal

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2009

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

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<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
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</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.063 %</td>
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<tr>
<td>Category 2</td>
<td>0.019 %</td>
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<tr>
<td>Category 3</td>
<td>0.38 %</td>
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<tr>
<td>Category 4</td>
<td>0.35 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.089 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.089 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.089 %</td>
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<td>Category 5D</td>
<td>0.089 %</td>
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<tr>
<td>Category 6</td>
<td>0.21 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of...
Cinnamic aldehyde dimethyl acetal

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamic aldehyde dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamic aldehyde dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamic aldehyde dimethyl acetal in the various product categories.

REFERENCES:
The IFRA Standard on Cinnamic aldehyde dimethyl acetal is based on at least one of the following publications:

- The RIFM Safety Assessment on Cinnamic aldehyde dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Cinnamic aldehyde dimethyl acetal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cinnamyl nitrile**

**CAS-No.:**
1885-38-7
4360-47-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
Cinnamyl nitrile (E)
trans-β-Phenylacrylonitrile
2-Propenenitrile, 3-phenyl-, (E)-

**History:**
Publication date: 2020 (Amendment 49)

**Implementation dates:**
For new creation*: February 10, 2021
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

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<thead>
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<th>Category</th>
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</tr>
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<tbody>
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<tr>
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<tr>
<td>Category 3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
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<tr>
<td>Category 5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of

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2020 (Amendment 49)
Cinnamyl nitrile

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cinnamyl nitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Cinnamyl nitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cinnamyl nitrile in the various product categories.

REFERENCES:
The IFRA Standard on Cinnamyl nitrile is based on at least one of the following publications:

- The RIFM Safety Assessment on Cinnamyl nitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Cinnamyl nitrile


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Citral

**CAS-No.:**
5392-40-5
141-27-5
106-26-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
3,7-Dimethyl-2,6-octadienal
Geranial (trans-citral)
Neral
Geranial
Lemarome (commercial name)

**History:**

<table>
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<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
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**Implementation dates:**

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<th>For new creation*:</th>
<th>February 10, 2021</th>
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<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.35 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.2 %</td>
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<tr>
<td>Category 10A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.2 %</td>
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<tr>
<td>Category 11A</td>
<td>0.051 %</td>
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<tr>
<td>Category 11B</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
Citral

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citral, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Citral and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citral in the various product categories.

**REFERENCES:**

The IFRA Standard on Citral is based on at least one of the following publications:

- The RIFM Safety Assessment on Citral if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Citral


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Citronellol

| CAS-No.: | 106-22-9  
|          | 1117-61-9  
|          | 26489-01-0  
|          | 6812-78-8  
|          | 141-25-3  
|          | 7540-51-4  
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well. |

| Synonyms: | 106-22-9:  
|           | 3,7-Dimethyl-6-octen-1-ol  
|           | 6-Octen-1-ol, 3,7-dimethyl-  
|           | Citronellol  
|           | dl-Citronellol  
|           | Rhodinol pure (commercial name)  
| 1117-61-9: | 3,7-Dimethyloct-6-en-1-ol  
| 6-Octen-1-ol, 3,7-dimethyl-, (R)-  
| (R)-3,7-Dimethyloct-6-en-1-ol  
| (+)-ß-Citronellol  
| (+)-(R)-Citronellol  
| 26489-01-0: | 6-Octen-1-ol, 3,7-dimethyl-,(+/-)-  
| 6812-78-8: | 3,7-Dimethyloct-7-en-1-ol  
| 7-Octen-1-ol, 3,7-dimethyl-, (S)-  
| 3,7-Dimethyl-(6-or 7-)octen-1-ol  
| 3,7-Dimethyl-7-octen-1-ol  
| 141-25-3: | 3,7-Dimethyloct-7-en-1-ol  
| 7-Octen-1-ol, 3,7-dimethyl- (isomer unspecified)  
| α-Citronellol  
| Rhodinol (commercial name)  
| 7540-51-4: | 3,7-Dimethyloct-6-en-1-ol  
| (-)-3,7-Dimethyloct-6-en-1-ol  
| (S)-3,7-Dimethyl-6-octen-1-ol  
| 6-Octen-1-ol, 3,7-dimethyl-, (S)-  
| l-Citronellol |

| History: | Publication date: | 2020 (Amendment 49)  
| Previous Publications: | 2007  

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2020 (Amendment 49) 1/3
### Citronellol

<table>
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<tr>
<td></td>
<td>For existing creation*: February 10, 2022</td>
</tr>
<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
<td></td>
</tr>
</tbody>
</table>

#### RECOMMENDATION: RESTRICITION

#### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>13 %</td>
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<tr>
<td>4</td>
<td>12 %</td>
</tr>
<tr>
<td>5A</td>
<td>3.2 %</td>
</tr>
<tr>
<td>5B</td>
<td>3.2 %</td>
</tr>
<tr>
<td>5C</td>
<td>3.2 %</td>
</tr>
<tr>
<td>5D</td>
<td>3.2 %</td>
</tr>
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<td>6</td>
<td>7.3 %</td>
</tr>
<tr>
<td>7A</td>
<td>25 %</td>
</tr>
<tr>
<td>7B</td>
<td>25 %</td>
</tr>
<tr>
<td>8</td>
<td>1.3 %</td>
</tr>
<tr>
<td>9</td>
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<td>10A</td>
<td>87 %</td>
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<td>10B</td>
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<td>11A</td>
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<td>48 %</td>
</tr>
<tr>
<td>12</td>
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</table>

#### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

#### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION

#### RIFM SUMMARIES:

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2020 (Amendment 49)  2/3
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citronellol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellol in the various product categories.

REFERENCES:

The IFRA Standard on Citronellol is based on at least one of the following publications:

- The RIFM Safety Assessment on Citronellol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Coumarin

**CAS-No.:** 91-64-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
2H-1-Benzopyran-2-one  
1,2-Benzopyrone  
cis-o-Coumaric acid lactone  
Coumarinic anhydride  
2-Oxo-1,2-benzopyran  
2H-chromen-2-one  
Tonka bean camphor

**History:**  
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<th>Publication date:</th>
<th>Previous Publications:</th>
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<tr>
<td>2020 (Amendment 49)</td>
<td>2008</td>
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**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.089 %</td>
</tr>
<tr>
<td>2</td>
<td>0.080 %</td>
</tr>
<tr>
<td>3</td>
<td>0.089 %</td>
</tr>
<tr>
<td>4</td>
<td>1.5 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.38 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.16 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.035 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0024 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.18 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.18 %</td>
</tr>
<tr>
<td>8</td>
<td>0.035 %</td>
</tr>
<tr>
<td>9</td>
<td>0.52 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.52 %</td>
</tr>
<tr>
<td>10B</td>
<td>1.6 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.035 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.035 %</td>
</tr>
<tr>
<td>12</td>
<td>33 %</td>
</tr>
</tbody>
</table>
### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Coumarin, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Coumarin and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Coumarin in the various product categories.

### REFERENCES:

The IFRA Standard on Coumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on Coumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cuminaldehyde**

**CAS-No.:** 122-03-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Benzaldehyde, 4-(1-methylethyl)-  
Cumaldehyde  
Cuminal  
Cuminic aldehyde  
4-Isopropylbenzaldehyde  
p-Isopropylbenzaldehyde  
4-Isopropylbenzenecarboxaldehyde

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2013

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.085 %</td>
</tr>
<tr>
<td>2</td>
<td>0.025 %</td>
</tr>
<tr>
<td>3</td>
<td>0.51 %</td>
</tr>
<tr>
<td>4</td>
<td>0.47 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.12 %</td>
</tr>
<tr>
<td>6</td>
<td>0.28 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.96 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.96 %</td>
</tr>
<tr>
<td>8</td>
<td>0.050 %</td>
</tr>
<tr>
<td>9</td>
<td>0.92 %</td>
</tr>
<tr>
<td>10A</td>
<td>3.3 %</td>
</tr>
<tr>
<td>10B</td>
<td>3.3 %</td>
</tr>
<tr>
<td>11A</td>
<td>1.8 %</td>
</tr>
<tr>
<td>11B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

### INTRINSIC PROPERTY DRIVING RISK

**DERMAL SENSITIZATION**

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cuminaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com).

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cuminaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cuminaldehyde in the various product categories.

### REFERENCES:

The IFRA Standard on Cuminaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Cuminaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com)


Cuminaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Cyclamen aldehyde

### CAS-No.:
103-95-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- Benzenepropanal, α-methyl-4-(1-methylethyl)-
- Benzenepropanol, α.-methyl-4-(1-methylethyl)-
- 3-p-Cumenyl-2-methylpropionaldehyde
- p-Isopropyl-α-methylhydrocinnamaldehyde
- 3-(4-Isopropylphenyl)-2-methylpropanal
- 2-Methyl-3-(p-isopropylphenyl)propionaldehyde
- α-Methyl-p-isopropylphenylpropionaldehyde
- α-Methyl-4-(1-methylethyl)benzenepropanal
- Cyclamal (commercial name)
- Cyclaviol (commercial name)
- Cyclosal (commercial name)

### History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>2013 2015</td>
</tr>
</tbody>
</table>

### Implementation dates:

<table>
<thead>
<tr>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

#### Restriction / Specification

**Maximum Acceptable Concentrations in the Finished Product (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>2</td>
<td>0.14 %</td>
</tr>
<tr>
<td>3</td>
<td>0.038 %</td>
</tr>
<tr>
<td>4</td>
<td>0.95 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.45 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.076 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.076 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.076 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.076 %</td>
</tr>
<tr>
<td>8</td>
<td>0.025 %</td>
</tr>
<tr>
<td>9</td>
<td>0.23 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.23 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.72 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.025 %</td>
</tr>
</tbody>
</table>

---

2020 (Amendment 49)
Cyclamen aldehyde

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.025 %</th>
<th>Category 11B</th>
<th>0.025 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.076 %</td>
<td>Category 12</td>
<td>16 %</td>
</tr>
</tbody>
</table>

**FRAGRANCE INGREDIENT SPECIFICATION:**
Cyclamen aldehyde should not contain more than 1.5% of Cyclamen alcohol.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Cyclamen aldehyde has been found in natural extracts but only at trace levels.

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclamen aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclamen aldehyde in the various product categories. In addition, they recommend to use Cyclamen aldehyde according to the specification above mentioned.

**REFERENCES:**

2020 (Amendment 49)
Amendment 49

The IFRA Standard on Cyclamen aldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Cyclamen aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Cyclopentadecanolide

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>106-02-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

### Synonyms:
- Angelica lactone
- Cyclopentadecanolide
- 15-Hydroxypentadecanoic acid, \( \omega \)-lactone
- Oxacyclohexadecan-2-one
- Pentadecalactone
- \( \omega \)-Pentadecalactone
- Pentadecanolide
- Cyclopentadecanolide Supra (commercial name)
- Exaltex (commercial name)
- Exaltolide (commercial name)
- Macrolide (commercial name)
- Muskalactone (commercial name)
- Pentalide (commercial name)
- Thibetolide (commercial name)

### History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2013

### Implementation dates:
- **For new creation:** February 10, 2021
- **For existing creation:** February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

#### RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%)**:

<table>
<thead>
<tr>
<th>Category</th>
<th>Max. Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.42 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.13 %</td>
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<tr>
<td>Category 3</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>4.8 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>4.8 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>4.6 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>4.6 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>17 %</td>
</tr>
</tbody>
</table>
Cyclopentadecanolide

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.20 %</td>
</tr>
<tr>
<td>6</td>
<td>1.4 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
See Annex on Contributions from Other Sources

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
Dermal Sensitization and Systemic Toxicity

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclopentadecanolide, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Cyclopentadecanolide and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclopentadecanolide in the various product categories.

**REFERENCES:**
The IFRA Standard on Cyclopentadecanolide is based on at least one of the following publications:

- The RIFM Safety Assessment on Cyclopentadecanolide if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Cyclopentadecanolide


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Dibenzyl ether

**CAS-No.:** 103-50-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Phenylmethoxymethylbenzene
- Benzene, 1,1’-[oxybis(methylene)]bis-
- Benzyl ether
- Benzyl oxide
- Dibenzyl oxide
- 1,1’-[Oxybis(methylene)]dibenzene

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
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<tbody>
<tr>
<td>Previous Publications:</td>
<td>2009</td>
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</table>

**Implementation dates:**

| For new creation*: | February 10, 2021 |
| For existing creation*: | February 10, 2022 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.000040 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0028 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.00020 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0023 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.00024 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.00032 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.000081 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0023 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.00093 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.00093 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.000081 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.0037 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.0037 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.0037 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.000081 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.000081 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>0.24 %</td>
</tr>
</tbody>
</table>
### Dibenzyl ether

#### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

#### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY</th>
<th>DRIVING RISK</th>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dibenzyl ether, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dibenzyl ether and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dibenzyl ether in the various product categories.

#### REFERENCES:

The IFRA Standard on Dibenzyl ether is based on at least one of the following publications:

- The RIFM Safety Assessment on Dibenzyl ether if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)

Dibenzyl ether


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indenone (DPMI)

**CAS-No.:** 33704-61-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 1,2,3,5,6,7-Hexahydro-1,1,2,3,3-pentamethyl-4H-inden-4-one  
4H-Inden-4-one, 1,2,3,5,6,7-hexahydro-1,1,2,3,3-pentamethyl-1,1,2,3,3-Pentamethyl-1,2,3,5,6,7-hexahydro-4H-inden-4-one  
Cashmeran (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2015

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0063 %</td>
</tr>
<tr>
<td>2</td>
<td>0.26 %</td>
</tr>
<tr>
<td>3</td>
<td>0.019 %</td>
</tr>
<tr>
<td>4</td>
<td>3.8 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.31 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.025 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.038 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.0084 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0063 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.031 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.031 %</td>
</tr>
<tr>
<td>8</td>
<td>0.0084 %</td>
</tr>
<tr>
<td>9</td>
<td>0.13 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.13 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.28 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.0084 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.0084 %</td>
</tr>
<tr>
<td>12</td>
<td>9.4 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of
6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) in the various product categories.

REFERENCES:

The IFRA Standard on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) is based on at least one of the following publications:

•  The RIFM Safety Assessment on 6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
6,7-Dihydro-1,1,2,3,3-pentamethyl-4(5H)-indanone (DPMI)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Dihydrocoumarin

**CAS-No.:** 119-84-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Dihydrocoumarin  
- 1,2-Benzodihydropyrene  
- 2H-1-Benzopyran-2-one, 3,4-dihydro-Chroman-2-one  
- 2-Chromanone  
- 3,4-Dihydro-2H-1-benzopyran-2-one  
- o-Hydroxydihydrocinnamic acid lactone  
- Melilotic acid lactone  
- Melilotic lactone (commercial name)

**History:**  
- Publication date: 2023 (Amendment 51)  
- Previous Publications: 1974, 2013, 2020

**Implementation dates:**  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.038 %</td>
<td>7A</td>
<td>0.43 %</td>
</tr>
<tr>
<td>2</td>
<td>0.011 %</td>
<td>7B</td>
<td>0.43 %</td>
</tr>
<tr>
<td>3</td>
<td>0.23 %</td>
<td>8</td>
<td>0.018 %</td>
</tr>
<tr>
<td>4</td>
<td>0.21 %</td>
<td>9</td>
<td>0.41 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.053 %</td>
<td>10A</td>
<td>1.5 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.053 %</td>
<td>10B</td>
<td>1.5 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.053 %</td>
<td>11A</td>
<td>0.018 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.018 %</td>
<td>11B</td>
<td>0.018 %</td>
</tr>
</tbody>
</table>
Dihydrocoumarin

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.12 %</th>
<th>Category 12</th>
<th>No restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dihydrocoumarin, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Dihydrocoumarin and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dihydrocoumarin in the various product categories.

**REFERENCES:**

The IFRA Standard on Dihydrocoumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on Dihydrocoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Dihydrocoumarin


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)**

**CAS-No.:**
- 68737-61-1 (mixed isomers)
- 68039-49-6
- 68039-48-5
- 27939-60-2
- 67801-65-4
- 36635-35-5
- 68084-52-6
- 35145-02-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- Dimethylcyclohex-3-ene-1-carbaldehyde (isomer mixture) (68737-61-1)
- 2,4-Dimethyl-3-cyclohexen-1-carboxaldehyde (68039-49-6)
- 3,5-Dimethylcyclohex-3-ene-1-carbaldehyde (68039-48-5)
- Dimethylcyclohex-3-ene-1-carbaldehyde (isomer unspecified) (27939-60-2)
- 3,6-Dimethyl-3-cyclohexene-1-carboxaldehyde (67801-65-4)
- 3-Cyclohexene-1-carboxaldehyde, dimethyl- (isomer mixture)
- 2,4-Dimethyltetrahydrobenzaldehyde
- Dimethyltetrahydrobenzaldehyde (isomer mixture)
- Triplal (commercial name)
- Vertocitral (commercial name)
- Vertoliff (commercial name)
- Tricyclal (commercial name)
- Hivertal (commercial name)
- Agrumen Aldehyde (commercial name)
- Cyclovertal (commercial name)
- Ligustral (commercial name)
- Aldehyde AA (commercial name)

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Publications:</td>
<td>2010 2013</td>
</tr>
</tbody>
</table>

**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>5.2 %</td>
</tr>
</tbody>
</table>
### Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers)

<table>
<thead>
<tr>
<th>Category</th>
<th>0.14 %</th>
<th>Category 7B</th>
<th>5.2 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 3</td>
<td>2.7 %</td>
<td>Category 8</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.5 %</td>
<td>Category 9</td>
<td>4.9 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.64 %</td>
<td>Category 10A</td>
<td>18 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.64 %</td>
<td>Category 10B</td>
<td>18 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.64 %</td>
<td>Category 11A</td>
<td>9.8 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.64 %</td>
<td>Category 11B</td>
<td>9.8 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>1.5 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

The above limits apply to Dimethylcyclohexen-3-ene-1-carbaldehyde (mixed isomers) used individually or in combination. The sum of concentrations of Dimethylcyclohexen-3-ene-1-carbaldehyde isomers should not exceed the maximum concentration levels established by this Standard.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.
**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) in the various product categories.

**REFERENCES:**

The IFRA Standard on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) is based on at least one of the following publications:

- The RIFM Safety Assessment on Dimethylcyclohex-3-ene-1-carbaldehyde (mixed isomers) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one**

- **CAS-No.:** 56973-85-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

- **Synonyms:**  
  - α-Dynascone  
  - 4-Penten-1-one, 1-(5,5-dimethyl-1-cyclohexen-1-yl)-  
  - Dynascone (commercial name)  
  - Galbanone (commercial name)  
  - Galbascone (commercial name)  
  - Neobutenone (commercial name)  
  - Neogal (commercial name)  
  - Neogalbenum (commercial name)

- **History:**  
  - **Publication date:** 2020 (Amendment 49)  
  - **Previous Publications:** 2009

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*: February 10, 2021</th>
<th>For existing creation*: February 10, 2022</th>
</tr>
</thead>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.19 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.54 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.54 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.4 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.091 %</td>
</tr>
</tbody>
</table>
1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.54 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one in the various product categories.

**REFERENCES:**
The IFRA Standard on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-(5,5-Dimethyl-1-cyclohexen-1-yl)pent-4-en-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 2,2-Dimethyl-3-(3-tolyl)propan-1-ol

**CAS-No.:** 103694-68-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Benzenepropanol, β, β, 3-trimethyl  
- 2,2-Dimethyl-3-(3-methylphenyl)propanol  
- Benzene propanol  
- Majantol (commercial name)  
- Linlan alcohol (commercial name)  
- Muguetol B (commercial name)

**History:**  
- **Publication date:** 2020 (Amendment 49)  
- **Previous Publications:** 2008, 2010

**Implementation dates:**  
- For new creation*: February 10, 2021  
- For existing creation*: February 10, 2022  

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.034 %</td>
<td>7A</td>
</tr>
<tr>
<td>2</td>
<td>0.20 %</td>
<td>7B</td>
</tr>
<tr>
<td>3</td>
<td>0.025 %</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>1.7 %</td>
<td>9</td>
</tr>
<tr>
<td>5A</td>
<td>0.43 %</td>
<td>10A</td>
</tr>
<tr>
<td>5B</td>
<td>0.061 %</td>
<td>10B</td>
</tr>
<tr>
<td>5C</td>
<td>0.039 %</td>
<td>11A</td>
</tr>
<tr>
<td>5D</td>
<td>0.013 %</td>
<td>11B</td>
</tr>
<tr>
<td>6</td>
<td>0.0025 %</td>
<td>12</td>
</tr>
<tr>
<td>7A</td>
<td>0.052 %</td>
<td></td>
</tr>
<tr>
<td>7B</td>
<td>0.052 %</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.013 %</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0.14 %</td>
<td></td>
</tr>
<tr>
<td>10A</td>
<td>0.14 %</td>
<td></td>
</tr>
<tr>
<td>10B</td>
<td>0.30 %</td>
<td></td>
</tr>
<tr>
<td>11A</td>
<td>0.013 %</td>
<td></td>
</tr>
<tr>
<td>11B</td>
<td>0.013 %</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>8.6 %</td>
<td></td>
</tr>
</tbody>
</table>
### FRAGRANCE INGREDIENT SPECIFICATION:

2,2-Dimethyl-3-(3-tolyl)propan-1-ol should only be used as a fragrance ingredient if traces of organochlorine compounds are restricted. Total Chlorine, which can be measured by Atomic Absorption Spectroscopy, must not exceed 25 ppm in the raw material.

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dimethyl-3-(3-tolyl)propan-1-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,2-Dimethyl-3-(3-tolyl)propan-1-ol in the various product categories. In addition, they recommend to use 2,2-Dimethyl-3-(3-tolyl)propan-1-ol according to the specification above mentioned.

### REFERENCES:

The IFRA Standard on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol is based on at least one of the following publications:
2,2-Dimethyl-3-(3-tolyl)propan-1-ol

• The RIFM Safety Assessment on 2,2-Dimethyl-3-(3-tolyl)propan-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 2-Ethoxy-4-methylphenol

## CAS-No.: 2563-07-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

## Synonyms:
- 2-Ethoxy-p-cresol
- 2-Ethoxy-4-methylphenol
- 4-Methyl-2-ethoxyphenol
- Phenol, 2-ethoxy-4-methyl-
- Ultravanil (commercial name)
- Supravanil (commercial name)

## History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2008

## Implementation dates:
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0087 %</td>
</tr>
<tr>
<td>2</td>
<td>0.0053 %</td>
</tr>
<tr>
<td>3</td>
<td>0.017 %</td>
</tr>
<tr>
<td>4</td>
<td>0.099 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.025 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.017 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.025 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.0058 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0087 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.044 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.044 %</td>
</tr>
<tr>
<td>8</td>
<td>0.0058 %</td>
</tr>
<tr>
<td>9</td>
<td>0.052 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.052 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.052 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.0058 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.0058 %</td>
</tr>
<tr>
<td>12</td>
<td>4.2 %</td>
</tr>
</tbody>
</table>
# 2-Ethoxy-4-methylphenol

## FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

## CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

## INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

## RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Ethoxy-4-methylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

## EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Ethoxy-4-methylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Ethoxy-4-methylphenol in the various product categories.

## REFERENCES:

The IFRA Standard on 2-Ethoxy-4-methylphenol is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Ethoxy-4-methylphenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2-Ethoxy-4-methylphenol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
p-Ethylbenzaldehyde

CAS-No.: 4748-78-1
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 4-Ethylbenzaldehyde
Benzaldehyde, 4-ethyl

History: Publication date: 2020 (Amendment 49) Previous Publications: 2013

Implementation dates: For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.085 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.47 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.28 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.96 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.96 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.92 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.92 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.3 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
p-Ethylbenzaldehyde

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Ethylbenzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for p-Ethylbenzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Ethylbenzaldehyde in the various product categories.

REFERENCES:

The IFRA Standard on p-Ethylbenzaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on p-Ethylbenzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Eugenol**

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>97-53-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Eugenol</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Allylcatechol-2-methyl ether</td>
<td></td>
</tr>
<tr>
<td>1-Allyl-4-hydroxy-3-methoxybenzene</td>
<td></td>
</tr>
<tr>
<td>4-Allyl-2-methoxyphenol</td>
<td></td>
</tr>
<tr>
<td>Caryophylllic acid</td>
<td></td>
</tr>
<tr>
<td>2-Hydroxy-5-allylanisole</td>
<td></td>
</tr>
<tr>
<td>1-Hydroxy-2-methoxy-4-allylbenezene</td>
<td></td>
</tr>
<tr>
<td>4-Hydroxy-3-methoxy-1-allylbenezene</td>
<td></td>
</tr>
<tr>
<td>1-Hydroxy-2-methoxy-4-propenylbenezene</td>
<td></td>
</tr>
<tr>
<td>2-Methoxy-4-allylphenol</td>
<td></td>
</tr>
<tr>
<td>2-Methoxy-4-(2-propenyl)phenol</td>
<td></td>
</tr>
<tr>
<td>Phenol, 2-methoxy-4-(2-propenyl)-</td>
<td></td>
</tr>
<tr>
<td>Eugenic acid</td>
<td></td>
</tr>
<tr>
<td>Allylguaiacol</td>
<td></td>
</tr>
<tr>
<td>4-Allylguaiacol</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
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</thead>
<tbody>
<tr>
<td>Previous Publications:</td>
<td>2004</td>
<td>2006</td>
</tr>
<tr>
<td>2007</td>
<td>2008</td>
<td>2020</td>
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<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>October 30, 2025</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RECOMMENDATION:</th>
<th>RESTRICTION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.64 %</td>
</tr>
</tbody>
</table>
**Eugenol**

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
<th>Category</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B</td>
<td>0.64</td>
<td>10B</td>
<td>18</td>
</tr>
<tr>
<td>5C</td>
<td>0.64</td>
<td>11A</td>
<td>0.21</td>
</tr>
<tr>
<td>5D</td>
<td>0.21</td>
<td>11B</td>
<td>0.21</td>
</tr>
<tr>
<td>6</td>
<td>1.5</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Eugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Eugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Eugenol in the various product categories.

**REFERENCES:**

The IFRA Standard on Eugenol is based on at least one of the following publications:

Eugenol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Farnesol

**CAS-No.:**
- 4602-84-0
- 106-28-5
- 3790-71-4
- 16106-95-9
- 3879-60-5

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Farnesol
- 2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-Farnesyl alcohol
- Trimethyl dodecatrienol
- 3,7,11-Trimethyl-2,6,10-dodecatrien-1-ol
- trans-trans-Farnesol
- cis-trans-Farnesol
- 2Z,6Z-Farnesol
- cis-cis-Farnesol
- 2-trans,6-cis-Farnesol

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>
|                   |                      | 1979
|                   |                      | 1980
|                   |                      | 2002
|                   |                      | 2006

**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

### RESTRICTION / SPECIFICATION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>0.21 %</th>
<th>Category</th>
<th>2.4 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td></td>
<td>Category 7A</td>
<td></td>
</tr>
<tr>
<td>Category 2</td>
<td>0.062 %</td>
<td>Category 7B</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.2 %</td>
<td>Category 8</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.2 %</td>
<td>Category 9</td>
<td>2.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.29 %</td>
<td>Category 10A</td>
<td>8.1 %</td>
</tr>
</tbody>
</table>
### Farnesol

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5B</td>
<td>0.29%</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.29%</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.29%</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.68%</td>
</tr>
<tr>
<td>Category 10B</td>
<td>8.1%</td>
</tr>
<tr>
<td>Category 11A</td>
<td>4.5%</td>
</tr>
<tr>
<td>Category 11B</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

### FRAGRANCE INGREDIENT SPECIFICATION:
Farnesol should only be used as a fragrance ingredient if it contains a minimum of 96% of farnesol isomers as determined by GLC.

### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

### INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

### RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Farnesol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Farnesol in the various product categories.
In addition, they recommend to use Farnesol according to the specification above mentioned.

### REFERENCES:
The IFRA Standard on Farnesol is based on at least one of the following publications:

- The RIFM Safety Assessment on Farnesol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Geraniol

#### CAS-No.: 106-24-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

#### Synonyms:
- Geraniol
- 3,7-Dimethylocta-2,6-dien-1-ol
- 2,6-Octadien-1-ol, 3,7-dimethyl-, (e)-
- 2,6-Dimethyl-2,6-octadien-8-ol
- trans-3,7-Dimethyl-2,6-octadien-1-ol
- Geraniol 60 (commercial name)
- Geraniol Coeur (commercial name)
- Geraniol extra (commercial name)
- Geraniol SP (commercial name)
- Geraniol Supra (commercial name)
- Meranol (commercial name)
- Rhodinol pure (commercial name)

#### History:

<table>
<thead>
<tr>
<th>Publication date</th>
<th>Previous Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>2007 2020</td>
</tr>
</tbody>
</table>

#### Implementation dates:

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

#### RECOMMENDATION:

**RESTRICTION**

#### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.78 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>4.7 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.78 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.78 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.78 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>5.3 %</td>
</tr>
</tbody>
</table>
Geraniol

<table>
<thead>
<tr>
<th>Category 5C</th>
<th>0.94 %</th>
<th>Category 11A</th>
<th>0.26 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5D</td>
<td>0.26 %</td>
<td>Category 11B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.16 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Geraniol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Geraniol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Geraniol in the various product categories.

**REFERENCES:**
The IFRA Standard on Geraniol is based on at least one of the following publications:

- The RIFM Safety Assessment on Geraniol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Geraniol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 2-Heptylidene cyclopentan-1-one

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>39189-74-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

## Synonyms:
- 2-Heptylidene cyclopentanone
- 2-Heptylidene cyclopentan-1-one
- Cyclopentanone, 2-heptylidene-

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>2011</th>
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</thead>
</table>

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<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION: RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.077 %</td>
</tr>
<tr>
<td>2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
2-Heptylidene cyclopentan-1-one

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Heptylidene cyclopentan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Heptylidene cyclopentan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Heptylidene cyclopentan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Heptylidene cyclopentan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Heptylidene cyclopentan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


**2-Heptylidene cyclopentan-1-one**


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
**2-Hexenal**

**CAS-No.:**
- 505-57-7
- 6728-26-3
- 16635-54-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Hexenal
- Hex-2-enal
- trans-2-Hexenal
- 2-Hexenal, (E)-
- Hexen-2-al
- Leaf aldehyde
- beta-Propyl acrolein
- cis-2-Hexenal
- 2-Hexenal, (Z)-

**History:**
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2024

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>2</td>
<td>0.00041 %</td>
</tr>
<tr>
<td>3</td>
<td>0.0083 %</td>
</tr>
<tr>
<td>4</td>
<td>0.0077 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.0020 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.0020 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.016 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.016 %</td>
</tr>
<tr>
<td>8</td>
<td>0.00067 %</td>
</tr>
<tr>
<td>9</td>
<td>0.015 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.054 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.054 %</td>
</tr>
</tbody>
</table>
2-Hexenal

<table>
<thead>
<tr>
<th>Category</th>
<th>% Concentration</th>
<th>Category</th>
<th>% Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.0020</td>
<td>11A</td>
<td>0.00067</td>
</tr>
<tr>
<td>5D</td>
<td>0.00067</td>
<td>11B</td>
<td>0.00067</td>
</tr>
<tr>
<td>6</td>
<td>0.0045</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:** SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Hexenal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Hexenal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Hexenal in the various product categories.

**REFERENCES:**

The IFRA Standard on 2-Hexenal is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Hexenal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
2-Hexenal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**alpha-Hexyl cinnamic aldehyde**

**CAS-No.:** 101-86-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2-Benzylideneoctanal  
Hexyl cinnamal  
α-Hexyl cinnamaldehyde  
Hexyl cinnamic aldehyde  
α-n-Hexylcinnamic aldehyde  
Hexyl cinnamyl  
α-n-Hexyl-β-phenylacrolein  
Octanal, 2-(phenylmethylene)-  
Jasmonal H (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2007, 2013

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.53 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>9.9 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>20 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>20 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>19 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>69 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>69 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>38 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>38 %</td>
</tr>
</tbody>
</table>
alpha-Hexyl cinnamic aldehyde

**Category 6** 5.8 %  **Category 12**  No Restriction

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Hexyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Hexyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Hexyl cinnamic aldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Hexyl cinnamic aldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Hexyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

alpha-Hexyl cinnamic aldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### alpha-Hexylidene cyclopentanone

**CAS-No.:** 17373-89-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
2-Hexylidene cyclopentanone  
Cyclopentanone, 2-hexylidene-  
2-Hexylidene cyclopentanone  
Jasmalone (commercial name)

**History:**  
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>
| 2020 (Amendment 49) | 1983  
1994  
2008 |

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0069 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.033 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.033 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.033 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.033 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.014 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.90 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.90 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.50 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.50 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of
alpha-Hexylidene cyclopentanone

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK

DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Hexylidene cyclopentanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Hexylidene cyclopentanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Hexylidene cyclopentanone in the various product categories.

REFERENCES:

The IFRA Standard on alpha-Hexylidene cyclopentanone is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Hexylidene cyclopentanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Hexyl salicylate

**CAS-No.:** 6259-76-3  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Hexyl 2-hydroxybenzoate  
Benzoic acid, 2-hydroxy-, hexyl ester  
Hexyl o-hydroxybenzoate

**History:**  
**Publication date:** 2020 (Amendment 49)  
**Previous Publications:** 2007

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION: RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.092 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>6.5 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>2.7 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.30 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0092 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>64 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

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2020 (Amendment 49)
### Hexyl salicylate

<table>
<thead>
<tr>
<th>IFRA STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (<a href="http://www.iofi.org">www.iofi.org</a>). For more details see chapter 1 of the Guidance for the use of IFRA Standards.</td>
</tr>
</tbody>
</table>

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hexyl salicylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Hexyl salicylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Hexyl salicylate in the various product categories.

### REFERENCES:

The IFRA Standard on Hexyl salicylate is based on at least one of the following publications:

- The RIFM Safety Assessment on Hexyl salicylate if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)


Hexyl salicylate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Hydroxycitronellal

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>107-75-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | Hydroxycitronellal  
|-----------|-------------------|
|          | Citronellalhydrate  
|          | 7-Hydroxy-3,7-dimethyloctanal  
|          | 3,7-Dimethyl-7-hydroxyoctanal  
|          | Octanal, 7-hydroxy-3,7-dimethyl-  
|          | Oxydihydrocitronellal  
|          | Laurinal (commercial name)  
|          | Laurine (commercial name)  |

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date: 2023 (Amendment 51)</th>
</tr>
</thead>
</table>

| Implementation dates: | For new creation*: March 30, 2024  
|----------------------|--------------------------------------|
|                      | For existing creation*: October 30, 2024  
|                      | *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.  

<table>
<thead>
<tr>
<th>RECOMMENDATION:</th>
<th>RESTRICTION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
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<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 7A</td>
</tr>
<tr>
<td>Category 7B</td>
</tr>
<tr>
<td>Category 8</td>
</tr>
<tr>
<td>Category 9</td>
</tr>
<tr>
<td>Category 10A</td>
</tr>
<tr>
<td>Category 10B</td>
</tr>
<tr>
<td>Category 11A</td>
</tr>
</tbody>
</table>
Hydroxycitronellal

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.18%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 11B</td>
<td>0.18%</td>
</tr>
<tr>
<td>Category 6</td>
<td>1.2%</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:** SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Hydroxycitronellal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Hydroxycitronellal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Hydroxycitronellal in the various product categories.

**REFERENCES:**
The IFRA Standard on Hydroxycitronellal is based on at least one of the following publications:

- The RIFM Safety Assessment on Hydroxycitronellal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

<table>
<thead>
<tr>
<th>AMENDMENT 51</th>
</tr>
</thead>
</table>

**Hydroxycitronellal**


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC)

**CAS-No.:**
- 31906-04-4
- 51414-25-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 3-Cyclohexen-1-carboxaldehyde, 4-(4-hydroxy-4-methylpentyl)-
- 3-Cyclohexen-1-carboxaldehyde, 3-(4-hydroxy-4-methylpentyl)-
- Hydroxyisohexyl 3-cyclohexene carboxaldehyde
- 4-(4-Hydroxy-4-methylpentyl) cyclohex-3-ene-1-carboxaldehyde
- HICC
- Lyral (commercial name)
- Kovanol (commercial name)
- Mugonal (commercial name)
- Landolal (commercial name)
- Cyclohexal (commercial name)

**History:**
- Publication date: 2020 (Amendment 49)
- Previous Publications: 2003
- 2008
- 2009
- 2013

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.067 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.20 %</td>
</tr>
</tbody>
</table>
### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

### INTRINSIC PROPERTY DRIVING RISK

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY</th>
<th>DRIVING RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) in the various product categories.

### REFERENCES:
The IFRA Standard on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) is based on at least one of the following publications:

• The RIFM Safety Assessment on 3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (HMPCC) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
p-Isobutyl-alpha-methyl hydrocinnamaldehyde

**CAS-No.:** 6658-48-6
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- p-Isobutyl-α-methyl hydro cinnamic aldehyde
- Benzenepropanal, α-methyl-4-(2-methylpropyl)-3-(4-Isobutyl-phenyl)-2-methyl-propionaldehyde
- 2-Methyl-3-[4-(2-methylpropyl)phenyl]propanal
- 3-(p-Cumenyl)-2-methylpropionaldehyde
- Cyclamen homoaldehyde
- Rhodial (commercial name)
- Silvial (commercial name)
- Suzaral (commercial name)

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2009

**Implementation dates:**
- **For new creation:** February 10, 2021
- **For existing creation:** February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%) | Category 1 | 0.080 % |
| | Category 2 | 0.053 % |
| | Category 3 | 0.80 % |
| | Category 4 | 0.99 % |
| | Category 5A | 0.25 % |
| | Category 5B | 0.25 % |
| | Category 5C | 0.25 % |
| | Category 5D | 0.083 % |
| | Category 7A | 0.72 % |
| | Category 7B | 0.72 % |
| | Category 8 | 0.083 % |
| | Category 9 | 1.9 % |
| | Category 10A | 1.9 % |
| | Category 10B | 5.4 % |
| | Category 11A | 0.083 % |
| | Category 11B | 0.083 % |
p-Isobutyl-alpha-methyl hydrocinnamaldehyde

| Category 6 | 0.080 % | Category 12 | No Restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isobutyl-alpha-methyl hydrocinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for p-Isobutyl-alpha-methyl hydrocinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Isobutyl-alpha-methyl hydrocinnamaldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on p-Isobutyl-alpha-methyl hydrocinnamaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on p-Isobutyl-alpha-methyl hydrocinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.
**p-Isobutyl-alpha-methyl hydrocinnamaldehyde**


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Isocyclocitral

**CAS-No.:**
- 1335-66-6
- 1423-46-7
- 67634-07-5

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- 1335-66-6: 1-Formyl-[2,4,6-]&[3,5,6-]trimethyl-3-cyclohexene
- 1423-46-7: 3-Cyclohexene-1-carboxaldehyde, 2,4,6-trimethyl-Neocyclocitral
- 1423-46-7: 2,4,6-Trimethylcyclohex-3-enecarbaldehyde
- 67634-07-5: 3-Cyclohexene-1-carboxaldehyde, 3,5,6-trimethyl-3,5,6-Trimethylcyclohex-3-ene-1-carbaldehyde

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2007

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
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</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.54 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.16 %</td>
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<tr>
<td>Category 3</td>
<td>3.2 %</td>
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<td>Category 4</td>
<td>3.0 %</td>
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<tr>
<td>Category 5A</td>
<td>0.76 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>6.1 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>6.1 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>5.9 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>21 %</td>
</tr>
</tbody>
</table>
Amendment 49

Category 5B  0.76 %  Category 10B  21 %
Category 5C  0.76 %  Category 11A  12 %
Category 5D  0.76 %  Category 11B  12 %
Category 6   1.8 %   Category 12  No Restriction

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclocitrinal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclocitrinal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isocyclocitrinal in the various product categories.

**REFERENCES:**
Isocyclocitrinal

The IFRA Standard on Isocyclocitrinal is based on at least one of the following publications:

- The RIFM Safety Assessment on Isocyclocitrinal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Isocyclogeraniol**

**CAS-No.**: 68527-77-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms**: 3-Cyclohexene-1-methanol, 2,4,6-trimethyl-2,4,6-Trimethyl-3-cyclohexene-1-methanol

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
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<tr>
<th>Implementation dates:</th>
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<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum %</th>
<th>Category</th>
<th>Maximum %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.29 %</td>
<td>7A</td>
<td>3.3 %</td>
</tr>
<tr>
<td>2</td>
<td>0.087 %</td>
<td>7B</td>
<td>3.3 %</td>
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<tr>
<td>3</td>
<td>1.8 %</td>
<td>8</td>
<td>0.17 %</td>
</tr>
<tr>
<td>4</td>
<td>1.6 %</td>
<td>9</td>
<td>3.2 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.41 %</td>
<td>10A</td>
<td>11 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.41 %</td>
<td>10B</td>
<td>11 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.41 %</td>
<td>11A</td>
<td>6.3 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.41 %</td>
<td>11B</td>
<td>6.3 %</td>
</tr>
<tr>
<td>6</td>
<td>0.96 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply
**Isocyclogeraniol**

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isocyclogeraniol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Isocyclogeraniol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isocyclogeraniol in the various product categories.

**REFERENCES:**

The IFRA Standard on Isocyclogeraniol is based on at least one of the following publications:

- The RIFM Safety Assessment on Isocyclogeraniol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Isoeugenol

| CAS-No.:         | 97-54-1  
|                 | 5932-68-3  
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well. |
| Synonyms:       | 1-Hydroxy-2-methoxy-4-propen-1-ylbenzene  
|                 | 4-Hydroxy-3-methoxy-1-propen-1-ylbenzene  
|                 | 4-Hydroxy-3-methoxy-1-propenylbenzene  
|                 | iso-Eugenol  
|                 | 3-Methoxy-4-hydroxy-1-propen-1-ylbenzene  
|                 | 2-Methoxy-4-propenylphenol  
|                 | 2-Methoxy-4-(1-propenyl)phenol  
|                 | Phenol, 2-methoxy-4-(1-propenyl)-4-Propenylguaiacol  

### History:

| Publication date: | 2020 (Amendment 49)  
| Previous Publications: | 1980  
|                     | 1998  
|                     | 2001  
|                     | 2004  
|                     | 2007  

### Implementation dates:

- For new creation*:
  - February 10, 2021
- For existing creation*:
  - February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

**RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 7A</td>
</tr>
<tr>
<td>Category 7B</td>
</tr>
<tr>
<td>Category 8</td>
</tr>
<tr>
<td>Category 9</td>
</tr>
<tr>
<td>Category 10A</td>
</tr>
<tr>
<td>Category 10B</td>
</tr>
<tr>
<td>Category 11A</td>
</tr>
</tbody>
</table>
Amendment 49

Isoeugenol

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5D</td>
<td>0.0090 %</td>
</tr>
<tr>
<td>6</td>
<td>0.063 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.0090 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isoeugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Isoeugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isoeugenol in the various product categories.

**REFERENCES:**

The IFRA Standard on Isoeugenol is based on at least one of the following publications:

- The RIFM Safety Assessment on Isoeugenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Isoeugenol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Jasmine absolute (grandiflorum)

**CAS-No.:**
- 8022-96-6
- 8024-43-9
- 90045-94-6
- 84776-64-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Jasmine absolute (Jasminum grandiflorum L.)
- Jasminum grandiflorum absolute
- Jasmin officinale var. grandiflorum

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2008

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## Recommendation:

### Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.65 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.35 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.063 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>4.2 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.2 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>2.3 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>2.3 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
Jasmine absolute (grandiflorum)

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Jasmine absolute (grandiflorum), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (grandiflorum) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Jasmine absolute (grandiflorum) in the various product categories.

REFERENCES:
The IFRA Standard on Jasmine absolute (grandiflorum) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (grandiflorum) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Amendment 49

Jasmine absolute (grandiflorum)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Jasmine absolute (sambac)**

**CAS-No.:**
- 91770-14-8
- 1034798-23-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Jasmin sambac extract
- Jasminum sambac (L.) Aiton

**History:**

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
</table>

| For existing creation*: | February 10, 2022 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in...
Jasmine absolute (sambac)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Jasmine absolute (sambac), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Jasmine absolute (sambac) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Jasmine absolute (sambac) in the various product categories.

REFERENCES:

The IFRA Standard on Jasmine absolute (sambac) is based on at least one of the following publications:

• The RIFM Safety Assessment on Jasmine absolute (sambac) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Jasmine absolute (sambac)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Melissa oil (genuine Melissa officinalis L.)

**CAS-No.:** 8014-71-9  
84082-61-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Balm oil (Melissa officinalis L.)  
Lemon balm oil  
Melissa officinalis leaf oil  
Melissa oil (Melissa officinalis L.)  
Oil of balm

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
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| Previous Publications: | 2008  
2009 |

**Implementation dates:**

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<th>February 10, 2021</th>
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<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>3</td>
<td>0.65 %</td>
</tr>
<tr>
<td>4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.15 %</td>
</tr>
<tr>
<td>6</td>
<td>0.35 %</td>
</tr>
<tr>
<td>7A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>7B</td>
<td>1.2 %</td>
</tr>
<tr>
<td>8</td>
<td>0.063 %</td>
</tr>
<tr>
<td>9</td>
<td>1.2 %</td>
</tr>
<tr>
<td>10A</td>
<td>4.2 %</td>
</tr>
<tr>
<td>10B</td>
<td>4.2 %</td>
</tr>
<tr>
<td>11A</td>
<td>2.3 %</td>
</tr>
<tr>
<td>11B</td>
<td>2.3 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
**Melissa oil (genuine Melissa officinalis L.)**

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Melissa oil (genuine Melissa officinalis L.), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Melissa oil (genuine Melissa officinalis L.) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Melissa oil (genuine Melissa officinalis L.) in the various product categories.

**REFERENCES:**
The IFRA Standard on Melissa oil (genuine Melissa officinalis L.) is based on at least one of the following publications:

- The RIFM Safety Assessment on Melissa oil (genuine Melissa officinalis L.) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
Melissa oil (genuine Melissa officinalis L.)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Amendment 49

## Perilla aldehyde

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>2111-75-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | 1-Cyclohexene-1-carboxaldehyde, 4-(1-methylethenyl)-4-Isopropenylcyclohex-1-ene-1-carbaldehyde 4-Isopropenyl-1-cyclohexene-1-carboxaldehyde Dihydrocuminic aldehyde p-Mentha-1,8-dien-7-al Perillaldehyde |

| History: | Publication date: | 2020 (Amendment 49) | Previous Publications: | 1979 1994 2013 |

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
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<td>For existing creation*:</td>
<td>February 10, 2022</td>
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</tr>
<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### RECOMMENDATION: RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.054 %</th>
<th>Category 7A</th>
<th>0.61 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.016 %</td>
<td>Category 7B</td>
<td>0.61 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.32 %</td>
<td>Category 8</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.30 %</td>
<td>Category 9</td>
<td>0.59 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.076 %</td>
<td>Category 10A</td>
<td>2.1 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.076 %</td>
<td>Category 10B</td>
<td>2.1 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.076 %</td>
<td>Category 11A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.076 %</td>
<td>Category 11B</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.18 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

---

2020 (Amendment 49) 1/3
Perilla aldehyde

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY**

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>DRIVING RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DERMAL SENSITIZATION</td>
</tr>
</tbody>
</table>

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Perilla aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Perilla aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Perilla aldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on Perilla aldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on Perilla aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Perilla aldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Menthadiene-7-methyl formate**

**CAS-No.:** 68683-20-5

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Cyclohexadiene-1-ethanol, 4-(1-methylethyl)-, formate
- Isobergamate
- 4-(Isopropyl)cyclohexadiene-1-ethyl formate
- 2-(4-Isopropylcyclohexadienyl)ethyl formate
- Menthadienyl formate
- 4-(1-Methylethyl)cyclohexadiene-1-ethyl formate

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
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**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.077 %</td>
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<tr>
<td>Category 2</td>
<td>0.023 %</td>
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<tr>
<td>Category 3</td>
<td>0.46 %</td>
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<tr>
<td>Category 4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.88 %</td>
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<tr>
<td>Category 7B</td>
<td>0.88 %</td>
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<tr>
<td>Category 8</td>
<td>0.045 %</td>
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<tr>
<td>Category 9</td>
<td>0.84 %</td>
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<tr>
<td>Category 10A</td>
<td>3.0 %</td>
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<td>Category 10B</td>
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<td>Category 11A</td>
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<td>Category 11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
Menthadiene-7-methyl formate

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Menthadiene-7-methyl formate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Menthadiene-7-methyl formate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Menthadiene-7-methyl formate in the various product categories.

**REFERENCES:**
The IFRA Standard on Menthadiene-7-methyl formate is based on at least one of the following publications:

- The RIFM Safety Assessment on Menthadiene-7-methyl formate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Menthadiene-7-methyl formate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**p-Methoxybenzaldehyde**

**CAS-No.:** 123-11-5

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- p-Methoxybenzaldehyde
- Anisaldehyde
- p-Anisaldehyde
- Anisic aldehyde
- Anisyl aldehyde
- Benzaldehyde, 4-methoxy
- 4-Methoxybenzaldehyde
- Aubepine P Cresol (commercial name)
- Aubepine liquid (commercial name)

**History:**

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<th>Publication date:</th>
<th>Previous Publications:</th>
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<td>2023 (Amendment 51)</td>
<td>2013 2020</td>
</tr>
</tbody>
</table>

**Implementation dates:**

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<tr>
<th>For new creation*</th>
<th>March 30, 2024</th>
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<tr>
<td>For existing creation*</td>
<td>October 30, 2025</td>
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</tbody>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

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<thead>
<tr>
<th>Category 1</th>
<th>0.23 %</th>
<th>Category 7A</th>
<th>0.14 %</th>
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</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.080 %</td>
<td>Category 7B</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.14 %</td>
<td>Category 8</td>
<td>0.031 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.4 %</td>
<td>Category 9</td>
<td>0.42 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.38 %</td>
<td>Category 10A</td>
<td>0.19 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.093 %</td>
<td>Category 10B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.14 %</td>
<td>Category 11A</td>
<td>0.031 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.031 %</td>
<td>Category 11B</td>
<td>0.031 %</td>
</tr>
</tbody>
</table>
p-Methoxybenzaldehyde

| Category 6 | 0.047 % | Category 12 | 31 % |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Methoxybenzaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for p-Methoxybenzaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Methoxybenzaldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on p-Methoxybenzaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on p-Methoxybenzaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**o-Methoxycinnamaldehyde**

**CAS-No.:** 1504-74-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
2'-Methoxycinnamaldehyde  
ortho-Methoxycinnamic aldehyde  
β-(o-Methoxyphenyl)acrolein  
3-(2-Methoxyphenyl)acrylaldehyde  
3-(o-Methoxyphenyl)-2-propenal  
2-Propenal, 3-(2-methoxyphenyl)-

**History:**  
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<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
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<td>2020 (Amendment 49)</td>
<td>2011</td>
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**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
o-Methoxycinnamaldehyde

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for o-Methoxycinnamaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for o-Methoxycinnamaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of o-Methoxycinnamaldehyde in the various product categories.

REFERENCES:
The IFRA Standard on o-Methoxycinnamaldehyde is based on at least one of the following publications:

• The RIFM Safety Assessment on o-Methoxycinnamaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


o-Methoxycinnamaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Methoxy dicyclopentadiene carboxaldehyde

CAS-No.: 86803-90-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
- 4,7-Methano-1H-indene-2-carboxaldehyde, octahydro-5-methoxy
- 8-Methoxytricyclo[5.2.2.1]decane-4-carboxaldehyde
- Scentenal (commercial name)

History:
Publication date: 2020 (Amendment 49)

Implementation dates:
For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.19 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.63 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.1 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>2.1 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>7.5 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
### Methoxy dicyclopentadiene carboxaldehyde

<table>
<thead>
<tr>
<th>Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (<a href="http://www.iofi.org">www.iofi.org</a>). For more details see chapter 1 of the Guidance for the use of IFRA Standards.</th>
</tr>
</thead>
</table>

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

| DERMAL SENSITIZATION AND SYSTEMIC TOXICITY |

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methoxy dicyclopentadiene carboxaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Methoxy dicyclopentadiene carboxaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methoxy dicyclopentadiene carboxaldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on Methoxy dicyclopentadiene carboxaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Methoxy dicyclopentadiene carboxaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com)

Methoxy dicyclopentadiene carboxaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 4-Methoxy-alpha-methylbenzenepropanal

**CAS-No.:** 5462-06-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 4-Methoxy-alpha-methylbenzenepropanal
- 4-Methoxy-α-methylbenzenepropanal
- 2-Anisypropional
- 2-(p-Anisy)propanal
- Benzenepropanal, 4-methoxy-α-methyl-
- Benzenepropanal, 4-methoxy-alpha-methyl-
- Hydrocinnamaldehyde, p-methoxy-a-methyl
- p-Methoxyhydratropaldehyde
- 4-Methoxy-a-methylbenzenepropanal
- p-Methoxy-a-methylhydrocinnamaldehyde
- p-Methoxy-alpha-methylhydrocinnamaldehyde
- 3-(4-Methoxyphenyl)-2-methylpropanal
- 3-(p-Methoxyphenyl)-2-methylpropionaldehyde
- 2-Methyl-3-(p-methoxyphenyl)propanal
- 2-Methyl-3-(4-methoxyphenyl)propionaldehyde
- Canthoxal (commercial name)
- Fennaldehyde (commercial name)
- Foliaver (commercial name)

**History:**

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<th>Publication date</th>
<th>Previous Publications</th>
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<td>2023 (Amendment 51)</td>
<td>2009 2013 2020</td>
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</table>

**Implementation dates:**

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.75 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.86 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.86 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.7 %</td>
</tr>
</tbody>
</table>
### 4-Methoxy-alpha-methylbenzenepropanal

<table>
<thead>
<tr>
<th>Category 5A</th>
<th>0.64 %</th>
<th>Category 10A</th>
<th>0.75 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5B</td>
<td>0.64 %</td>
<td>Category 10B</td>
<td>4.1 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.64 %</td>
<td>Category 11A</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.21 %</td>
<td>Category 11B</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.11 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Methoxy-alpha-methylbenzenepropanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methoxy-alpha-methylbenzenepropanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Methoxy-alpha-methylbenzenepropanal in the various product categories.

**REFERENCES:**
4-Methoxy-alpha-methylbenzenepropanal

The IFRA Standard on 4-Methoxy-alpha-methylbenzenepropanal is based on at least one of the following publications:

- The RIFM Safety Assessment on 4-Methoxy-alpha-methylbenzenepropanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## 2-Methoxy-4-methylphenol

<table>
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<tr>
<th><strong>CAS-No.:</strong></th>
<th>93-51-6</th>
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</thead>
<tbody>
<tr>
<td><strong>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</strong></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Synonyms:</strong></th>
<th>Creosol</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-Creosol</td>
<td>p-Cresol, 2-methoxy-</td>
</tr>
<tr>
<td>Homoguaiacol</td>
<td>1-Hydroxy-2-methoxy-4-methylbenzene</td>
</tr>
<tr>
<td></td>
<td>4-Hydroxy-3-methoxytoluene</td>
</tr>
<tr>
<td></td>
<td>2-Methoxy-p-cresol</td>
</tr>
<tr>
<td></td>
<td>3-Methoxy-4-hydroxytoluene</td>
</tr>
<tr>
<td></td>
<td>4-Methylguaiacol</td>
</tr>
<tr>
<td></td>
<td>p-Methylguaiacol</td>
</tr>
<tr>
<td></td>
<td>4-Methyl-2-methoxyphenol</td>
</tr>
<tr>
<td></td>
<td>Phenol, 2-methoxy-4-methyl-</td>
</tr>
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<td>Valspice (commercial name)</td>
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</table>

<table>
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<th><strong>Publication date:</strong></th>
<th>2020 (Amendment 49)</th>
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<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th><strong>Category</strong></th>
<th><strong>Maximum Acceptable Concentration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0085 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0025 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.047 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.092 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.33 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.33 %</td>
</tr>
</tbody>
</table>

---

**2020 (Amendment 49) 1/3**
2-Methoxy-4-methylphenol

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5C</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.028 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-methylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-methylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methoxy-4-methylphenol in the various product categories.

**REFERENCES:**
The IFRA Standard on 2-Methoxy-4-methylphenol is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Methoxy-4-methylphenol if available at the RIFM Fragrance Material
2-Methoxy-4-methylphenol

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>1205-17-0</th>
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</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>1,3-Benzodioxole-5-propanal, α-methyl-3-(1,3-Benzodioxol-5-yl)-2-methylpropanal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-Methyl-3-(3,4-methylenedioxyphenyl)-propanaldehyde</td>
</tr>
<tr>
<td></td>
<td>2-Methyl-3-(3,4-methylenedioxyphenyl)propanal</td>
</tr>
<tr>
<td></td>
<td>α-Methyl-3,4-(methylenedioxy)hydrocinnamaldehyde</td>
</tr>
<tr>
<td></td>
<td>α-Methyl-1,3-benzodioxole-5-propanal</td>
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<tr>
<td></td>
<td>α-Methyl-1,3-benzodioxole-5-propionaldehyde</td>
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<tr>
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<td>3-(3,4-Methylenedioxyphenyl)-2-methylpropanal</td>
</tr>
<tr>
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<td>α-Methyl-3,4-methylene-dioxyhydrocinnamic aldehyde</td>
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<td>Heliofolal (commercial name)</td>
</tr>
<tr>
<td></td>
<td>Heliogan (commercial name)</td>
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<td>Helional (commercial name)</td>
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<th>2020 (Amendment 49)</th>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.12 %</th>
<th>Category 7A</th>
<th>0.077 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.25 %</td>
<td>Category 7B</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.039 %</td>
<td>Category 8</td>
<td>0.026 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.6 %</td>
<td>Category 9</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.39 %</td>
<td>Category 10A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.077 %</td>
<td>Category 10B</td>
<td>0.62 %</td>
</tr>
</tbody>
</table>
alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

<table>
<thead>
<tr>
<th>Category 5C</th>
<th>0.077 %</th>
<th>Category 11A</th>
<th>0.026 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5D</td>
<td>0.026 %</td>
<td>Category 11B</td>
<td>0.026 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.62 %</td>
<td>Category 12</td>
<td>12 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

See Annex on Contributions from Other Sources

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) in the various product categories.

**REFERENCES:**

The IFRA Standard on alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) is based on at least one of the following publications:

1. The RIFM Safety Assessment on alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA) if available at the RIFM Fragrance Material Safety Assessment Center:
alpha-Methyl-1,3-benzodioxole-5-propionaldehyde (MMDHCA)

http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Amendment 49

**alpha-Methyl cinnamic aldehyde**

<table>
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<tr>
<th>CAS-No.:</th>
<th>101-39-3</th>
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</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | α-Methylcinnamaldehyde  
α-Methylcinnamyl aldehyde  
α-Methylcinnamic aldehyde  
2-Methyl-3-phenyl-2-propenal  
3-Phenyl-2-methylacrolein  
2-Propenyl, 2-methyl-3-phenyl- |

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<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
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#### RECOMMENDATION:

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
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<tbody>
<tr>
<td>Category 1</td>
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<tr>
<td>Category 2</td>
<td>0.080 %</td>
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<tr>
<td>Category 3</td>
<td>1.6 %</td>
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<tr>
<td>Category 4</td>
<td>1.5 %</td>
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<tr>
<td>Category 5A</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>3.1 %</td>
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<tr>
<td>Category 7B</td>
<td>3.1 %</td>
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<tr>
<td>Category 8</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
**alpha-Methyl cinnamic aldehyde**

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Methyl cinnamic aldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Methyl cinnamic aldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Methyl cinnamic aldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Methyl cinnamic aldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Methyl cinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

alpha-Methyl cinnamic aldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 6-Methyl-3,5-heptadien-2-one

**CAS-No.:** 1604-28-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 3,5-Heptadien-2-one, 6-methyl-Methylheptadienone  
2-Methylhepta-2,4-dien-6-one  
6-Methylhepta-3,5-dien-2-one

## History:

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<thead>
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| 2020 (Amendment 49) | 1989  
1999  
2009 |

## Implementation dates:

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<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## Recommendation:  
**RESTRICTION**

### Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>% Concentration</th>
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<tbody>
<tr>
<td>Category 1</td>
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<tr>
<td>Category 2</td>
<td>0.0025 %</td>
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<tr>
<td>Category 3</td>
<td>0.051 %</td>
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<tr>
<td>Category 4</td>
<td>0.047 %</td>
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<tr>
<td>Category 5A</td>
<td>0.012 %</td>
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<tr>
<td>Category 5B</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.028 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.092 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.33 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.33 %</td>
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<tr>
<td>Category 11A</td>
<td>0.18 %</td>
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<tr>
<td>Category 11B</td>
<td>0.18 %</td>
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<tr>
<td>Category 12</td>
<td>No Restriction</td>
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</table>

## FLAVOR REQUIREMENTS:  
Due to the possible ingestion of small amounts of...
6-Methyl-3,5-heptadien-2-one

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6-Methyl-3,5-heptadien-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methyl-3,5-heptadien-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6-Methyl-3,5-heptadien-2-one in the various product categories.

REFERENCES:
The IFRA Standard on 6-Methyl-3,5-heptadien-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Methyl-3,5-heptadien-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for...
6-Methyl-3,5-heptadien-2-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Methyl heptine carbonate

**CAS-No.:** 111-12-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Methyl heptyne carbonate  
Methyl 2-octynoate  
Methyl oct-2-ynoate  
MHC  
2-Octynoic acid, methyl ester  
Folione (commercial name)

**History:**

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<th>2005</th>
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**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
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</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>Category 1</td>
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<tr>
<td>Category 2</td>
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<tr>
<td>Category 3</td>
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<tr>
<td>Category 4</td>
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<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
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<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>
Methyl heptine carbonate

Fragrance ingredient restriction - Note box
When used in the same fragrance compound within a specific QRA category, the sum total of Methyl heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted in the respective categories as listed in the Standard for MOC.

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl heptine carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Methyl heptine carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl heptine carbonate in the various product categories.

REFERENCES:
The IFRA Standard on Methyl heptine carbonate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl heptine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Methyl heptine carbonate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Methyl ionone, mixed isomers**

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The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

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<td>127-42-4:</td>
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<td>Methyl-α-ionone</td>
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<td>α-Cetone</td>
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<td>α-Cyclocitrilylidenebutanone</td>
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<td>1-Penten-3-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-5-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-4-penten-3-one</td>
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<td>127-51-5:</td>
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<td>α-Isomethylionone</td>
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<td>3-Buten-2-one, 3-methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-</td>
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<td>3-Methyl-4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-3-butene-2-one</td>
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<td>α-Isomethyl ionone</td>
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<td></td>
<td>Iraldeine gamma</td>
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# Methyl ionone, mixed isomers

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<th>δ-Iraldeine</th>
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<tr>
<td>1335-94-0:</td>
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<td>2020 (Amendment 49)</td>
<td>2007, 2015</td>
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## Implementation dates:

<table>
<thead>
<tr>
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<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

### RESTRICTION / SPECIFICATION

#### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>5.4 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>32 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>30 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>7.6 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>7.6 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>7.6 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>7.6 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>18 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>61 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>61 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>3.2 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>59 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>100 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>100 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>100 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>100 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

## Fragrance ingredient restriction - Note box

The above limits apply to Methyl ionone isomers used individually or in combination.

## FRAGRANCE INGREDIENT SPECIFICATION:

Pseudo methyl ionones (CAS numbers 26651-96-7, 72968-25-3, 1117-41-5) should not be used as fragrance ingredient as such. A level of up to 2% of Pseudo methyl ionones as an impurity in Methyl ionones is accepted.
Methyl ionone, mixed isomers

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl ionone, mixed isomers, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl ionone, mixed isomers and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl ionone, mixed isomers in the various product categories. In addition, they recommend to use Methyl ionone, mixed isomers according to the specification above mentioned.

**REFERENCES:**

The IFRA Standard on Methyl ionone, mixed isomers is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl ionone, mixed isomers if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Methyl ionone, mixed isomers


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Methyl octine carbonate

**CAS-No.:** 111-80-8
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Methyl octyne carbonate
Methyl 2-nonynoate
2-Nonynoic acid, methyl ester
MOC

**History:**
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
</thead>
</table>

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0018 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.00055 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.011 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.010 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0026 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0026 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0026 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0026 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0061 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0011 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.072 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.072 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.040 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

When used in the same fragrance compound within a specific QRA category, the sum total of any Methyl
Methyl octine carbonate

Heptine carbonate (MHC, CAS number 111-12-6) and Methyl octine carbonate (MOC, CAS number 111-80-8) contributions must not exceed the maximum permitted level for MHC. At the same time, the contribution from MOC should always respect the maximum levels permitted as listed in the table above.

| FLAVOR REQUIREMENTS: | Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards. |
| CONTRIBUTIONS FROM OTHER SOURCES: | NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS) |
| INTRINSIC PROPERTY DRIVING RISK | DERMAL SENSITIZATION |

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl octine carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl octine carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl octine carbonate in the various product categories.

REFERENCES:

The IFRA Standard on Methyl octine carbonate is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl octine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Methyl octine carbonate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

CAS-No.: 68922-13-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2-Cyclopenten-1-one, 2-(pentyloxy)-3-methyl-
Pentyloxy cyclopentenone (commercial name)

History: Publication date: 2020 (Amendment 49) Previous Publications: 2011

Implementation dates: For new creation*: February 10, 2021 For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.085 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.47 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.28 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.96 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.96 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.92 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.3 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.3 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply
3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


3-Methyl-2-(pentyloxy)cyclopent-2-en-1-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>1,1-Dimethoxynon-2-yne</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Nonyl-1-al-Dimethyl-Acetyl</td>
<td></td>
</tr>
<tr>
<td>2-Nonyne, 1,1-dimethoxy-Parmavert (commercial name)</td>
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</table>

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</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
<td></td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%): |
| --- | --- |
| Category 1 | 1.8 % |
| Category 2 | 0.53 % |
| Category 3 | 11 % |
| Category 4 | 9.9 % |
| Category 5A | 2.5 % |
| Category 5B | 2.5 % |
| Category 5C | 2.5 % |
| Category 5D | 2.5 % |
| Category 6 | 5.8 % |
| Category 7A | 20 % |
| Category 7B | 20 % |
| Category 8 | 1.0 % |
| Category 9 | 19 % |
| Category 10A | 69 % |
| Category 10B | 69 % |
| Category 11A | 38 % |
| Category 11B | 38 % |
| Category 12 | No Restriction |

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of
2-Nonyn-1-al dimethyl acetal

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT: DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Nonyn-1-al dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Nonyn-1-al dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Nonyn-1-al dimethyl acetal in the various product categories.

REFERENCES:
The IFRA Standard on 2-Nonyn-1-al dimethyl acetal is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Nonyn-1-al dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2-Nonyl-1-al dimethyl acetal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Oakmoss extracts

**CAS-No.:**
- 90028-68-5
- 68917-10-2
- 9000-50-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- Oakmoss absolute
- Evernia absolute
- Evernia prunastri, ext.
- Mousse de Chêne absolute
- Oakmoss absolute (Evernia prunastri)
- Evernia prunastri (Oakmoss) extract

**History:**
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<th>Previous Publications:</th>
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**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentrations (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.016 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.076 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category 7A</th>
<th>0.10 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 7B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.10 %</td>
</tr>
</tbody>
</table>

---

2020 (Amendment 49) 1/3
**Oakmoss extracts**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0.18 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

For Oakmoss and Treemoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared its last publication in the Amendment 43 (2008)).

In the presence of Treemoss extracts, the level of Oakmoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above.

If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

**FRAGRANCE INGREDIENT SPECIFICATION:**

Oakmoss extracts must not contain added Treemoss, which is a source of resin acids. Traces of resin acids may be carried over to commercial qualities of Oakmoss in the manufacturing process. These traces must not exceed 0.1% (1000 ppm) of Dehydroabietic acid (DHA) in the extract. The concentration of resin acids in Oakmoss can be measured with an High Performance Liquid Chromatography (HPLC) Reverse Phase – Spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Oakmoss extracts.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of
relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Oakmoss extracts, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Oakmoss extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Oakmoss extracts in the various product categories. In addition, they recommend to use Oakmoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Oakmoss extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Oakmoss extracts if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 49

1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)

**CAS-No.:**
- 54464-57-2
- 54464-59-4
- 68155-66-8
- 68155-67-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 54464-57-2:
  - 1-(1,2,3,4,5,6,7,8-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethanone
  - 1',2',3',4',5',6',7',8'-Octahydro-2',3',8',8'-tetramethyl-2'-acetonaphthone
- 1-(1,2,3,4,5,6,7-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethan-1-one
- 1-(2,3,8,8-tetramethyl-1,2,3,4,5,6,7,8-octahydroacenaphthen-2-yl)ethanone
- 2-acetoxy-2,3,8,8-tetramethyloctahydroacenaphthalene
- 7-Acetyl-1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethylnaphthalene
- Ethanone, 1-(1,2,3,4,5,6,7,8-tetramethyl-2-naphthalenyl)-Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-aceto
- Ambergris Ketone (commercial name)
- Amberonne (commercial name)
- Ambralux (commercial name)
- Boisvelone (commercial name)
- Iso Ambois Super (commercial name)
- Iso-E Super (commercial name)
- Iso Gamma Super (commercial name)
- Isocyclenone E (commercial name)
- Orbitone (commercial name)
- Orbitone T (commercial name)

- 54464-59-4:
  - 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-naphthalenyl)ethan-1-one
  - 1-(2,3,5,5-tetramethyl-1,2,3,4,5,6,7,8-octahydroacenaphthalen-2-yl)ethanone
- Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-naphthalenyl)-Naphthalene, 1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-aceto

- 68155-66-8:
  - 1-(1,2,3,5,6,7,8-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethan-1-one
  - 1-(2,3,8,8-Tetramethyl-1,2,3,5,6,7,8-Octahydroacenaphthen-2-yl)ethanone
- Ethanone, 1-(1,2,3,5,6,7,8-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)-Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,5,6,7,8,8A-Octahydro)-

- 68155-67-9:
  - 1-(1,2,3,4,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)ethan-1-one
  - 1-(2,3,8,8-Tetramethyl-1,2,3,4,6,7,8,8a-Octahydroacenaphthen-2-yl)ethanone
- Ethanone, 1-(1,2,3,4,6,7,8,8a-Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)-Decalene, 2-Aceto-2,3,8,8-Tetramethyl(1,2,3,4,6,7,8,8A-Octahydro)-

**History:**

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<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Publications:</td>
<td>2008</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
**1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE)**

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>0.41 %</td>
</tr>
<tr>
<td>2</td>
<td>1.1 %</td>
</tr>
<tr>
<td>3</td>
<td>0.41 %</td>
</tr>
<tr>
<td>4</td>
<td>20 %</td>
</tr>
<tr>
<td>5A</td>
<td>5.1 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.56 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.76 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.19 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0093 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.67 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.67 %</td>
</tr>
<tr>
<td>8</td>
<td>0.19 %</td>
</tr>
<tr>
<td>9</td>
<td>2.4 %</td>
</tr>
<tr>
<td>10A</td>
<td>2.4 %</td>
</tr>
<tr>
<td>10B</td>
<td>6.6 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.19 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.19 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY
**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) in the various product categories.

**REFERENCES:**

The IFRA Standard on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-(1,2,3,4,5,6,7,8 Octahydro-2,3,8,8-tetramethyl-2-naphthalenyl) ethanone (OTNE) if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
### 1-Octen-3-yl acetate

**CAS-No.:** 2442-10-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 3-Acetoxyoctene  
Amyl crotonyl acetate  
Amyl vinyl carbiny1 acetate  
1-Octen-3-ol, acetate  
Octenyl acetate  
β-Octenyl acetate  
n-Pentyl vinyl carbinol acetate

**History:**  
Publication date: 2020 (Amendment 49)  

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRrCTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.27 %</td>
<td>Category 7A</td>
<td>3.1 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.080 %</td>
<td>Category 7B</td>
<td>3.1 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.6 %</td>
<td>Category 8</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.5 %</td>
<td>Category 9</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.38 %</td>
<td>Category 10A</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.38 %</td>
<td>Category 10B</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.38 %</td>
<td>Category 11A</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.38 %</td>
<td>Category 11B</td>
<td>5.8 %</td>
</tr>
</tbody>
</table>
1-Octen-3-yl acetate

| Category 6 | 0.88 % | Category 12 | No Restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-Octen-3-yl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 1-Octen-3-yl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-Octen-3-yl acetate in the various product categories.

**REFERENCES:**
The IFRA Standard on 1-Octen-3-yl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-Octen-3-yl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

1-Octen-3-yl acetate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 49

Opoponax

CAS-No.: 8021-36-1 9000-78-6 93384-32-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Opoponax (absolute, resinoid, oil, gum, tincture) Bisabol-myrrh Sweet myrrh Opoponax chironium (L.) W.D.J. Koch Commiphora erythraea Engler var. glabrescens (Burseraceae)

History: Publication date: 2020 (Amendment 49) Previous Publications: 1978 1994 2013

Implementation dates: For new creation*: February 10, 2021 For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION / SPECIFICATION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.077 %</td>
<td>Category 7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
<td>Category 8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
<td>Category 11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
<td>Category 11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

2020 (Amendment 49) 1/3
## Opoponax

### FRAGRANCE INGREDIENT SPECIFICATION:

Opoponax oil can be obtained from solvent extraction or pyrolysis. Opoponax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK

DERMAL SENSITIZATION

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Opoponax, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Opoponax and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations.
of Opoponax in the various product categories. In addition, they recommend to use Opoponax according to the specification above mentioned.

**REFERENCES:**

The IFRA Standard on Opoponax is based on at least one of the following publications:

- The RIFM Safety Assessment on Opoponax if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 49

Peru balsam

CAS-No.: 8007-00-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
Prohibition of Peru balsam crude:
Exudation of Myroxylon pereirae Klotsch
Restriction of Peru balsam extracts and distillates:
Balsam oil, Peru (Myroxylon pereirae Klotsch)
Myroxylon pereirae (Balsam Peru) oil
Myroxylon pereirae (Balsam Peru) resin
Myroxylon pereirae oil
Peru balsam absolute
Peru balsam anhydrol

History:
Publication date: 2020 (Amendment 49)

Implementation dates:
For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION / PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Peru balsam crude should not be used as a fragrance ingredient for any finished product application.

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.073 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.022 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.44 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.83 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.83 %</td>
</tr>
<tr>
<td>Category 8</td>
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</tr>
<tr>
<td>Category 9</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.80 %</td>
</tr>
</tbody>
</table>
**Peru balsam**

<table>
<thead>
<tr>
<th>Category</th>
<th>0.10%</th>
<th>Category</th>
<th>2.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B</td>
<td></td>
<td>10B</td>
<td></td>
</tr>
<tr>
<td>5C</td>
<td>0.10%</td>
<td>11A</td>
<td>0.034%</td>
</tr>
<tr>
<td>5D</td>
<td>0.034%</td>
<td>11B</td>
<td>0.034%</td>
</tr>
<tr>
<td>6</td>
<td>0.24%</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**
The restriction only applies to Peru balsam extracts and distillates (Peru balsam oil, absolute and anhydrol).

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Recommended concentration levels of Peru balsam extracts and distillates are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Peru balsam extracts and distillates, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Peru balsam extracts and distillates and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Peru balsam extracts and distillates in the various product categories.

In addition, they recommend not to use Peru balsam crude in any finished product application.
Peru balsam

REFERENCES:

The IFRA Standard on Peru balsam is based on at least one of the following publications:

• The RIFM Safety Assessment on Peru balsam if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

**CAS-No.:** 13144-88-2
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Acetyl-1,3,3,4,4-pentamethyl-1-cyclopentene
- Ethanone, 1-(2,4,4,5,5-pentamethyl-1-cyclopenten-1-yl)-1-(2,4,4,5,5-Pentamethylcyclopent-1-en-1-yl)ethanone
- Alpinone (commercial name)

**History:**

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<th>Publication date:</th>
<th>Previous Publications:</th>
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</thead>
<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>2011</td>
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</tbody>
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**Implementation dates:**

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<tr>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.077 %</th>
<th>Category 7A</th>
<th>0.88 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
<td>Category 8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
<td>Category 11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
<td>Category 11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of
1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK

DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49) 2/3
1-(2,4,4,5,5-Pentamethyl-1-cyclopenten-1-yl)ethan-1-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Phenylacetaldehyde

**CAS-No.:** 122-78-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Benzeneacetaldehyde  
Benzylcarboxaldehyde  
Hyacinthin  
1-Oxo-2-phenylethane  
α-Tolualdehyde  
α-Toluic aldehyde  
Phenylacetic aldehyde  
Phenyl acetic aldehyde (pure) (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.045 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.014 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.064 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.064 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.064 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.52 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.52 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.021 %</td>
</tr>
</tbody>
</table>
Amendment 49

Phenylacetaldehyde

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.15 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Phenylacetaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Phenylacetaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Phenylacetaldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on Phenylacetaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Phenylacetaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

Phenylacetaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**3-Phenylbutanal**

**CAS-No.:** 16251-77-7  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Benzene propanal, β-methyl-3-phenylbutyraldehyde  
3-Phenyl-3-methylpropanal  
Trifernal (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2010

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.023 %</td>
</tr>
<tr>
<td>2</td>
<td>0.069 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.023 %</td>
</tr>
<tr>
<td>3</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0076 %</td>
</tr>
<tr>
<td>4</td>
<td>0.44 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.080 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.080 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.36 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.034 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.0076 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.0076 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.0076 %</td>
</tr>
<tr>
<td>6</td>
<td>0.011 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>9.6 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of
3-Phenylbutanal

<table>
<thead>
<tr>
<th>CONTRIBUTIONS FROM OTHER SOURCES:</th>
<th>NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRINSIC PROPERTY DRIVING RISK</td>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
</tr>
</tbody>
</table>

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Phenylbutanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Phenylbutanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Phenylbutanal in the various product categories.

REFERENCES:

The IFRA Standard on 3-Phenylbutanal is based on at least one of the following publications:

- The RIFM Safety Assessment on 3-Phenylbutanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
3-Phenylbutanal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
### 2-Phenylpropionaldehyde

**CAS-No.:**
- 93-53-8
- 1340-11-0
- 34713-70-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Benzeneacetaldehyde, α-methyl-
- Hydratropicaldehyde
- α-Methylphenylacetaldehyde
- α-Methyltolualdehyde
- 2-Phenylpropanal
- α-Phenylpropionaldehyde
- (R)-2-Phenylpropionaldehyde
- (S)-2-Phenylpropionaldehyde
- Hydratropic aldehyde (commercial name)

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2009

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.029 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0087 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.041 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.041 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.041 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.19 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.19 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.014 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.77 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.014 %</td>
</tr>
</tbody>
</table>
Amendment 49

IFRA STANDARD

Category 5D  0.014 %  Category 11B  0.014 %
Category 6  0.096 %  Category 12  31 %

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Phenylpropionaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Phenylpropionaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Phenylpropionaldehyde in the various product categories.

**REFERENCES:**

The IFRA Standard on 2-Phenylpropionaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Phenylpropionaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
2-Phenylpropionaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3-Propylideneephthalide

**CAS-No.:** 17369-59-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 3-Propylideneephthalide
- 1(3H)-Isobenzofuranone, 3-propylidene-
- 3-Propylidene-2-benzofuran-1(3H)-one
- Propylidene phthalide

**History:**
- Publication date: 2023 (Amendment 51)

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.072 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.022 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.40 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.82 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.82 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.042 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.79 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of
3-Propylidenephthalide

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Propylidenephthalide, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Propylidenephthalide and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Propylidenephthalide in the various product categories.

REFERENCES:

The IFRA Standard on 3-Propylidenephthalide is based on at least one of the following publications:

• The RIFM Safety Assessment on 3-Propylidenephthalide if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


3-Propylideneephthalide

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).

Synonyms:

- **23696-85-7 (C13H18O):**
  - 1-(2,6,6-Trimethylcyclohexa-1,3-dienyl)-2-buten-1-one
  - 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)
  - Damascenone (commercial name)
  - Floriffone (commercial name)
  - Doricenone (commercial name)

- **23726-93-4 (C13H18O):**
  - (E)-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one
  - trans-1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one
  - 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)- (2E)-β-Damascenone

- **59739-63-8 (C13H18O):**
  - (2Z)-1-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-Buten-1-one
  - (Z)-β-Damascenone
  - cis-Damascenone
  - 2-Buten-1-one, 1-(2,6,6-trimethyl-1,3-cyclohexadien-1-y1)-, (Z)-

- **43052-87-5 (C13H20O):**
  - α-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one
  - 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-
  - α-Damascone (commercial name)
  - Dihydroflorifonne α (commercial name)

- **24720-09-0 (C13H20O):**
  - (E)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one
  - trans-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-en-1-one
  - 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-y1)-, (2E)-trans-α-Damascone
  - Damascone alpha (commercial name)
  - Dorinone (commercial name)
## Rose ketones

<table>
<thead>
<tr>
<th>Chemical Code</th>
<th>Chemical Name and Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>23726-94-5 (C13H20O):</td>
<td>(Z)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one</td>
</tr>
<tr>
<td>23726-92-3 (C13H20O):</td>
<td>1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one</td>
</tr>
<tr>
<td>23726-91-2 (C13H20O):</td>
<td>(2E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one</td>
</tr>
<tr>
<td>35044-68-9 (C13H20O):</td>
<td>2-Buten-1-one, 1-(2,2-dimethyl-6-methylenecyclohexyl)</td>
</tr>
<tr>
<td>57378-68-4 (C13H20O):</td>
<td>δ-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one</td>
</tr>
<tr>
<td>71048-82-3 (C13H20O):</td>
<td>[1α(E),2β]-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one</td>
</tr>
<tr>
<td>35087-49-1 (C13H20O):</td>
<td>1-(2,2-Dimethyl-6-methylenecyclohexyl)but-2-en-1-one</td>
</tr>
</tbody>
</table>
| 39872-57-6 (C13H20O): | }
## Rose ketones

1-((2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one
(E)-1-((2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one
2-Buten-1-one, 1-((2,4,4-trimethyl-2-cyclohexen-1-yl)-, (2E)-
2-Buten-1-one, 1-((2,4,4-trimethyl-2-cyclohexen-1-yl)-, (E)-
(E)-α-Isodamascone
Isodamascone (high α) (commercial name)

70266-48-7 (C13H20O):
1-((2,4,4-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one
2-Buten-1-one, 1-((2,4,4-trimethyl-1-cyclohexene-1-yl)
Generic β-Isodamascone
Isodamascone (standard quality) (commercial name)

33673-71-1 (C13H20O):
1-((2,4,4-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one
1-((2,4,4-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one
2-Buten-1-one, 1-((2,4,4-trimethyl-2-cyclohexen-1-yl)-
Isodamascone (isomer unspecified)
Generic δ-Isodamascone

87064-19-5 (C13H20O):
2-Buten-1-one, 1-((2,4,4-trimethyl-2-cyclohexen-1-yl)-, (Z)-
cis-Isodamascone
(including all geometric isomers).

### History:

<table>
<thead>
<tr>
<th>Publication date</th>
<th>Previous Publications</th>
</tr>
</thead>
</table>

### Implementation dates:

| For new creation* | February 10, 2021 |
| For existing creation* | February 10, 2022 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

| Category 1 | 0.0077 % | Category 7A | 0.088 % |
| Category 2 | 0.0023 % | Category 7B | 0.088 % |
| Category 3 | 0.046 % | Category 8 | 0.0045 % |
Rose ketones

<table>
<thead>
<tr>
<th>Category</th>
<th>Limit</th>
<th>Category</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.043 %</td>
<td>9</td>
<td>0.084 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.011 %</td>
<td>10A</td>
<td>0.30 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.011 %</td>
<td>10B</td>
<td>0.30 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.011 %</td>
<td>11A</td>
<td>0.17 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.011 %</td>
<td>11B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>6</td>
<td>0.025 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

Fragrance ingredient restriction - Note box
The above limits apply to Rose Ketones used individually or in combination. The sum of concentrations of Rose ketones isomers should not exceed the maximum concentration levels established by this Standard.

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Rose ketones, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

2020 (Amendment 49)
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Rose ketones and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Rose ketones in the various product categories.

REFERENCES:

The IFRA Standard on Rose ketones is based on at least one of the following publications:

- The RIFM Safety Assessment on Rose ketones if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Styrax

| CAS-No.: | 8046-19-3  
| | 8024-01-9  
| | 94891-27-7  
| | 94891-28-8  
| | 101227-15-0  |

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

## Synonyms:

- Prohibition of the crude material:
  - Styrax crude gums
- Restriction and Specification of the distillates:
  - Styrax resin
  - Styrax oil
  - Styrax oil, rectified
  - Styrax oil, pyrogenated, distilled

## History:

| Publication date: | 2020 (Amendment 49) |
| Previous Publications: | 1977  
| | 1994  
| | 2013 |

## Implementation dates:

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## Recommendation:

**PROHIBITION / RESTRICTION / SPECIFICATION**

## Fragrance Ingredient Prohibition:

Crude gums of Liquidambar styraficula L. var. macrophylla or Liquidambar orientalis Mill. should not be used as fragrance ingredients for any finished product application.

## Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.12 %</td>
</tr>
<tr>
<td>2</td>
<td>0.034 %</td>
</tr>
<tr>
<td>3</td>
<td>0.69 %</td>
</tr>
<tr>
<td>7A</td>
<td>1.3 %</td>
</tr>
<tr>
<td>7B</td>
<td>1.3 %</td>
</tr>
<tr>
<td>8</td>
<td>0.068 %</td>
</tr>
</tbody>
</table>
Styrax

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
<th>Category</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
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<tr>
<td>5A</td>
<td>0.16</td>
<td>10A</td>
<td>4.5</td>
</tr>
<tr>
<td>5B</td>
<td>0.16</td>
<td>10B</td>
<td>4.5</td>
</tr>
<tr>
<td>5C</td>
<td>0.16</td>
<td>11A</td>
<td>2.5</td>
</tr>
<tr>
<td>5D</td>
<td>0.16</td>
<td>11B</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>0.38</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance Ingredient restriction - Note box**

Only extracts or distillates (resinoids, absolutes and oils), prepared from exudations of Liquidambar styraciflua L. var. macrophylla or Liquidambar orientalis Mill., can be used.

**FRAGRANCE INGREDIENT SPECIFICATION:**

Styrax oil can be obtained from solvent extraction or pyrolysis. Styrax oil obtained through pyrolysis shall be rectified according to Good Manufacturing Practices (GMP) and the content of Polycyclic Aromatic Hydrocarbons (PAH) resulting from their use shall respect the following requirement: Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Birch tar oils or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Styrax, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed data available for Styrax distillates and recommends the limits for the 12 different product categories, which are the acceptable use levels of Styrax distillates in the various product categories.

In addition, they recommend to use Styrax distillates according to the its specification above mentioned.

The Expert Panel for Fragrance Safety further recommends not to use Styrax crude in any finished product application.

REFERENCES:

The IFRA Standard on Styrax is based on at least one of the following publications:

• The RIFM Safety Assessment on Styrax if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Tea leaf absolute

**CAS-No.:** 84650-60-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Camellia sinensis leaf extract  
Tea, ext.  
Tea sinensis absolute  
Thea chinensis ext.  
Thea sinensis ext.

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>2006</th>
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<th>For new creation*:</th>
<th>February 10, 2021</th>
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<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** **RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
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<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>

---
Tea leaf absolute

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Tea leaf absolute, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Tea leaf absolute and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Tea leaf absolute in the various product categories.

**REFERENCES:**
The IFRA Standard on Tea leaf absolute is based on at least one of the following publications:

- The RIFM Safety Assessment on Tea leaf absolute if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Treemoss extracts

<table>
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<th>CAS-No.:</th>
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<td>68648-41-9</td>
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<td></td>
<td>68917-40-8</td>
</tr>
</tbody>
</table>

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

### Synonyms:
- Treemoss absolute (Pseudevernia furfuracea)
- Treemoss (Usnea furfuracea)
- Treemoss colourless
- Pseudevernia furfuracea extract
- Cedar moss

### History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:**
  - 1991
  - 2001
  - 2008

### Implementation dates:
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>MAX Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.016 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.076 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.10 %</td>
</tr>
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<td>0.10 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 10A</td>
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</tr>
<tr>
<td>Category 10B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.10 %</td>
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<tr>
<td>Category 11B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 12</td>
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</tr>
</tbody>
</table>
Amendment 49

Treemoss extracts

**Fragrance ingredient restriction - Note box**

For Treemoss and Oakmoss extracts, the restrictions in the Standards are directly linked to the presence of Atranol and Chloroatranol in the finished products. To ensure that those remain below trace levels, the upper concentration levels have not been increased (compared to its last publication in the Amendment 43 (2008)).

In the presence of Oakmoss extracts, the level of Treemoss in the respective category has to be reduced accordingly, such that the total amount of both extracts does not exceed the maximum permitted level in each category as listed in the table above. If the same fragrance mixture is intended to be used in more than one IFRA Category, then the most restrictive limitation (based on foreseen use concentrations and maximum permitted level) will apply.

**FRAGRANCE INGREDIENT SPECIFICATION:**

Treemoss extracts shall not contain more than 0.8% of Dehydroabietic acid (DHA) as a marker of 2% of total resin acids. The concentration of DHA (about 40% of the total resin acids) in Treemoss can be measured with an High Performance Liquid Chromatography (HPLC) reverse phase - spectrofluorometry method. Further, levels of Atranol and Chloroatranol should each be below 100 ppm in Treemoss extracts.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Treemoss extracts, which can be
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Treemoss extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Treemoss extracts in the various product categories. In addition, they recommend to use Treemoss extracts according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Treemoss extracts is based on at least one of the following publications:

- The RIFM Safety Assessment on Treemoss extracts if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### o,m,p-Tolualdehydes and their mixtures

<table>
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<th>620-23-5</th>
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<tr>
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<td>2-Tolualdehyde</td>
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<td>meta-Tolualdehyde</td>
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<td>3-Methyl-benzaldehyde</td>
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<td>4-Methyl-benzaldehyde</td>
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<td>Benzaldehyde, 4-methyl-</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tolyl Aldehyde Para Extra (commercial name)</td>
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</tr>
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<td></td>
<td>1334-78-7:</td>
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</tr>
<tr>
<td></td>
<td>Benzaldehyde, methyl-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o,m,p-Methyl-benzaldehydes</td>
<td></td>
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<tr>
<td></td>
<td>Methylbenzaldehyde (mixed 2,3,4)</td>
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<td>Tolualdehydes (mixed o,m,p)</td>
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<td>Tolualdehyde</td>
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</tr>
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<td></td>
<td>Toluic aldehyde (mixed 2,3,4)</td>
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### History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
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</tr>
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### Implementation dates:

- **For new creation***: February 10, 2021
- **For existing creation***: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

**RESTRICTION**

### Maximum Acceptable Concentrations in the Finished Product (%):
## o,m,p-Tolualdehydes and their mixtures

<table>
<thead>
<tr>
<th>Category</th>
<th>Limit</th>
<th>Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.085 %</td>
<td>7A</td>
<td>0.96 %</td>
</tr>
<tr>
<td>2</td>
<td>0.025 %</td>
<td>7B</td>
<td>0.96 %</td>
</tr>
<tr>
<td>3</td>
<td>0.51 %</td>
<td>8</td>
<td>0.050 %</td>
</tr>
<tr>
<td>4</td>
<td>0.47 %</td>
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<td>0.92 %</td>
</tr>
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<td>5A</td>
<td>0.12 %</td>
<td>10A</td>
<td>3.3 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.12 %</td>
<td>10B</td>
<td>3.3 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.12 %</td>
<td>11A</td>
<td>1.8 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.12 %</td>
<td>11B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>6</td>
<td>0.28 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

The above limits apply to ortho-, meta- and para-Tolualdehyde used individually or in combination.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.
Amendment 49

o,m,p-Tolualdehydes and their mixtures

Additional information is available in the RIFM safety assessment for o,m,p-Tolualdehydes and their mixtures, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for o,m,p-Tolualdehydes and their mixtures and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of o,m,p-Tolualdehydes and their mixtures in the various product categories.

REFERENCES:

The IFRA Standard on o,m,p-Tolualdehydes and their mixtures is based on at least one of the following publications:

• The RIFM Safety Assessment on o,m,p-Tolualdehydes and their mixtures if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**2,6,6-Trimethylcyclohexa-1,3-diene-1-carbaldehyde**

**CAS-No.:** 116-26-7  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- 2,6,6-Trimethylcyclohexa-1,3-diene-1-carbaldehyde  
- 2,6,6-Trimethyl-1,3-cyclohexadienal  
- 2,6,6-Trimethyl-1,3-cyclohexadien-1-carboxaldehyde  
- 1,1,3-Trimethyl-2-formylcyclohexa-2,4-diene  
- Dehydro-β-cyclocitral  
- Safranal (commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**Restriction**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0022 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.00666 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0032 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0032 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0032 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0032 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0073 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.024 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.087 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.087 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.048 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.048 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
2,6,6-Trimethylcyclohex-1,3-dienyl methanal

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

2,6,6-Trimethylcyclohex-1,3-dienyl methanal has been found in natural extracts but only at trace levels.

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,6-Trimethylcyclohex-1,3-dienyl methanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,6,6-Trimethylcyclohex-1,3-dienyl methanal in the various product categories.

**REFERENCES:**
The IFRA Standard on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,6,6-Trimethylcyclohex-1,3-dienyl methanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

### 2,6,6-Trimethylcyclohex-1,3-dienyl methanal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Verbena oil and absolute (Lippia citriodora Kunth.)

**CAS-No.:**
- 8024-12-2
- 85116-63-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- Prohibition of Verbena oils:
  - Lippia citriodora oils
- Restriction of Verbena absolutes:
  - Lippia citriodora absolute
  - Verbena absolute
  - Aloysia triphylla absolute
  - Lippia triphylla absolute
  - Verbena triphylla absolute
  - Zappania citrodora absolute

**History:**
- Publication date: 2020 (Amendment 49)
- Previous Publications: 1987, 2010

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- RESTRICTION / PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
Verbena oils from Lippia citriodora Kunth. should not be used as a fragrance ingredient, based on its sensitizing and phototoxic potential.

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.12 %</td>
</tr>
<tr>
<td>2</td>
<td>0.037 %</td>
</tr>
<tr>
<td>3</td>
<td>0.74 %</td>
</tr>
<tr>
<td>4</td>
<td>0.69 %</td>
</tr>
<tr>
<td>7A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>7B</td>
<td>1.4 %</td>
</tr>
<tr>
<td>8</td>
<td>0.072 %</td>
</tr>
<tr>
<td>9</td>
<td>1.3 %</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
Amendment 49

Verbena oil and absolute (Lippia citriodora Kunth.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5A</td>
<td>0.17 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.17 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.17 %</td>
</tr>
<tr>
<td>6</td>
<td>0.40 %</td>
</tr>
<tr>
<td>10A</td>
<td>4.8 %</td>
</tr>
<tr>
<td>10B</td>
<td>4.8 %</td>
</tr>
<tr>
<td>11A</td>
<td>2.7 %</td>
</tr>
<tr>
<td>11B</td>
<td>2.7 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

The Standard is set due to the phototoxic effects of Verbena oil and absolute (Lippia citriodora Kunth.). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Only Verbena absolutes from Lippia citriodora Kunth. can be used as a fragrance ingredient.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION, PHOTOTOXICITY

**RIFM SUMMARIES:**

Recommended concentration levels of Verbena absolute are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the recommended concentration levels for each product category is derived from comparing maximum permitted level per endpoint consideration (dermal sensitization and/or systemic toxicity). Such recommended concentration levels correspond to the lowest level obtained per category. Additional information is available in the RIFM safety assessment for Verbena absolute, which can be downloaded from the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Verbena absolute and recommends the limits for the 12 different product categories, which provide the acceptable use levels of Verbena absolute in the various product categories. In addition, they recommend not to use Verbena oil in any finished product application.

REFERENCES:

The IFRA Standard on Verbena oil and absolute (Lippia citriodora Kunth.) is based on at least one of the following publications:

- The RIFM Safety Assessment on Verbena oil and absolute (Lippia citriodora Kunth.) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafrafrance.org.
### Ylang ylang extracts

**CAS-No.:**
- 8006-81-3
- 68606-83-7
- 83863-30-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- Cananga odorata (Lamark) (Hooker et Thompson) (Anonaceae)
- Cananga odorata extract
- Cananga odorata flower oil
- Cananga odorata oil
- Cananga oil
- Ylang ylang oil (Cananga odorata Hook. f. and Thomas)
- Ylang ylang oil extra
- Ylang ylang oil I
- Ylang ylang oil II
- Ylang ylang oil III
- Ylang ylang, Cananga odorata, ext.

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 2008

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.039 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.78 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.73 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.18 %</td>
</tr>
</tbody>
</table>
Ylang ylang extracts

<table>
<thead>
<tr>
<th>Category 5C</th>
<th>0.18 %</th>
<th>Category 11A</th>
<th>2.8 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5D</td>
<td>0.18 %</td>
<td>Category 11B</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.43 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ylang ylang extracts, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Ylang ylang extracts and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ylang ylang extracts in the various product categories.

**REFERENCES:**

The IFRA Standard on Ylang ylang extracts is based on at least one of the following publications:

• The RIFM Safety Assessment on Ylang ylang extracts if available at the RIFM Fragrance Material Safety
Ylang ylang extracts

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Acetyl hexamethyl indan (AHMI)

**CAS-No.:** 15323-35-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- 5-Acetyl-1,1,2,3,3,6-hexamethyl indan  
- 6-Acetyl-1,1,2,3,3,5-hexamethylindane  
- 1-(2,3-Dihydro-1,1,2,3,3,6-hexamethyl-1H-inden-5-yl)ethanone  
- Ethanone, 1-(2,3-dihydro-1,1,2,3,3,6-hexamethyl-1H-inden-5-yl)-1,1,2,3,3,6-Hexamethylinden-5-yl methylketone  
- Phantolid (commercial name)

**History:**  

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>
| 2020 (Amendment 49) | 1978  
|                  | 1987  
|                  | 2001  
|                  | 2015 |

**Implementation dates:**  
- For new creation*: February 10, 2021  
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
<th>Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.0 %</td>
<td>7A</td>
<td></td>
<td>No Restriction</td>
</tr>
<tr>
<td>2</td>
<td>2.0 %</td>
<td>7B</td>
<td>2.0 %</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.0 %</td>
<td>8</td>
<td>2.0 %</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.0 %</td>
<td>9</td>
<td></td>
<td>No Restriction</td>
</tr>
<tr>
<td>5A</td>
<td>2.0 %</td>
<td>10A</td>
<td></td>
<td>No Restriction</td>
</tr>
<tr>
<td>5B</td>
<td>2.0 %</td>
<td>10B</td>
<td>2.0 %</td>
<td></td>
</tr>
<tr>
<td>5C</td>
<td>2.0 %</td>
<td>11A</td>
<td></td>
<td>No Restriction</td>
</tr>
<tr>
<td>5D</td>
<td>2.0 %</td>
<td>11B</td>
<td>2.0 %</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2.0 %</td>
<td>12</td>
<td></td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

2020 (Amendment 49) 1/4
Amendment 49

Acetyl hexamethyl indan (AHMI)

**Fragrance ingredient restriction - Note box**
The Standard is set due to the phototoxic effects of Acetyl hexamethyl indan (AHMI). For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
PHOTOXOTOXICITY

**RIFM SUMMARIES:**

**Human studies – phototoxicity**
The IFRA Standard is based upon two photoirritation studies in humans. In the first study, 10 volunteers were treated with 10% solution of Acetyl hexamethyl indan (AHMI) in 75% ethanol plus 25% diethyl phthalate on each forearm. Twenty-four hours later, one arm was irradiated (UVA) and the other served as a control. Observations immediately after radiation, at 24 hrs, and at 48 hours showed no phototoxic effects (RIFM, 1986). In the second study, 10 volunteers were treated with a 10% solution in 75% ethanol plus 25% diethyl phthalate on the back. After 30 minutes, the site was irradiated (UVA and UVB). Observations at 5 minutes after irradiation, and at 3, 24, 48, and 72 hours showed no phototoxic effects (RIFM, 1987).

**Animal studies – phototoxicity**
- 5, 20, 50 % in guinea pigs, photoirritation observed 20 and 50% (RIFM, 1978a).
- 5, 20% in rabbits, photoirritation observed at 5 and 20% (RIFM, 1978a).
- 1, 5, 10, 20% in guinea pigs and rabbits, photoirritation observed in guinea pigs and rabbits at 5, 10, and 20% (Ogoshi et al., 1980; Ohkoshi et al., 1981).
- 10% in guinea pigs, no photoirritation observed (Guillot et al., 1985).
- 1% in rabbits, photoirritation observed (RIFM, 1978).
- 1, 2, 4 % in rabbits, photoirritation observed (RIFM, 1985a; 1985b).
- 0.01, 1, 10, 25, 50% in hairless mice, photoirritation observed at 10, 25, 50% (RIFM, 1978c).

**Animal studies – photoallergy**
2% in guinea pigs, no photoallergy observed, 1/10 showed sensitization (RIFM, 1985c).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
Acetyl hexamethyl indan (AHMI)

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl hexamethyl indan (AHMI) and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Acetyl hexamethyl indan (AHMI) in the various product categories.

REFERENCES:

The IFRA Standard on Acetyl hexamethyl indan (AHMI) is based on at least one of the following publications:

• The RIFM Safety Assessment on Acetyl hexamethyl indan (AHMI) is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


• Research Institute for Fragrance Materials, Inc. (1985b). Photosensitization test with 1% 5-acetyl-
Acetyl hexamethyl indan (AHMI)

1,1,2,3,3,6-hexamethylindan in albino rabbits. Unpublished report from PFW Aroma Chemicals. Report number 29706, 1 November.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Angelica root oil

**CAS-No.:**
- 8015-64-3
- 84775-41-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Angelica archangelica oil
- Angelica archangelica root oil
- Angelica root oil (Angelica archangelica L.)

## History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>
| 2020 (Amendment 49) | 1975
|                   | 1978
|                   | 2001
|                   | 2015

## Implementation dates:

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

**RESTRICTION**

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**
The Standard is set due to the phototoxic effects of Angelica root oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

**PHOTOTOXICITY**

**RIFM SUMMARIES:**

Two human phototoxicity studies were conducted.
In one study, the test material at concentrations of 1% and 5% was applied to the backs of 30 male volunteers for 48 hours, under occlusion. 23 hours after patch removal the sites were irradiated. Observations were made at 72 and 96 hours after application. No phototoxic reactions were observed in any subjects with either 1 or 5% concentrations of the test material (RIFM, 1975a).

In a second study, the test material was applied neat to 13 male and female volunteers. Six hours later, the test sites were exposed to UVA radiation. Positive reactions were observed in 5/13 subjects (Kaidbey and Kligman, 1978, 1980).

Additional studies are:
- 4% on guinea pigs, UVA, photoirritation observed in all animals, 20/20 (Guillot, et al, 1985).
- 100% on hairless mice, UV, photoirritation observed (RIFM, 1974. Forbes, et al, 1977). 0.78, 1.56, 3.125, 6.25, 12.5, 25, 50% on hairless mice. UV. Photoirritation observed at concentrations of 1.56% and higher (RIFM, 1975b).
- 0.375, 0.75, and 1.5% on hairless mice. Photoirritation observed at all concentrations (RIFM, 1987).
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Angelica root oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Angelica root oil in the various product categories.

REFERENCES:

The IFRA Standard on Angelica root oil is based on at least one of the following publications:


• Research Institute for Fragrance materials, Inc. (1975b). Primary skin irritation and phototoxicity evaluation in human subjects with fragrance materials. RIFM report number 15092, December.


• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Bergamot oil expressed

| CAS-No.:          | 8007-75-8  
|                  | 89957-91-5  
|                  | The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.  
| Synonyms:        | Not applicable.  

| History: | Publication date: | 2020 (Amendment 49)  
|          | Previous Publications: | 1974  
|          |                     | 1992  
|          |                     | 2015  

| Implementation dates: | For new creation*: | February 10, 2021  
|                       | For existing creation*: | February 10, 2022  
| *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.  

| RECOMMENDATION: | RESTRICTION  

| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  
| Category 1 | 0.40 % | Category 7A | No Restriction  
| Category 2 | 0.40 % | Category 7B | 0.40 %  
| Category 3 | 0.40 % | Category 8  | 0.40 %  
| Category 4 | 0.40 % | Category 9  | No Restriction  
| Category 5A | 0.40 % | Category 10A | No Restriction  
| Category 5B | 0.40 % | Category 10B | 0.40 %  
| Category 5C | 0.40 % | Category 11A | No Restriction  
| Category 5D | 0.40 % | Category 11B | 0.40 %  
| Category 6 | 0.40 % | Category 12 | No Restriction  

**Fragrance ingredient restriction - Note box**  
The Standard is set due to the phototoxic effects of Bergamot oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.
Amendment 49

Bergamot oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
PHOTOTOXICITY

**RIFM SUMMARIES:**
These recommendations are based on the published literature on the phototoxicity of this material, summarized by D.L. Opdyke, Fd. Cosm. Toxicol. 11,1031 (1973) and other investigations published in Contact Dermatitis 3,225 (1977).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Bergamot oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Bergamot oil expressed in the various product categories.

**REFERENCES:**
The IFRA Standard on Bergamot oil expressed is based on at least one of the following publications:

IFRA STANDARD
Bergamot oil expressed


• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Bitter orange peel oil expressed**

**CAS-No.:** 68916-04-1
72968-50-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Orange Peel Oil, Bitter (Citrus aurantium L. subsp amara L.)
- Bitter orange oil (Citrus aurantium L. subsp. amara L.)
- Citrus aurantium peel oil
- Curacao peel oil (Citrus aurantium L.)
- Daidai peel oil (Citrus aurantium L.)

**History:**

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<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
</table>

**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>
Bitter orange peel oil expressed

**Fragrance ingredient restriction - Note box**

The Standard is set due to the phototoxic effects of Bitter orange peel oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarin containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

PHOTOTOXICITY

**RIFM SUMMARIES:**

Human Studies: The material was tested for phototoxic potential in human volunteers (Kaidbey and Kligman, 1980). Five μL/cm² of 100% bitter orange oil was applied to 2 cm² under occlusive tape. One cm circular sites were exposed to visible light or 20 J/ cm² UVA. Reactions were read at 24 and 48 hours. All 8 subjects reacted.

Animal studies: The NOEL was based on studies conducted with pooled samples of bitter orange oil in one miniature swine and hairless mice, which showed NOEL of 6.25%.

The Expert Panel for Fragrance Safety recommended that the skin contact level should be 1.25%, incorporating a 5 fold uncertainty factor.
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bitter orange peel oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Bitter orange peel oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Bitter orange peel oil expressed is based on at least one of the following publications:


• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Citrus oils and other furocoumarins containing essential oils

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>Not applicable.</td>
</tr>
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### History:

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<th>Previous Publications:</th>
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<td>2020 (Amendment 49)</td>
<td>1996 2015</td>
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</table>

### Implementation dates:

For new creation*: February 10, 2021
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0015 % (5-MOP)</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0015 % (5-MOP)</td>
</tr>
</tbody>
</table>

### Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Citrus oils and other furocoumarins containing essential oils. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

Where the Bergapten (5-Methoxypsoralen, 5-MOP) content of all relevant oils present in a compound...
Citrus oils and other furocoumarins containing essential oils

has been determined, it is recommended that for applications on areas of skin exposed to UV-light, the total level of Bergapten in the consumer products should not exceed 0.0015% (15 ppm). This upper concentration level only applies to applications on skin exposed to UV-light, excluding rinse-off products and incidental skin contact products as detailed in the Guidance for the use of IFRA Standards.

Where the level of Bergapten has not been determined by appropriate methods, the limits specified in the guidelines on individual oils should apply. In those cases, where such oils are used in combination with other furocoumarin-containing phototoxic fragrance ingredients (extracts), the additive effect has to be taken into consideration and the concentration levels have to be reduced accordingly.

The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the finished consumer product, shall not exceed 100. Restrictions for furocoumarin-containing fragrance ingredients (extracts) have been recommended for:

- Angelica root oil,
- Bergamot oil expressed,
- Bitter orange oil expressed,
- Cumin oil,
- Grapefruit oil expressed,
- Lemon oil cold pressed,
- Lime oil expressed,
- Rue oil.

The following essential oils contain small amounts of phototoxic furocoumarins (typical levels are provided in brackets):

- Petitgrain Mandarin oil (50 ppm),
- Tangerine oil cold pressed (50 ppm),
- Parsley leaf oil (20 ppm).

These levels are not high enough to require special restrictions if used alone, but if used in combination with one or the other furocoumarin-containing phototoxic fragrance ingredients (extracts), attention should be paid that the total level of Bergapten in the consumer product does not exceed 15 ppm.

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
PHOTOTOXICITY
Citrus oils and other furocoumarins containing essential oils

RIFM SUMMARIES:

These recommendations are based on the published phototoxic effects of Bergapten and the established dose-effect relationships (Young at al., J. Photochem. Photobiol. B,7, 231 (1990); Dubertret et al. ibid 7, 251 (1990), idem, ibid, 7, 362 (1990).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Citrus oils and other furocoumarins containing essential oils and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citrus oils and other furocoumarins containing essential oils in the various product categories.

REFERENCES:

The IFRA Standard on Citrus oils and other furocoumarins containing essential oils is based on at least one of the following publications:

• Dubertret et al. ibid 7, 251 (1990).
• Dubertret et al. ibid, 7, 362 (1990).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cumin oil**

**CAS-No.:**
- 8014-13-9
- 84775-51-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Cumin seed oil
- Cuminum cyminum (Cumin) seed oil
- Cuminum cyminum L.
- Cuminum cyminum oil
- Oils, cumin (Cuminum cyminum)

**History:**
- **Publication date:** 2020 (Amendment 49)

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**Restriction**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.40 %</td>
<td>7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>2</td>
<td>0.40 %</td>
<td>7B</td>
<td>0.40 %</td>
</tr>
<tr>
<td>3</td>
<td>0.40 %</td>
<td>8</td>
<td>0.40 %</td>
</tr>
<tr>
<td>4</td>
<td>0.40 %</td>
<td>9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>5A</td>
<td>0.40 %</td>
<td>10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>5B</td>
<td>0.40 %</td>
<td>10B</td>
<td>0.40 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.40 %</td>
<td>11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>5D</td>
<td>0.40 %</td>
<td>11B</td>
<td>0.40 %</td>
</tr>
<tr>
<td>6</td>
<td>0.40 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Cumin oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK

PHOTOTOXICITY

RIFM SUMMARIES:

The NOEL for phototoxicity is 50% based on a study in 23 volunteers patched under occlusion on the back for 24 hours. Patches were removed after 10 minutes followed by irradiation with 16-20 J/cm2 of UVA. Readings were made at 1, 24, 48 & 72 hours after irradiation. No photodamage was observed (RIFM, 1986).

Additional studies considered are:

• 100% in miniature swine, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977)
• 100% in hairless mice, UV, distinct photoirritant effects were observed (RIFM 1972; Forbes et al., 1977).
• 100% and 25% in hairless mice, UV, no reactions at 25% 0/12, 6/12 reactions at 100% (RIFM, 1983).
• 100%, 75%, 50%, and 25% in hairless mice, UV, no reactions 0/6 at 25%, 5/6 reactions at 50%, 6/6 reactions at 75% and 100% (RIFM, 1983).
• 30% in guinea pigs, UV, no reactions 0/10 (RIFM, 1984)
• 3% and 10% in guinea pigs, UV, no reactions 0/10 at 3%, and 4/10 reactions at 10% (RIFM, 1984).
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cumin oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cumin oil in the various product categories.

REFERENCES:

The IFRA Standard on Cumin oil is based on at least one of the publications listed below:


- IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Grapefruit oil expressed

**CAS-No.:** 8016-20-4  
90045-43-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Not applicable.

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 1992  
2015

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>4.0 %</td>
<td>Category 7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 2</td>
<td>4.0 %</td>
<td>Category 7B</td>
<td>4.0 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>4.0 %</td>
<td>Category 8</td>
<td>4.0 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>4.0 %</td>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5A</td>
<td>4.0 %</td>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5B</td>
<td>4.0 %</td>
<td>Category 10B</td>
<td>4.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>4.0 %</td>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5D</td>
<td>4.0 %</td>
<td>Category 11B</td>
<td>4.0 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>4.0 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**

The Standard is set due to the phototoxic effects of Grapefruit oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.
Amendment 49

Grapefruit oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK

PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are made in order to promote Good Manufacturing Practices (GMP) considering the large variations in the Bergapten content of commercial samples of Grapefruit oil expressed.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Grapefruit oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Grapefruit oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Grapefruit oil expressed is based on at least one of the following publications:

Grapefruit oil expressed

• Dubertret et al. ibid 7, 251 (1990).

• Dubertret et al. ibid, 7, 362 (1990).

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Lemon oil cold pressed

**CAS-No.:** 8008-56-8  
84929-31-7  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Not applicable.

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>1992 2015</th>
</tr>
</thead>
</table>

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>2.0 %</th>
<th>Category 7A</th>
<th>No Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>2.0 %</td>
<td>Category 7B</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>2.0 %</td>
<td>Category 8</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.0 %</td>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5A</td>
<td>2.0 %</td>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5B</td>
<td>2.0 %</td>
<td>Category 10B</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>2.0 %</td>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5D</td>
<td>2.0 %</td>
<td>Category 11B</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>2.0 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**
The Standard is set due to the phototoxic effects of Lemon oil cold pressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.
If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

PHOTOTOXICITY

**RIFM SUMMARIES:**

These recommendations are based on results of RIFM on the phototoxicity of lemon oil cold pressed (Fd. Cosm. Toxicol. 12,725 (1974), its low bergapten content (C.K. Shu et al. VI Int. Congress of Essential oils 1974) and the observed no-effect level of pooled samples in tests using the animal model.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Lemon oil cold pressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Lemon oil cold pressed in the various product categories.

**REFERENCES:**

The IFRA Standard on Lemon oil cold pressed is based on at least one of the following publications:
Lemon oil cold pressed


• C.K. Shu et al. VI Int. Congress of Essential oils, 1974.

• IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Lime oil expressed

| CAS-No.: | 8008-26-2  
90063-52-8 |
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | Not applicable. |

### History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** 1975, 1992, 2015

### Implementation dates:
- **For new creation**: February 10, 2021
- **For existing creation**: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.*

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.70 %</td>
</tr>
<tr>
<td>2</td>
<td>0.70 %</td>
</tr>
<tr>
<td>3</td>
<td>0.70 %</td>
</tr>
<tr>
<td>4</td>
<td>0.70 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.70 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.70 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.70 %</td>
</tr>
<tr>
<td>6</td>
<td>0.70 %</td>
</tr>
<tr>
<td>7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>7B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>8</td>
<td>0.70 %</td>
</tr>
<tr>
<td>9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>10B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>11B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

### Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Lime oil expressed. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.
Amendment 49

Lime oil expressed

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

For qualities of the expressed oil in which the less volatile components have been concentrated by partial or total removal of the terpene fraction, this limit should be reduced in proportion to the degree of concentration.

FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
PHOTOTOXICITY

RIFM SUMMARIES:

These recommendations are based on results of RIFM on the phototoxicity of Lime oil expressed (Fd. Cosm. Toxicol. 12, 731 (1974), its Bergapten content reported in J.A.O.A.C. 52, (4), 727 (1969) and the observed no-effect level of pooled samples in tests using the animal model.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Lime oil expressed and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Lime oil expressed in the various product categories.

REFERENCES:

The IFRA Standard on Lime oil expressed is based on at least one of the following publications:
**Lime oil expressed**

- IFRA Standard on Citrus oils and other furocoumarins containing essential oils.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Methyl N-methylantranilate

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>85-91-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | Methyl N-methylantranilate  
Benzoic acid, 2-(methylamino)-, methyl ester  
Dimethyl anthranilate  
2-Methylamino methyl benzoate  
N-Methylantranillic acid, methyl ester  
Methyl 2-(methylamino)benzoate  
Methyl 2-methylaminobenzoate  
Methyl o-methylaminobenzoate |

| History: | Publication date: 2023 (Amendment 51)  
Previous Publications: 1978  
2001  
2002  
2006  
2009  
2015  
2020 |

| Implementation dates: For new creation*: March 30, 2024  
For existing creation*: October 30, 2025 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:  
**RESTRICTION / SPECIFICATION**

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

| Category 1 | 0.10 %  
Category 2 | 0.10 %  
Category 3 | 0.10 %  
Category 4 | 0.10 %  
Category 5A | 0.10 %  
Category 5B | 0.10 %  
Category 5C | 0.10 %  
Category 7A | 0.50 %  
Category 7B | 0.10 %  
Category 8 | 0.10 %  
Category 9 | 0.50 %  
Category 10A | 0.50 %  
Category 10B | 0.10 %  
Category 11A | No restriction |
Methyl N-methylanthranilate

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.10 %</th>
<th>Category 11B</th>
<th>0.10 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.50 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

Fragrance ingredient restriction – Note box
The Standard is set due to the phototoxic effects of Methyl N-methylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

FRAGRANCE INGREDIENT SPECIFICATION:
This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
PHOTOTOXICITY AND SYSTEMIC TOXICITY, POTENTIAL OF NITROSAMINE FORMATION

RIFM SUMMARIES:
A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).
A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).
An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).
Methyl N-methylantranilate

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-methylantranilate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl N-methylantranilate in the various product categories. In addition, they recommend to use Methyl N-methylantranilate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl N-methylantranilate is based on at least one of the following publications:

• The RIFM Safety Assessment on Methyl N-methylantranilate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Methyl beta-naphthyl ketone

**CAS-No.:** 93-08-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Acetonaphthone
- β-Acetylnaphthalene
- Cetone d
- Ethanone, 1-(2-naphthalenyl)
- β-Methyl naphthyl ketone
- β-Naphthyl methyl ketone
- Oranger crystals

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:**
  - 2004
  - 2015

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- **RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.20 %</th>
<th>Category 7A</th>
<th>No Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.20 %</td>
<td>Category 7B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.20 %</td>
<td>Category 8</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.20 %</td>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.20 %</td>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.20 %</td>
<td>Category 10B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.20 %</td>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.20 %</td>
<td>Category 11B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.20 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
# Methyl beta-naphthyl ketone

### Fragrance ingredient restriction - Note box
The Standard is set due to the phototoxic effects of Methyl beta-naphthyl ketone. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK
PHOTOTOXICITY

### RIFM SUMMARIES:

#### Human Studies:
A human phototoxicity study with Methyl β-naphthyl ketone (concentrations of 0.1, 1 and 10% in 3:1 DEP:EOH) was conducted. No reactions indicative of primary irritation were observed in this study. However, under irradiated conditions, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH produced moderate erythema in 5 subjects. These responses were stronger than those seen for the irradiated blank patch, which only produced slight to mild erythema. Under the conditions of the study, Methyl β-naphthyl ketone at 10% in 3:1 DEP:EtOH showed evidence of phototoxicity. Erythema scores for Methyl β-naphthyl ketone at 0.1% and 1.0% in 3:1 DEP:EtOH were similar to those seen for the blank patch under irradiated conditions. These reactions were not indicative of phototoxic responses (RIFM, 2004).

#### Other Studies:
Methyl β-naphthyl ketone has been observed to absorb in the UV range of 290-400 nm and is positive in the Neutral Red Uptake Phototoxicity Assay (RIFM, 2002). However, it has been shown to be non-phototoxic in guinea pigs at concentrations up to 60% in 3:1 EtOH:DEP (RIFM, 2003).

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Methyl beta-naphthyl ketone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl beta-naphthyl ketone in the various product categories.

### REFERENCES:
Methyl beta-naphthyl ketone

The IFRA Standard on Methyl β-naphthyl ketone is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl β-naphthyl ketone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Rue oil

**CAS-No.:**
8014-29-7  
84929-47-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
Not applicable.

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:**
  - 1974
  - 1978
  - 2001
  - 2015

**Implementation dates:**
- For new creation*:
  - February 10, 2021
- For existing creation*:
  - February 10, 2022
  
  *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- **RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**Fragrance ingredient restriction - Note box**
The Standard is set due to the phototoxic effects of Rue oil. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the...
Rue oil

Guidance for the use of IFRA Standards.

If the level of furocoumarins is unknown, the restriction level specified in this IFRA Standard applies.

Combination effects of phototoxic ingredients are only taken into consideration for the furocoumarin-containing fragrance ingredients (extracts) listed in the IFRA Standard of Citrus oils and other furocoumarins containing essential oils.

If combinations of furocoumarin-containing phototoxic fragrance ingredients (extracts) are used, the use levels must be reduced accordingly. The sum of the concentrations of all furocoumarin-containing phototoxic fragrance ingredients (extracts), expressed in % of their recommended upper concentration level in the consumer product shall not exceed 100.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

PHOTOTOXICITY

**RIFM SUMMARIES:**

This recommendation is based on the fact that Rue oil is known to contain psoralens and on the no-effect level of 0.8% found in hairless mice (P.D. Forbes, F. Urbach, R.E. Davis (1977), Fd. Cosmet. Toxicol. 15, 55-60 and communication from RIFM).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Rue oil and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Rue oil in the various product categories.

**REFERENCES:**

The IFRA Standard on Rue oil is based on at least one of the following publications:

- IFRA Standard on Citrus oils and other furocoumarins containing essential oils.
Rue oil

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafgrance.org.
### Tagetes oil and absolute

<table>
<thead>
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<th>CAS-No.:</th>
<th>Prohibition of <em>Tagetes erecta:</em></th>
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<tbody>
<tr>
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Restriction and Specification of *Tagetes patula* and *Tagetes minuta*:

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<td>91770-75-1</td>
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</tbody>
</table>

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Prohibition of <em>Tagetes erecta:</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Tagetes erecta</em> L.</td>
</tr>
</tbody>
</table>

Restriction and Specification of *Tagetes patula* and *Tagetes minuta*:

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th><em>Tagetes absolute</em> (<em>Tagetes patula</em> L.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Tagetes patula absolute</em></td>
</tr>
<tr>
<td></td>
<td><em>Tagetes patula, ext.</em></td>
</tr>
<tr>
<td></td>
<td><em>Tagetes minuta absolute</em></td>
</tr>
<tr>
<td></td>
<td><em>Tagetes oil</em></td>
</tr>
</tbody>
</table>

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
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<tr>
<td>Previous Publications:</td>
<td>1986 2001 2015</td>
</tr>
</tbody>
</table>

**Implementation dates:**

<table>
<thead>
<tr>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION / RESTRICTION / SPECIFICATION**

**FRAGRANCE INGREDIENT PROHIBITION:**

*Tagetes erecta* should not be used as a fragrance ingredient in any finished product application. Only *Tagetes patula* and *Tagetes minuta* should be used as fragrance ingredients according to the Restriction and Specification set in this Standard.

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.010 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.10 %</td>
</tr>
</tbody>
</table>
## Tagetes oil and absolute

<table>
<thead>
<tr>
<th>Category</th>
<th>Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.010 %</td>
</tr>
<tr>
<td>3</td>
<td>0.010 %</td>
</tr>
<tr>
<td>4</td>
<td>0.010 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.010 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.010 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.010 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.010 %</td>
</tr>
<tr>
<td>6</td>
<td>0.10 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.010 %</td>
</tr>
<tr>
<td>8</td>
<td>0.010 %</td>
</tr>
<tr>
<td>9</td>
<td>0.10 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.10 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.010 %</td>
</tr>
<tr>
<td>11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>11B</td>
<td>0.010 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

### Fragrance ingredient restriction - Note box

The Standard is set due to the phototoxic effects of Tagetes oil and absolute. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

The restriction only applies to Tagetes patula and Tagetes minuta.

### FRAGRANCE INGREDIENT SPECIFICATION:

The content of alpha-Terthiienyl (Terthiophene, CAS number 1081-34-1) in Tagetes patula and Tagetes minuta oils and absolutes must not exceed 0.35 %.

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

PHOTOTOXICITY

RIFM SUMMARIES:
Tagetes oil and absolute

Tagetes oils and absolutes obtained from Tagetes minuta L. (syn. Tagetes glandulifera Schrank and Tagetes patula L.) were evaluated by RIFM (Letizia and Api, 2000). A no effect level for phototoxicity of 0.05% was determined on humans using Egyptian Tagetes minuta (RIFM, 1986a).

The following studies have also been considered:

• At 0.003% in guinea pigs, no observable effects, 0/10 (RIFM, 1985a).
• At 0.01% in guinea pigs, phototoxicity observed, 8/10 (RIFM, 1985b).
• At 100% in mice, phototoxicity was observed, 6/6 (RIFM, 1986b).
• At 1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.1% in mice, phototoxicity was observed, 6/6 (RIFM, 1986c).
• At 0.01% in mice, phototoxicity was observed, 2/6 (RIFM, 1986c).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:


The Expert Panel for Fragrance Safety reviewed the SCCS Opinion SCCS/1551/15 for Tagetes minuta and Tagetes Patula and recommends the limits for the 12 different product categories, which are the acceptable use levels of Tagetes minuta and Tagetes Patula in the various product categories. In addition, they recommend to use Tagetes minuta and Tagetes Patula according to the its specification above mentioned.


REFERENCES:

The IFRA Standard Tagetes oil and absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Tagetes oil and absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Tagetes oil and absolute


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Furfural

**CAS-No.:** 98-01-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2-Formylfuran  
Fural  
Furaldehyde  
2-Furaldehyde  
2-Furancarbonal  
2-Furancarboxaldehyde  
Furfuraldehyde  
α-Furfuraldehyde  
2-Furylcarboxaldehyde  
Pyromucic aldehyde

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2013

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

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<thead>
<tr>
<th>Category</th>
<th>0.0010 %</th>
<th>Category</th>
<th>0.0010 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0010 %</td>
<td>Category 7A</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0010 %</td>
<td>Category 7B</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0010 %</td>
<td>Category 8</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.0010 %</td>
<td>Category 9</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0010 %</td>
<td>Category 10A</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0010 %</td>
<td>Category 10B</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0010 %</td>
<td>Category 11A</td>
<td>0.0010 %</td>
</tr>
</tbody>
</table>
**Furfural**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5D</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>12</td>
<td>0.050 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Furfural has been found in natural extracts but only at trace levels.

**INTRINSIC PROPERTY DRIVING RISK**
CARCINOGENICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Furfural, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Furfural and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Furfural in the various product categories.

**REFERENCES:**
The IFRA Standard on Furfural is based on at least one of the following publications:

- The RIFM Safety Assessment on Furfural is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.
**Estragole**

| CAS-No.: | 140-67-0  
|          | 1407-27-8  
|          | 77525-18-9  
|          | The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.  
| Synonyms: | Estragole  
|          | p-Allylanisole  
|          | 4-Allylanisole  
|          | 1-Allyl-4-methoxybenzene  
|          | Benzene, 1-methoxy-4-(2-propenyl)-  
|          | Chavicol methyl ether  
|          | Isoanethole  
|          | p-Methoxyallylbenzene  
|          | 1-Methoxy-4-(2-propen-1-yl)benzene  
|          | Methyl chavicol  
| History: | Publication date: 2023 (Amendment 51)  
|          | Previous Publications: 2009  
|          | 2015  
|          | 2020  
| Implementation dates: | For new creation*: March 30, 2024  
|          | For existing creation*: October 30, 2025  
|          | *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.  
| RECOMMENDATION: | RESTRICTION  
| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%): |  
| Category 1 | 0.00031 %  
| Category 2 | 0.0025 %  
| Category 3 | 0.00063 %  
| Category 4 | 0.014 %  
| Category 5A | 0.0022 %  
| Category 5B | 0.00063 %  
| Category 7A | 0.00063 %  
| Category 7B | 0.00063 %  
| Category 8 | 0.00021 %  
| Category 9 | 0.0041 %  
| Category 10A | 0.00094 %  
| Category 10B | 0.0022 %  

2023 (Amendment 51) 1/3
**Estragole**

<table>
<thead>
<tr>
<th>Category</th>
<th>0.00063 %</th>
<th>Category 11A</th>
<th>0.00021 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5C</td>
<td></td>
<td>Category 11B</td>
<td>0.00021 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.00021 %</td>
<td>Category 12</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0019 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**REFERENCES:**
The IFRA Standard on Estragole is based on at least one of the following publications:

- The RIFM Safety Assessment on Estragole if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Methyl Eugenol

**CAS-No.:** 93-15-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Methyl eugenol  
Eugenol methyl ether  
Eugenyl methyl ether  
Methyl eugenol ether  
Allylveratrole  
4-Allylveratrole  
Veratrole methyl ether  
4-Allyl-1,2-dimethoxybenzene  
Benzene, 1,2-dimethoxy-4-(2-propenyl)-  
1,2-Dimethoxy-4-allylbenzene  
1,2-dimethoxy-4-(2-propenyl)-benzene  
3,4-Dimethoxyallylbenzene

### History:

<table>
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<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
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</table>
| 2023 (Amendment 51) | 2002  
2015  
2020 |

### Implementation dates:

For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:  
**Restriction**

### Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
</table>
| Category 1 | 0.00042 %  
Category 7A | 0.00042 % |
| Category 2 | 0.0015 %  
Category 7B | 0.00042 % |
| Category 3 | 0.00042 %  
Category 8 | 0.000069 % |
| Category 4 | 0.011 %  
Category 9 | 0.0017 % |
| Category 5A | 0.0015 %  
Category 10A | 0.00062 % |
| Category 5B | 0.00021 %  
Category 10B | 0.0021 % |
### Methyl eugenol

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.00042 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.00069 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0010 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.000069 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.000069 %</td>
</tr>
<tr>
<td>12</td>
<td>0.066 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl eugenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl eugenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl eugenol in the various product categories.

**REFERENCES:**

The IFRA Standard on Methyl eugenol is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl eugenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Methyl eugenol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Methyl N-formylantranilate

**CAS-No.:** 41270-80-8  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Benzoic acid, 2-(formylamino)-, methyl ester  
Methyl 2-(formylamino)benzoate  
Methyl 2-formamidobenzoate  
Methyl o-formamidobenzoate  
N-Formylantranillic acid, methyl ester

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: Not applicable.

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION / SPECIFICATION**

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard</th>
<th>Category</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.10 %</td>
<td>Category 7A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.10 %</td>
<td>Category 7B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.10 %</td>
<td>Category 8</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.10 %</td>
<td>Category 9</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.10 %</td>
<td>Category 10A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.10 %</td>
<td>Category 10B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.10 %</td>
<td>Category 11A</td>
<td>No Restriction</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.10 %</td>
<td>Category 11B</td>
<td>0.10 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.10 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

---

**Fragrance ingredient restriction - Note box**

2020 (Amendment 49)  1/3
Methyl N-formylanthranilate

The Standard is set due to the phototoxic effects of Methyl N-formylanthranilate. For more detailed information on the application of this Standard, please refer to the note on phototoxic ingredients in chapter 1 of the Guidance for the use of IFRA Standards.

**FRAGRANCE INGREDIENT SPECIFICATION:**
This material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK**
PHOTOTOXICITY, POTENTIAL OF NITROSAMINE FORMATION

**RIFM SUMMARIES:**

Phototoxicity effects of Methyl N-formylanthranilate have been assessed by read-across from Methyl N-methylanthranilate. The following studies have been considered for the determination of the phototoxicity potential of Methyl N-methylanthranilate:

- A human phototoxicity study at 0.5% in 75% Ethanol/25% Diethyl phthalate (DEP) resulted in 0/26 reactions (RIFM, 2001). Another human phototoxicity study with concentrations of 0.1, 0.3, and 0.5% resulted in 0/29 reactions (RIFM, 1998). Several other phototoxicity studies showed phototoxic reactions at 1% and 5% (Kaidbey and Kligman, 1980; Letizia and Api, 2003; RIFM, 1999).
- A human photosensitization study at 0.5% in 75% Ethanol/25% DEP resulted in 0/26 reactions (RIFM, 2001). Another human photosensitization study at 5.0% resulted in no photoallergic reactions. However, 14/18 phototoxic reactions were observed (RIFM, 1978a).
- A phototoxicity study at 50% in Methanol and 100% on hairless mice produced reactions at both dose levels (RIFM, 1978b).
- An in vitro phototoxicity assay using a human skin model (Skin2®) with concentrations of Methyl N-methylanthranilate ranging from 0.05% to 25% in corn oil showed that the material was phototoxic at dose levels above 5% (Api, 1997).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl N-formylanthranilate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl N-formylanthranilate in the various product categories.
In addition, they recommend to use Methyl N-formylantranilate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Methyl N-formylantranilate is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl N-formylantranilate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance to IFRA Standards, publicly available at www.ifrafragrance.org.
## Thujone

### CAS-No.:
546-80-5  
471-15-8  
76231-76-0  
1125-12-8  

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
1-Isopropyl-4-methylbicyclo[3.1.0]hexan-3-one  
3-Thujanone, (1s,4r,5r)-(-)  
α-Thujone  
β-Thujone

### History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>Not applicable.</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

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<td>Category 6</td>
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2020 (Amendment 49)
Thujone

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

The natural contribution of Thujone is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK NEUROTOXICITY

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Thujone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Thujone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Thujone in the various product categories.

REFERENCES:
The IFRA Standard on Thujone is based on at least one of the following publications:

• The RIFM Safety Assessment on Thujone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49)
Thujone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 40

Acetyl ethyl tetramethyl tetralin (AETT)

**CAS-No.:** 88-29-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 7-Acetyl-6-ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene
- Ethanone, 1-(3-ethyl-5,6,7,8-tetrahydro-5,5,8,8-tetramethyl-2-naphthalenyl)-
- Versalide (commercial name)

**History:**
- **Publication date:** 2006 (Amendment 40)
- **Previous Publications:** 1977, 1980, 2002

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** Acetyl ethyl tetramethyl tetralin (AETT) should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:** NEUROTOXICITY

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl ethyl tetramethyl tetralin (AETT) and recommends not to use Acetyl ethyl tetramethyl tetralin (AETT) as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Acetyl ethyl tetramethyl tetralin (AETT) is based on at least one of the following publications:

- The RIFM Safety Assessment on Acetyl ethyl tetramethyl tetralin (AETT) is available at the RIFM Safety...
Acetyl ethyl tetramethyl tetralin (AETT)

Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


• Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 357-360.

• Spencer, P.S., Sterman, A.B et al. (1979), Neurotoxicology 1(1).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Acetyl isovaleryl

**CAS-No.:** 13706-86-0

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 5-Methyl-2,3-hexanedione
- 2,3-Hexanediol, 5-methyl-
- Acetyl isopentanoyl

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Acetyl isovaleryl should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Acetyl isovaleryl and recommends not to use Acetyl isovaleryl as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Acetyl isovaleryl is based on at least one of the following publications:

- The RIFM Safety Assessment on Acetyl isovaleryl is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Alantroot oil

**CAS-No.:** 97676-35-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Alantroot oil (Inula helenium)  
Elecampane oil  
Inula helenium oil

| History: | Publication date: | 2006 (Amendment 40) | Previous Publications: | 1975  
2002 |
|----------|------------------|----------------------|------------------------|-------|

**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**  
Alantroot oil should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**  
The Expert Panel for Fragrance Safety reviewed all the available data for Alantroot oil and recommends not to use Alantroot oil as or in fragrance ingredients in any finished product application.

**REFERENCES:**  
The IFRA Standard on Alantroot oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Alantroot oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

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2006 (Amendment 40) 1/2
Amendment 40

Alantroot oil


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
Allyl heptine carbonate

CAS-No.: 73157-43-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Allyl 2-octynoate
2-Octynoic acid
2-Propenyl ester

History:
Publication date: 2008 (Amendment 43)

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Allyl heptine carbonate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Allyl heptine carbonate and recommends not to use Allyl heptine carbonate as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Allyl heptine carbonate is based on at least one of the following publications:

- The RIFM Safety Assessment on Allyl heptine carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2008 (Amendment 43) 1/2
Allyl heptine carbonate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 49

Allyl isothiocyanate

**CAS-No.:** 57-06-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Allyl isosulfocyanate
- Allyl thiocarbonimide
- 1-Propenal, 3-isothiocyanato-
- 2-Propenyl isothiocyanate
- AITC

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

- Allyl isothiocyanate should not be used as a fragrance ingredient.
- Allyl isothiocyanate as such should not be used as a fragrance ingredient.
- The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

Allyl isothiocyanate can be found at relatively high levels in Mustard oil and Horseradish oil. The natural extracts containing Allyl isothiocyanate should not be used as substitutes for this substance. This means that the use of Mustard oil and Horseradish oil cannot be considered safe and therefore both extracts should not be used in fragrance mixtures until additional data is available and considered sufficient to support the safe use of these ingredients.

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

2020 (Amendment 49)
The Expert Panel for Fragrance Safety reviewed all the available data for Allyl isothiocyanate and recommends not to use Allyl isothiocyanate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Allyl isothiocyanate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl isothiocyanate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amylcyclopentenone

**CAS-No.:** 25564-22-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Cyclopenten-1-one, 2-pentyl-
- 2-Pentyl-2-cyclopentenone
- 2-Pentylcyclopent-2-en-1-one

**History:**
- **Publication date:** 2008 (Amendment 43)
- **Previous Publications:** 1987, 1994, 2007

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
Amylcyclopentenone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Amylcyclopentenone and recommends not to use Amylcyclopentenone as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Amylcyclopentenone is based on at least one of the following publications:

- The RIFM Safety Assessment on Amylcyclopentenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Amylcyclopentenone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Anisylidene acetone

**CAS-No.:** 943-88-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 3-Butene-2-one, 4-(4-methoxyphenyl) ester  
4-(p-methoxyphenyl)-3-butene-2-one  
Methyl p-methoxycinnamyl ketone

**History:**  
| Publication date: | 2006 (Amendment 40) | Previous Publications: | 1974 2002 |

**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**  
Anisylidene acetone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**  
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**  
The Expert Panel for Fragrance Safety reviewed all the available data for Anisylidene acetone and recommends not to use Anisylidene acetone as or in fragrance ingredients in any finished product application.

**REFERENCES:**  
The IFRA Standard on Anisylidene acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on Anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Amendment 40

Anisylidene acetone


- Opdyke, D.L.J. (1975), Food and Chemical Toxicology 13, 456.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
## cis- and trans-Asarone

| CAS-No.: | 494-40-6  
|          | 2883-98-9  
|          | 5273-86-9  
| **Synonyms:** | 494-40-6: Benzene, 1,2,4-trimethoxy-5-(1-propen-1-yl)- (unspecified isomer)  
|          | (E)-and (Z)-2,4,5-Trimethoxypropen-1-yl benzene  
|          | 2883-98-9: α-Asarone trans-Asarone  
|          | Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (E)-trans-Isoasarone  
|          | 5273-86-9: β-Asarone cis-β-Asarone  
|          | Benzene, 1,2,4-trimethoxy-5-(1-propenyl)-, (Z)-cis-Isoasarone  
| **History:** | **Publication date:** 2006 (Amendment 40)  
|          | **Previous Publications:** 1991  
| **Implementation dates:** | For new creation*: Not applicable.  
|          | For existing creation*: December 1991  
|          | *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.  
| **RECOMMENDATION:** | **PROHIBITION / RESTRICTION**  
| **FRAGRANCE INGREDIENT PROHIBITION:** | cis- and trans-Asarone as such should not be used as fragrance ingredients.  
|          | The natural extracts containing cis- and trans-Asarone should not be used as substitutes for this substance.  
| **MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):** | **Category 1** | See notebox  
|          | **Category 7A** | See notebox  

2006 (Amendment 40)
### cis-and trans-Asarone

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**Fragrance ingredient restriction - Note box**

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts (e.g. Calamus oils) is regarded acceptable as long as the level of cis- and trans-Asarone in the finished consumer product does not exceed 100ppm (0.01%).

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

The natural contribution of cis-and trans-Asarone is determined by the sum of the natural contributions of each of its isomers.

**INTRINSIC PROPERTY DRIVING RISK**

**CARCINOGENICITY**

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for cis-and trans-Asarone and recommends not to use cis-and trans-Asarone as or in fragrance ingredients in any finished product application. However, the presence of cis-and trans-Asarone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

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2006 (Amendment 40) 2/3
cis-and trans-Asarone

REFERENCES:

The IFRA Standard on cis-and trans-Asarone is based on at least one of the following publications:

- The RIFM Safety Assessment on cis-and trans-Asarone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Benzene

### CAS-No.: 71-43-2

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms: Benzol

### History:

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

| FRAGRANCE INGREDIENT PROHIBITION: | Benzene should not be used as a fragrance ingredient. |

| FRAGRANCE INGREDIENT SPECIFICATION: | The level of Benzene has to be kept as low as practicable and should never exceed 1 ppm in the fragrance compound/mixture or fragrance oil. Since the introduction of the original Restriction on the use of Benzene by IFRA in 1988, there have been significant changes in manufacturing practices that permit the reduction of the maximum permitted level of this substance. These include use of technological improvements allowing replacement of this solvent for the extraction of fragrance materials and in eliminating its presence as an impurity in alternative extraction solvents. |

| CONTRIBUTIONS FROM OTHER SOURCES: | NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS) |

| INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: | CARCINOGENICITY |

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

2004 (Amendment 38)
### Benzene

The Expert Panel for Fragrance Safety reviewed all the available data for Benzene and recommends not to use Benzene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

**REFERENCES:**

The IFRA Standard on Benzene is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzene is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).

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2004 (Amendment 38) 2/2
## Benzy1 cyanide

### CAS-No.: 140-29-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- Benzeneacetonitrile
- Benzylnitrile
- Phenylacetonitrile
- Phenyl acetyl nitrile

### History:
- **Publication date:** 2004 (Amendment 38)
- **Previous Publications:** Not applicable.

### Implementation dates:
- **For new creation***: Not applicable.
- **For existing creation***: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

### PROHIBITION / RESTRICTION

**FRAGRANCE INGREDIENT PROHIBITION:**

Benzyl cyanide as such should not be used as fragrance ingredient.

The natural extracts containing Benzyl cyanide should not be used as substitutes for this substance.

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

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2004 (Amendment 38) 1/3
### Benzyl cyanide

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#### Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Benzyl cyanide in the finished product does not exceed 0.01% (100 ppm).

#### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

#### INTRINSIC PROPERTY DRIVING RISK

RELEASE OF CYANIDE

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyl cyanide and recommends not to use Benzyl cyanide as or in fragrance ingredients in any finished product application. However, the presence of Benzyl cyanide in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

#### REFERENCES:

The IFRA Standard on Benzyl cyanide is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzyl cyanide is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


Benzyl cyanide


- Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 141-146.

- Potter et al., 2001, Food and Chemical Toxicology 39 (2), page 147-151.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Benzyldene acetone

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<th>4-Phenyl-3-buten-2-one</th>
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| 3-Buten-2-one, 4-phenyl-
| Benzilideneacetone |
| Methyl styryl ketone |

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**PROHIBITION**

### FRAGRANCE INGREDIENT PROHIBITION:

Benzyldene acetone should not be used as a fragrance ingredient.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Benzyldene acetone and recommends not to use Benzyldene acetone as or in fragrance ingredients in any finished product application.

### REFERENCES:

The IFRA Standard on Benzyldene acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on Benzyldene acetone is available at the RIFM Safety Assessment Sheet
Benzyldiene acetone

Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Opdyke, D.L.J. (1973), Food and Chemical Toxicology 11, 1021.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Birch wood pyrolysate**

| CAS-No.: | 8001-88-5  
|          | 68917-50-0  
|          | 84012-15-7  
|          | 85251-66-7  
|          | 85940-29-0  
|          | 91745-85-6  

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Prohibition of the crude material:
  - Birch tar oil, crude
- Specification for the distillates:
  - Birch tar oil dephenolated
  - Birch tar oil rectified
  - Essence bouleau dephenolisée
  - Essence bouleau (Goudron) rect.

**History:**
- Publication date: 2013 (Amendment 47)
- Previous Publications: 1996  
  2003

**Implementation dates:**
- For new creation*: August 10, 2013
- For existing creation*: August 10, 2014

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- PROHIBITION / SPECIFICATION

**FRAGRANCE INGREDIENT PROHIBITION:**

Birch wood pyrolysate should not be used as a fragrance ingredient.

Crude birch wood (bark) pyrolysates (oils) derived by pyrolysis (destructive distillation) of the wood or bark of Betula pubescens, Betula pendula, Betula lenta or Betula alba should not be used as a fragrance ingredient for any finished product application. Only rectified (purified) Birch tar oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.
**FRAGRANCE INGREDIENT SPECIFICATION:**
Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Cade oil, rectified Styrax oil or rectified Opoponax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Birch wood pyrolysate and recommends not to use Birch wood pyrolysate (crude) as or in fragrance ingredients in any finished product application. In addition, they recommend to use Birch wood pyrolysate (distillates) according to the specification mentioned above.

**REFERENCES:**
The IFRA Standard on Birch wood pyrolysate is based on at least one of the following publications:

- The RIFM Safety Assessment on Birch wood pyrolysate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Amendment 44**

**Boldo oil**

**CAS-No.:**
- 8022-81-9
- 84649-96-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Boldo leaf oil (Peumus boldus Mol.)
- Oil, boldo leaf
- Peumus boldus oil

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Boldo oil should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Boldo oil and recommends not to use Boldo oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Boldo oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Boldo oil if available at the RIFM Fragrance Material Safety
Amendment 44

Boldo oil

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one

**CAS-No.:** 76-29-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Bicyclo[2.2.1]heptan-2-one, 3-bromo-1,7,7-trimethyl-2-bornanone, 3-bromo-3-bromobornan-2-one  
3-Bromo-2-bornanone  
3-Bromocamphor  
Camphor bromide  
Camphor, 3-bromo-

**History:**  
**Publication date:** 2008 (Amendment 43)  
**Previous Publications:** Not applicable.

**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one and recommends not to use 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**
The IFRA Standard on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one is based on at least one of the following publications:

- The RIFM Safety Assessment on 3-Bromo-1,7,7-trimethylbicyclo[2.2.1]heptane-2-one if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
## Bromostyrene

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### Synonyms:
- Benzene, (2-bromoethenyl)-
- α-Bromo-β-phenylethylene
- β-Bromostyrene
- β-Bromovinylbenzene
- ω-Bromstyrene
- Bromstyrol
- Bromstyrole

### History:
- **Publication date:** 2008 (Amendment 43)
- **Previous Publications:** Not applicable.

### Implementation dates:
- **For new creation:** Not applicable.
- **For existing creation:** Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:
- **PROHIBITION**

### FRAGRANCE INGREDIENT PROHIBITION:
- Bromostyrene should not be used as a fragrance ingredient.

### CONTRIBUTIONS FROM OTHER SOURCES:
- **NONE TO CONSIDER BEYOND TRACES** (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
- **INSUFFICIENT DATA**

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Bromostyrene and recommends not to use Bromostyrene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

### REFERENCES:

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2008 (Amendment 43) 1/2
The IFRA Standard on Bromostyrene is based on at least one of the following publications:

- The RIFM Safety Assessment on Bromostyrene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# p-tert-Butylphenol

**CAS-No.:** 98-54-4

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 4-tert-Butylphenol
- 4-(1,1-Dimethylethyl) phenol
- 1-Hydroxy-4-tert-butylbenzene
- Phenol, 4-(1,1-dimethylethyl)-
- Phenol, p-tert-butyl

**History:**

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<th>Previous Publications</th>
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**Implementation dates:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

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p-tert-Butylphenol should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION, DERMAL DEPIGMENTATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for p-tert-Butylphenol and recommends not to use p-tert-Butylphenol as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on p-tert-Butylphenol is based on at least one of the following publications:

- The RIFM Safety Assessment on p-tert-Butylphenol is available at the RIFM Safety Assessment Sheet
Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Opdyke, D.L.J. (1975), Food and Chemical Toxicology 12, 835.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Cade oil

CAS-No.: 8013-10-3
90046-02-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:

Prohibition of the crude material:
Juniper tar

Specification for the distillates:
Juniper tar oil
Juniperus oxycedrus oil

History:

Publication date: 2013 (Amendment 47)

Previous Publications: 1990
2003

Implementation dates:

For new creation*: August 10, 2013
For existing creation*: August 10, 2014

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:

PROHIBITION / SPECIFICATION

FRAGRANCE INGREDIENT PROHIBITION:

Cade oil should not be used as a fragrance ingredient.

Crude cade oil derived by pyrolysis of the wood and twigs of Juniperus oxycedrus L. should not be used as a fragrance ingredient for any finished product application.

Only rectified (purified) cade oils being in compliance with the limitations for polynuclear aromatic hydrocarbons (PAH) established by this IFRA Standard should be used.

FRAGRANCE INGREDIENT SPECIFICATION:

Limit content of polynuclear aromatic hydrocarbons (PAH) resulting from the use of rectified oils according to Good Manufacturing Practice. Benzopyrene and 1,2-Benzanthracene are to be used as markers for PAH. If used alone or in combination with rectified Birch tar oils, rectified Opoponax oil or rectified Styrax oil, the total concentration of both of the markers should not exceed 1 ppb in the final product.
CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: CARCINOGENICITY, GENOTOXICITY BY RELEASE OF POLYNUCLEAR HYDROCARBONS (PAH).

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cade oil and recommends not to use Cade oil (crude) as or in fragrance ingredients in any finished product application. In addition, they recommend to use Cade oil (distillates) according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Cade oil is based on at least one of the following publications:

• The RIFM Safety Assessment on Cade oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Carvone oxide

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### Synonyms:
- Carvone epoxide
- 1,6-Epoxy-p-menth-8-en-2-one
- 1-Methyl-4-(1-methylethenyl)-7-oxabicyclo[4.1.0]heptan-2-one
- 7-Oxabicyclo[4.1.0]heptan-2-one, 1-methyl-4-(1-methylethenyl)-

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### Implementation dates:
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:
**PROHIBITION**

### Fragrance Ingredient Prohibition:
Carvone oxide should not be used as a fragrance ingredient.

### Contributions from Other Sources:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### Intrinsic Property Driving Risk:
DERMAL SENSITIZATION

### Expert Panel for Fragrance Safety Rationale / Conclusion:
The Expert Panel for Fragrance Safety reviewed all the available data for Carvone oxide and recommends not to use Carvone oxide as or in fragrance ingredients in any finished product application.

### References:
The IFRA Standard on Carvone oxide is based on at least one of the following publications:

- The RIFM Safety Assessment on Carvone oxide is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Carvone oxide


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Amendment 43**

**Chenopodium oil**

**CAS-No.:**
- 8006-99-3
- 8024-11-1
- 89997-47-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- American wormseed oil
- Chenopodium ambrosioides L. var anthelminticum

**History:**
- **Publication date:** 2008 (Amendment 43)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- **For new creation:** Not applicable.
- **For existing creation:** Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:**
Chenopodium oil should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Chenopodium oil and recommends not to use Chenopodium oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**
The IFRA Standard on Chenopodium oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Chenopodium oil if available at the RIFM Fragrance Material Safety
Chenopodium oil

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cinnamylidene acetone**

**CAS-No.:** 4173-44-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 3,5-Hexadien-2-one, 6-phenyl-
- Methyl 4-phenyl-1,3-butadienyl ketone
- 1-Phenyl-3,5-hexadien-5-one
- 6-Phenyl-3,5-hexadien-2-on

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**Implementation dates:**

| For new creation* | Not applicable. |
| For existing creation* | Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

Cinnamylidene acetone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**REFERENCES:**

The IFRA Standard on Cinnamylidene acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on Cinnamylidene acetone if available at the RIFM Fragrance Material
Cinnamylidene acetone

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Colophony

CAS-No.: 8050-09-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Colophonium Rosin

History: Publication date: 2006 (Amendment 40) Previous Publications: 1992 2002

Implementation dates: For new creation*: Not applicable. For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: Colophony should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Colophony and recommends not to use Colophony as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Colophony is based on at least one of the following publications:

- The RIFM Safety Assessment on Colophony is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Colophony


- Hausen. B.M. (1989), Contact Dermatitis (20), 41-50; 133-143; 295-301.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Costus root oil, absolute and concrete**

**CAS-No.:**
- 8023-88-9
- 90106-55-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- Costus root essential oil, absolute and concrete (Saussurea lappa Clarke)
- Oils, costus
- Saussurea lappa root oil
- Spiral flag oil

**History:**
- **Publication date:** 2006 (Amendment 40)
- **Previous Publications:** 1974, 1998, 2002

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
Costus root oil, absolute and concrete should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Costus root oil, absolute and concrete and recommends not to use Costus root oil, absolute and concrete as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Costus root oil, absolute and concrete is based on at least one of the following publications:
Costus root oil, absolute and concrete

- The RIFM Safety Assessment on Costus root oil, absolute and concrete is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Foussereau, J., Muller J.C. and Benezra C. (1975), Contact Dermatitis, 1, 223-230.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Cyclamen alcohol

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| Synonyms: 3-(4-Isopropylphenyl)-2-methylpropan-1-ol |
| 3-(p-Isopropyl)phenyl-2-methyl-1-propanol |
| Benzenepropanol, β.-methyl-4-(1-methylethyl)- |

| History: Publication date: 1980 (Amendment 4) |
| Previous Publications: 1977 1978 |

| Implementation dates: For new creation*: Not applicable. |
| For existing creation*: Not applicable. |
| *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace. |

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:** Cyclamen alcohol should not be used as a fragrance ingredient.

**FRAGRANCE INGREDIENT SPECIFICATION:** Cyclamen alcohol should not be used as a fragrance ingredient as such, but a level of up to 1.5% in Cyclamen aldehyde (CAS number 103-95-7) is accepted.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclamen alcohol and recommends not to use Cyclamen alcohol as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

**REFERENCES:**
Cyclamen alcohol

The IFRA Standard on Cyclamen alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Cyclamen alcohol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Musk alpha

CAS-No.: 63697-53-0
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Musk alpha
1,3-Dibromo-2-methoxy-4-nitro-5-(1,1-dimethylethyl)-6-methyl-benzene
Benzene,1,3-dibromo-5-(1,1-dimethylethyl)-2- methoxy-4-methyl-6-nitro-

History: Publication date: 2008 (Amendment 43) Previous Publications: Not applicable.

Implementation dates: For new creation*: Not applicable. For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION
FRAGRANCE INGREDIENT PROHIBITION: Musk alpha should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Musk alpha and recommends not to use Musk alpha as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:
The IFRA Standard on Musk alpha is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk alpha if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Musk alpha


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Musk KS

**CAS-No.:** 62265-99-0

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 1,3-Dibromo-2-methoxy-4-methyl-5-nitrobenzene
- Benzene, 1,3-dibromo-2-methoxy-4-methyl-5-nitro-
- 1,3-Dibromo-2-methoxy-5-nitro-6-methylbenzene
- 2,4-Dibromo-3-methoxy-6-nitrotoluene
- 2,6-Dibromo-3-methyl-4-nitroanisole
- 6-Nitro-2,4-dibromo-3-methoxytoluene
- Bromorose
- Musk KS (commercial name)

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Musk KS should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Musk KS and recommends not to use Musk KS as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**
The IFRA Standard on Musk KS is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk KS if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
2,2-Dichloro-1-methylcyclopropylbenzene

**CAS-No.:** 3591-42-2

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Benzene, (2,2-dichloro-1-methylcyclopropyl)-

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:** 2,2-Dichloro-1-methylcyclopropylbenzene should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** None to consider beyond traces (see also the section on contributions from other sources in Chapter 1 of the Guidance for the use of IFRA Standards)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2,2-Dichloro-1-methylcyclopropylbenzene and recommends not to use 2,2-Dichloro-1-methylcyclopropylbenzene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on 2,2-Dichloro-1-methylcyclopropylbenzene is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,2-Dichloro-1-methylcyclopropylbenzene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
2,2-Dichloro-1-methylcyclopropylbenzene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 2,4-Dienals

| CAS-No.:          | 764-40-9  
|                  | 142-83-6  
|                  | 80466-34-8  
|                  | 5910-85-0  
|                  | 30361-28-5  
|                  | 6750-03-4  
|                  | 2363-88-4  
|                  | 13162-46-4  
|                  | 21662-16-8  
|                  | 25152-84-5  
|                  | 30361-29-6  
|                  | 4313-03-5  
|                  | 20432-40-0  
|                  | 4488-48-6  
|                  | 5577-44-6  
|                  | 5910-87-2  |

The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).

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(including all geometric isomers)

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

This IFRA Standard represents the group of 2,4-Dienals and replaces the existing individual IFRA Standards for the materials listed above. This new group also includes any other 2,4-Dienals.

**RECOMMENDATION:** **PROHIBITION**
Amendment 47

2,4-Dienals

FRAGRANCE INGREDIENT PROHIBITION:
2,4-Dienals should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

2,4-Decadienal (CAS number 2363-88-4) has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK: INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONAL / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dienals and recommends not to use 2,4-Dienals as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:
The IFRA Standard on 2,4-Dienals is based on at least one of the following publications:

• The RIFM Safety Assessment on 2,4-Dienals if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
Diethyl maleate

**CAS-No.:** 141-05-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Butenedioic acid (2Z)-, diethyl ester
- Ethyl maleate
- Maleic acid, diethyl ester

**History:**
- **Publication date:** 2006 (Amendment 40)
- **Previous Publications:** 1975, 2002

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- **PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**
Diethyl maleate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Diethyl maleate and recommends not to use Diethyl maleate as or in fragrance ingredients in any finished product application.

**REFERENCES:**
The IFRA Standard on Diethyl maleate is based on at least one of the following publications:

- The RIFM Safety Assessment on Diethyl maleate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Diethyl maleate


- Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 443.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2,4-Dihydroxy-3-methylbenzaldehyde

**CAS-No.:** 6248-20-0

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Benzaldehyde, 2,4-dihydroxy-3-methyl-4-formyl-2-methylresorcinol

**History:**

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<th>Publication date:</th>
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</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

2,4-Dihydroxy-3-methylbenzaldehyde should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dihydroxy-3-methylbenzaldehyde and recommends not to use 2,4-Dihydroxy-3-methylbenzaldehyde as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on 2,4-Dihydroxy-3-methylbenzaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,4-Dihydroxy-3-methylbenzaldehyde is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Amendment 40

2,4-Dihydroxy-3-methylbenzaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
4,6-Dimethyl-8-tert-butylcoumarin

**CAS-No.:** 17874-34-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2H-1-Benzopyran-2-one, 8-(1,1-dimethylethyl)-4,6-dimethyl-Butolia

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** 4,6-Dimethyl-8-tert-butylcoumarin should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:** PHOTOSENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 4,6-Dimethyl-8-tert-butylcoumarin and recommends not to use 4,6-Dimethyl-8-tert-butylcoumarin as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on 4,6-Dimethyl-8-tert-butylcoumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on 4,6-Dimethyl-8-tert-butylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
4,6-Dimethyl-8-tert-butylcoumarin


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
3,7-Dimethyl-2-octen-1-ol

**CAS-No.:** 40607-48-5

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 6,7-Dihydrogeraniol
- 2-Octen-1-ol, 3,7-dimethyl

**History:**
- **Publication date:** 2004 (Amendment 38)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:**

3,7-Dimethyl-2-octen-1-ol should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2-octen-1-ol and recommends not to use 3,7-Dimethyl-2-octen-1-ol as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on 3,7-Dimethyl-2-octen-1-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 3,7-Dimethyl-2-octen-1-ol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
3,7-Dimethyl-2-octen-1-ol


- Ford et al., 1992, Food and Chemical Toxicology, Volume 30, Supplement, Special Issue VIII, page 19S.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Dimethyl citraconate**

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| **Synonyms:** | 2-Butenedioic acid, 2-methyl-, dimethyl ester, (2Z)-Dimethyl methyl maleate MethyImaleic acid, dimethyl ester |

| **History:** | Publication date: 2006 (Amendment 40) | Previous Publications: 1976 2002 |

| **Implementation dates:** | For new creation*: Not applicable. | For existing creation*: Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** Dimethyl citraconate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethyl citraconate and recommends not to use Dimethyl citraconate as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Dimethyl citraconate is based on at least one of the following publications:

- The RIFM Safety Assessment on Dimethyl citraconate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

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2006 (Amendment 40) 1/2
Dimethyl citraconate


- Opdyke, D.L.J. (1976), Food and Cosmetics Toxicology 14, 749.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Diphenylamine

CAS-No.: 122-39-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Benzeneamine, N-phenyl-

History: Publication date: 2004 (Amendment 38) Previous Publications: Not applicable.

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Diphenylamine should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: TOXICITY, TERATOGENICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Diphenylamine and recommends not to use Diphenylamine as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Diphenylamine is based on at least one of the following publications:

• The RIFM Safety Assessment on Diphenylamine is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


2004 (Amendment 38)
Diphenylamine


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2,4-Dodecadien-1-ol, (2E, 4E)

CAS-No.: 18485-38-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2,4-Dodecadien-1-ol

History:

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Implementation dates:

- For new creation*: August 10, 2015
- For existing creation*: August 10, 2016

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:

PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:

2,4-Dodecadien-1-ol, (2E, 4E) should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Dodecadien-1-ol, (2E, 4E) and recommends not to use 2,4-Dodecadien-1-ol, (2E, 4E) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on 2,4-Dodecadien-1-ol, (2E, 4E) is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,4-Dodecadien-1-ol, (2E, 4E) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
2,4-Dodecadien-1-ol, (2E, 4E)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Esters of 2-Nonynoic acid (except Methyl octine carbonate)

**CAS-No.:**

| e.g.: 10031-92-2 |

This IFRA Standard covers CAS numbers of any esters of 2-Nonynoic acid (except Methyl octine carbonate, CAS number 111-80-8).

**Synonyms:**

- Ethyl 2-nonynoate
- Ethyl octine carbonate
- Ethyl octyne carbonate
- 2-Nonynoic acid, ethyl ester

**History:**

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<th>2008 (Amendment 43)</th>
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**Previous Publications:**

Not applicable.

**Implementation dates:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

Esters of 2-Nonynoic acid (except Methyl octine carbonate) should not be used as a fragrance ingredient.

For Methyl octine carbonate (CAS Number 111-80-8), please refer to the IFRA Restricted Standard Methyl octine carbonate.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Nonynoic acid (except Methyl octine carbonate) and recommends not to use Esters of 2-Nonynoic acid (except Methyl octine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.
Esters of 2-Nonynoic acid (except Methyl octine carbonate)

REFERENCES:

The IFRA Standard on Esters of 2-Nonynoic acid (except Methyl octine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Nonynoic acid (except Methyl octine carbonate) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Esters of 2-Octynoic acid (except Methyl heptine carbonate)

**CAS-No.:**
- e.g.: 10484-32-9
- 10519-20-7

This IFRA Standard covers CAS numbers of any esters of 2-Octynoic acid (except Methyl heptine carbonate, CAS number 111-12-6).

**Synonyms:**
- 10484-32-9: Amyl heptine carbonate
- 2-Octynoic acid, pentyl ester
- Pentyl 2-octynoic acid
- Vert de violette

- 10519-20-7: Ethyl heptine carbonate
- Ethyl 2-octynoate
- 2-Octynoic acid, ethyl ester

**History:**
- Publication date: 2008 (Amendment 43)
- Previous Publications: Not applicable.

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**Recommendation:**
- PROHIBITION

**Fragrance Ingredient Prohibition:**
- Esters of 2-Octynoic acid (except Methyl heptine carbonate) should not be used as a fragrance ingredient.

- For Methyl heptine carbonate (CAS number 111-12-6), please refer to the IFRA Restricted Standard Methyl heptine carbonate.

**Contributions from Other Sources:**
- NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**Intrinsic Property Driving Risk Management:**
- INSUFFICIENT DATA

**Expert Panel for Fragrance Safety Rationale / Conclusion:**

2008 (Amendment 43)
Amendment 43

Esters of 2-Octynoic acid (except Methyl heptine carbonate)

The Expert Panel for Fragrance Safety reviewed all the available data for Esters of 2-Octynoic acid (except Methyl heptine carbonate) and recommends not to use Esters of 2-Octynoic acid (except Methyl heptine carbonate) as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Esters of 2-Octynoic acid (except Methyl heptine carbonate) is based on at least one of the following publications:

• The RIFM Safety Assessment on Esters of 2-Octynoic acid (except Methyl heptine carbonate) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Ethyl acrylate

**CAS-No.:** 140-88-5
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Ethyl propenoate
2-Propenoic acid, ethyl ester

**History:**

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**Implementation dates:**

| For new creation* | Not applicable. |
| For existing creation* | Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Ethyl acrylate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl acrylate and recommends not to use Ethyl acrylate as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Ethyl acrylate is based on at least one of the following publications:

- The RIFM Safety Assessment on Ethyl acrylate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Ethyl acrylate


- Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 801.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Ethylene glycol monoethyl ether and its acetate

| CAS-No.: | 110-80-5 (ether)  
|          | 111-15-9 (acetate)  
|          | The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.  
| Synonyms: | 110-80-5 (ether):  
|          | Ethylene glycol ethyl ether  
|          | 2-Ethoxyethanol  
|          | Ethanol, 2-ethoxy-  
|          | Cellosolve  
|          | Oxitol  
|          | 111-15-9 (acetate):  
|          | Ethylene glycol ethyl ether acetate  
|          | 2-Ethoxyethyl acetate  
|          | Ethyl cellosolve acetate  
|          | Ethanol, 2-ethoxy-, acetate  
|          | 1-Acetoxy-2-ethoxyethane  

| History: |  
| Publication date: | 2004 (Amendment 38)  
| Previous Publications: | Not applicable.  

| Implementation dates: |  
| For new creation*: | Not applicable.  
| For existing creation*: | Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** Ethylene glycol monoethyl ether and its acetate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** REPRODUCTIVE TOXICITY

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monoethyl ether and its acetate and recommends not to use Ethylene glycol monoethyl ether and its acetate as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Ethylene glycol monoethyl ether and its acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Ethylene glycol monoethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database:  
  http://fragrancematerialsafetyresource.elsevier.com/.


• EPA, 1984b, EPA/540/1-86/052; PB86-134632.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Ethylene glycol monomethyl ether and its acetate

## CAS-No.: 109-86-4 (ether)

110-49-6 (acetate)

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

## Synonyms:

109-86-4 (ether):
- Ethylene glycol methyl ether
- 2-Methoxyethanol
- Ethanol, 2-methoxy-
- Methyl cellosolve

110-49-6 (acetate):
- Ethylene glycol methyl ether acetate
- 2-Methoxyethanol acetate
- 2-Methoxyethyl acetate
- Methyl cellosolve acetate
- Ethanol, 2-methoxy-, acetate

## History:

**Publication date:** 2004 (Amendment 38)

**Previous Publications:** Not applicable.

## Implementation dates:

For new creation*:

- Not applicable.

For existing creation*:

- Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## Recommendation:

**PROHIBITION**

## Fragrance Ingredient Prohibition:

Ethylene glycol monomethyl ether and its acetate should not be used as a fragrance ingredient.

## Contributions from Other Sources:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

## Intrinsic Property Driving Risk Management:

REPRODUCTIVE TOXICITY

## Expert Panel for Fragrance Safety Rationale / Conclusion:
Amendment 38

IFRA STANDARD

**Ethylene glycol monomethyl ether and its acetate**

The Expert Panel for Fragrance Safety reviewed all the available data for Ethylene glycol monomethyl ether and its acetate and recommends not to use Ethylene glycol monomethyl ether and its acetate as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Ethylene glycol monomethyl ether and its acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on Ethylene glycol monomethyl ether and its acetate is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


- EPA, 1984b, EPA/540/1-86/052; PB86-134632.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
Fig leaf absolute

CAS-No.: 68916-52-9
90028-74-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Ficus carica absolute
Fig leaf absolute (Ficus carica)

History: Publication date: 2006 (Amendment 40)
Previous Publications: 1980
1983
2002

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: Fig leaf absolute should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION, PHOTOTOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Fig leaf absolute and recommends not to use Fig leaf absolute as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Fig leaf absolute is based on at least one of the following publications:

• The RIFM Safety Assessment on Fig leaf absolute is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Fig leaf absolute


• Opdyke, D.L.J., Letizia, C. (1982), Food and Chemical Toxicology 20, 691.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Furfuryl alcohol**

**CAS-No.:** 98-00-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
2-Furancarbinol  
2-Furanmethanol  
Furfuralcohol  
Furfuryl alcohol  
α-Furylcarbinol  
2-Furylcarbinol  
2-Furylmethanol  
2-Hydroxymethylfuran

**History:**  
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**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**  
Furfuryl alcohol should not be used as a fragrance ingredient.  
The natural extracts containing Furfuryl alcohol should not be used as substitutes for this substance.

**CONTRIBUTIONS FROM OTHER SOURCES:**  
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Furfuryl alcohol has been found in natural extracts but only at trace levels. Those contributions from other sources like Coffee extracts or certain types of Cade oil have been evaluated. On the basis of the established maximum level of Furfuryl alcohol in these commercially available natural sources, exposure to this substance from the use of these oils and extracts is not significant and not regarded of concern from a consumer safety point of view.

For more information, please also refer to the note on contributions from other sources in Chapter 1 of the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Furfuryl alcohol**

**INTRINSIC PROPERTY DRIVING RISK**  
**MANAGEMENT: INSUFFICIENT DATA**

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Furfuryl alcohol and recommends not to use Furfuryl alcohol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Furfuryl alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Furfuryl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
### Furfurylidene acetone

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The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

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<th><strong>Synonyms:</strong></th>
<th>3-Buten-2-one, 4-(2-furanyl)-Furfuralacetone 4-(2-Furyl)-3-buten-2-one</th>
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**Implementation dates:**

| For new creation*: | Not applicable. |
|--------------------|-----------------
| For existing creation*: | Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Furfurylidene acetone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Furfurylidene acetone and recommends not to use Furfurylidene acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Furfurylidene acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on Furfurylidene acetone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Furfurylidene acetone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Geranyl nitrile

**CAS-No.**  
5146-66-7  
5585-39-7  
31983-27-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
(2E)-3,7-dimethyl-octa-2,6-dienenitrile  
3,7-Dimethyl-2,6-octadienitrile  
Geranenitrile (isomer unspecified)  
2,6-Octadienitrile, 3,7-dimethyl-  
Citranile (commercial name)  
Citralka (commercial name)  
Geranitrile (commercial name)

**History:**  
Publication date: 2008 (Amendment 43)  
Previous Publications: 2006

**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**  
Geranyl nitrile should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**  
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**  
GENOTOXICITY

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**  
The material has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it should not be used as a fragrance ingredient, or in fragrance ingredients above unavoidable trace levels until additional data is available and considered sufficient to support the safe use of these ingredients.
The IFRA Standard on Geranyl nitrile is based on at least one of the following publications:

- The RIFM Safety Assessment on Geranyl nitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### trans-2-Heptenal

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<th><strong>CAS-No.:</strong></th>
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<th><strong>Synonyms:</strong></th>
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<td>3-Butylacrolein</td>
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<td>(E)-2-Hepten-1-al</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

trans-2-Heptenal should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Heptenal and recommends not to use trans-2-Heptenal as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on trans-2-Heptenal is based on at least one of the following publications:

- The RIFM Safety Assessment on trans-2-Heptenal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
trans-2-Heptenal


- Ford, R.A. (1988), Food and Chemical Toxicology, 26, 331.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafgrance.org.
### 2,4-Hexadien-1-ol

**CAS-No.:** 111-28-4  
17102-64-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 1-Hydroxy-2,4-hexadiene  
Hexa-2,4-dien-1-ol  
Sorbic alcohol  
Sorbyl alcohol  
Hexadienol (commercial name)

**History:**  
Publication date: 2015 (Amendment 48)  
Previous Publications: Not applicable.

**Implementation dates:**  
For new creation*: August 10, 2015  
For existing creation*: August 10, 2016  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** 2,4-Hexadien-1-ol should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**  
The Expert Panel for Fragrance Safety reviewed all the available data for 2,4-Hexadien-1-ol and recommends not to use 2,4-Hexadien-1-ol as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**
The IFRA Standard on 2,4-Hexadien-1-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,4-Hexadien-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Hexahydrocoumarin

CAS-No.: 700-82-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2H-1-Benzopyran-2-one, 3,4,5,6,7,8-hexahydro-Coumarin, hexahydro-Coumarin, 3,4,5,6,7,8-hexahydro-1-Cyclohexene-1-propanoic acid, 2-hydroxy-, d-lactone
3,4,5,6,7,8-Hexahydro-2H-1-benzopyran-2-one

History: Publication date: 2006 (Amendment 40) Previous Publications: 1980 2002

Implementation dates: For new creation*: Not applicable.
For existing creation**: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: Hexahydrocoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Hexahydrocoumarin and recommends not to use Hexahydrocoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Hexahydrocoumarin is based on at least one of the following publications:
Hexahydrocoumarin

- The RIFM Safety Assessment on Hexahydrocoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
trans-2-Hexenal diethyl acetal

**CAS-No.:** 67746-30-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
1,1-Diethoxy-trans-2-hexene  
(E)-2-Hexenal diethyl acetal  
2-Hexene, 1,1-diethoxy-, (2E)-

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

trans-2-Hexenal diethyl acetal should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal diethyl acetal and recommends not to use trans-2-Hexenal diethyl acetal as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on trans-2-Hexenal diethyl acetal is based on at least one of the following publications:

- The RIFM Safety Assessment on trans-2-Hexenal diethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
trans-2-Hexenal diethyl acetal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
trans-2-Hexenal dimethyl acetal

CAS-No.: 18318-83-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 1,1-Dimethoxy-trans-2-hexene
2-Hexene, 1,1-dimethoxy-, (2E)-


Implementation dates: For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: trans-2-Hexenal dimethyl acetal should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for trans-2-Hexenal dimethyl acetal and recommends not to use trans-2-Hexenal dimethyl acetal as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on trans-2-Hexenal dimethyl acetal is based on at least one of the following publications:

- The RIFM Safety Assessment on trans-2-Hexenal dimethyl acetal is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
trans-2-Hexenal dimethyl acetal


• Ford, R.A. (1988), Food and Chemical Toxicology 26, 347.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Hydroabietyl alcohol, Dihydroabietyl alcohol

CAS-No.: 13393-93-6
26266-77-3
1333-89-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

Synonyms: Abitol (mixture of different hydroabietyl alcohols)

History:
Publication date: 2004 (Amendment 38)

Implementation dates:
For new creation*: May 6, 2004
For existing creation*: May 6, 2005

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Hydroabietyl alcohol, Dihydroabietyl alcohol should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Hydroabietyl alcohol, Dihydroabietyl alcohol and recommends not to use Hydroabietyl alcohol, Dihydroabietyl alcohol as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Hydroabietyl alcohol, Dihydroabietyl alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on Hydroabietyl alcohol, Dihydroabietyl alcohol is available at the RIFM
Hydroabietyl alcohol, Dihydroabietyl alcohol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Hydroquinone monoethyl ether

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**Synonyms:**
- 1-Ethoxy-4-hydroxybenzene
- p-Ethoxyphenol
- Phenol, 4-ethoxy-
- 4-Ethoxyphenol

|----------|-------------------|---------------------|------------------------|----------------|

**Implementation dates:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

Hydroquinone monoethyl ether should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DEPIGMENTATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monoethyl ether and recommends not to use Hydroquinone monoethyl ether as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Hydroquinone monoethyl ether is based on at least one of the following publications:
Hydroquinone monoethyl ether

- The RIFM Safety Assessment on Hydroquinone monoethyl ether is available at the RIFM Safety Assessment Sheet Database:
  http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Hydroquinone monomethyl ether

**CAS-No.:** 150-76-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 4-Hydroxyanisole  
p-Hydroxyanisole  
4-Methoxyphenol  
p-Methoxyphenol  
Phenol, p-methoxy-

**History:**  
Publication date: 2006 (Amendment 40)  
Previous Publications: 1983  
2002

**Implementation dates:**  
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**  
Hydroquinone monomethyl ether should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**  
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**  
DEPIGMENTATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Hydroquinone monomethyl ether and recommends not to use Hydroquinone monomethyl ether as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Hydroquinone monomethyl ether is based on at least one of the following publications:
Hydroquinone monomethyl ether

- The RIFM Safety Assessment on Hydroquinone monomethyl ether is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Isophorone

**CAS-No.:** 78-59-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2-Cyclohexen-1-one, 3,5,5-trimethyl-isooacetophorone  
3,5,5-Trimethyl-2-cyclohexen-1-one

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: 2008

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

PROHIBITION / RESTRICTION

**FRAGRANCE INGREDIENT PROHIBITION:**  
Isophorone as such should not be used as fragrance ingredient.  
Natural extracts containing Isophorone should not be used as substitutes for this substance.

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  

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</tbody>
</table>
Isophorone

Category 6 | See notebox | Category 12 | See notebox

Fragrance ingredient restriction - Note box
On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils and extracts), exposure to this substance from the use of these oils and extracts is not significant and the use of these oils is authorized as long as the level of Isophorone in the finished product does not exceed 0.0013%.

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

INTRINSIC PROPERTY DRIVING RISK: INSUFFICIENT DATA

RIFM SUMMARIES:
The dose response for preputial gland carcinoma was identified as the critical effect for deriving an oral exposure threshold. Thus the NOAEL for preputial gland carcinoma from the 2-year US-NTP carcinogenicity study was determined to be 250 mg/kg/day.

The U.S. Environmental Protection Agency (EPA) reported that over a lifetime, an individual could consume 40 µg/l (0.04 mg/l) Isophorone and would have no more than a one-in-a-million increased chance of developing cancer as a direct result of ingesting water containing this chemical. According to the EPA, drinking water consumption is 2 l/day. As such, 40 µg/l X 2l/day consumption = 80 µg/person/day. Using a 60 kg bodyweight/person the Reference Dose (RfD) can be derived for humans as, 80/60 = 1.33 µg/kg/day.

This dose was used in the Creme RIFM Model to derive the acceptable safe use of 0.0013% in the final product.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Isophorone and recommends not to use Isophorone as or in fragrance ingredients in any finished product application.

However, the presence of Isophorone in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

REFERENCES:
The IFRA Standard on Isophorone is based on at least one of the following publications:

- The RIFM Safety Assessment on Isophorone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
6-Isopropyl-2-decalol

**CAS-No.:** 34131-99-2
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Decahydro-6-isopropyl-2-naphthol
- Decahydro-6-(1-methylethyl)-2-naphthalenol
- 6-Isopropyl-2-decahydronaphthalenol
- 6-Isopropyldecalol
- 2-Naphthalenol, decahydro-6-(1-methylethyl)-Decanol

**History:**
- **Publication date:** 2006 (Amendment 40)
- **Previous Publications:** 1979, 1989, 2002

**Implementation dates:**
- **For new creation:** Not applicable.
- **For existing creation:** Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
6-Isopropyl-2-decalol should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 6-Isopropyl-2-decalol and recommends not to use 6-Isopropyl-2-decalol as or in fragrance ingredients in any finished product application.

**REFERENCES:**

---

2006 (Amendment 40) 1/2
The IFRA Standard on 6-Isopropyl-2-decalol is based on at least one of the following publications:

- The RIFM Safety Assessment on 6-Isopropyl-2-decalol is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 43

Massoia bark oil

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<td>Cryptocarya massoy, ext.</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: Massoia bark oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Massoia bark oil and recommends not to use Massoia bark oil as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on Massoia bark oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Massoia bark oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2008 (Amendment 43) 1/2


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Massoia lactone

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:
PROHIBITION

### FRAGRANCE INGREDIENT PROHIBITION:
Massoia lactone should not be used as a fragrance ingredient.

### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK:
DERMAL SENSITIZATION

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Massoia lactone and recommends not to use Massoia lactone as or in fragrance ingredients in any finished product application.

### REFERENCES:
The IFRA Standard on Massoia lactone is based on at least one of the following publications:

- The RIFM Safety Assessment on Massoia lactone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
7-Methoxycoumarin

**CAS-No.:** 531-59-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2H-1-Benzopyran-2-one, 7-methoxy-Herniarin

**History:**
- **Publication date:** 2008 (Amendment 43)
- **Previous Publications:** 1979, 1989

**Implementation dates:**
- **For new creation**: August 16, 2008
- **For existing creation**: August 16, 2009

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION / RESTRICTION**

**FRAGRANCE INGREDIENT PROHIBITION:**

7-Methoxycoumarin as such should not be used as fragrance ingredient.
The natural extracts containing 7-Methoxycoumarin should not be used as substitutes for this substance.

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

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</tbody>
</table>
7-Methoxycoumarin

| Category 6 | See notebox | Category 12 | See notebox |

**Fragrance ingredient restriction - Note box**

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the level of 7-Methoxy-coumarin in the finished product does not exceed 0.01% (100 ppm).

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

See annex on contributions from other sources

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION, PHOTOSENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methoxycoumarin and recommends not to use 7-Methoxycoumarin as or in fragrance ingredients in any finished product application. However, the presence of 7-Methoxycoumarin in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.

**REFERENCES:**

The IFRA Standard on 7-Methoxycoumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on 7-Methoxycoumarin if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


7-Methoxycoumarin


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
α-Methyl anisylidene acetone

**CAS-No.:** 104-27-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
1-(p-Methoxyphenyl)-1-penten-3-one  
p-Methoxystyrlyl ethyl ketone  
alpha-Methylanisalacetone  
α-Methylanisalacetone  
1-(4-Methoxyphenyl)-1-penten-3-one  
1-Penten-3-one, 1-(4-(methoxyphenyl))-Ethone (commercial name)

**History:**
Publication date: 2006 (Amendment 40)  
Previous Publications: 1977  
1980  
2002

**Implementation dates:**
For new creation*: Not applicable.  
For existing creation*: Not applicable.  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
α-Methyl anisylidene acetone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for α-Methyl anisylidene acetone and recommends not to use α-Methyl anisylidene acetone as or in fragrance ingredients in any finished product application.

**REFERENCES:**
The IFRA Standard on α-Methyl anisylidene acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on α-Methyl anisylidene acetone is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


- Opdyke, D.L.J. (1979), Food and Chemical Toxicology 17, 863.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
Amendment 40

6-Methylcoumarin

**CAS-No.:** 92-48-8
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
2H-1-Benzopyran-2-one, 6-methyl
6-Methyl-2h-1-benzopyran-2-one
6-Methylbenzopyrone
6-Methyl coumarin
6-Methyl-cis-o-coumarinic lactone
5-Methyl-2-hydroxyphenylpropenoic acid lactone
Toncarine (commercial name)

**History:**

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**Implementation dates:**
For new creation*: Not applicable.
For existing creation*: Not applicable.
* These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
6-Methylcoumarin should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** PHOTOSENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 6-Methylcoumarin and recommends not to use 6-Methylcoumarin as or in fragrance ingredients in any finished product application.

**REFERENCES:**

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2006 (Amendment 40) 1/2
The IFRA Standard on 6-Methylcoumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on 6-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 275.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
7-Methylcoumarin

**CAS-No.:** 2445-83-2

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2H-1-Benzopyran-2-one, 7-methyl-7-Methyl-2-H-1-benzopyran-2-one

**History:**

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**Implementation dates:**

| For new creation* | Not applicable. |
| For existing creation* | Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

7-Methylcoumarin should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION, PHOTOSENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methylcoumarin and recommends not to use 7-Methylcoumarin as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on 7-Methylcoumarin is based on at least one of the following publications:

- The RIFM Safety Assessment on 7-Methylcoumarin is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
7-Methylcoumarin


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Methyl crotonate

**CAS-No.:** 623-43-8  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 2-Butenoic acid, methyl ester, (E)-Methyl trans-2-butenoate

**History:**  
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**Implementation dates:**  
| For new creation*: | Not applicable. |
| For existing creation*: | Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**  
Methyl crotonate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**  
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**  
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Methyl crotonate and recommends not to use Methyl crotonate as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on Methyl crotonate is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl crotonate is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,

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2006 (Amendment 40) 1/2


- Opdyke, D.L.J. (1979), Food and Cosmetics Toxicology 17, 865.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
4-Methyl-7-ethoxycoumarin

CAS-No.: 87-05-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2H-1-Benzopyran-2-one, 7-ethoxy-4-methyl-Coumarin, 7-ethoxy-4-methyl-7-Ethoxy-4-methylcoumarin
4-Methyl-7-ethoxybenzopyrone
Maraniol (commercial name)

History: Publication date: 2006 (Amendment 40) Previous Publications: 1979 2002

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: 4-Methyl-7-ethoxycoumarin should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: PHOTOREACTIVITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methyl-7-ethoxycoumarin and recommends not to use 4-Methyl-7-ethoxycoumarin as or in fragrance ingredients in any finished product application.

REFERENCES:

The IFRA Standard on 4-Methyl-7-ethoxycoumarin is based on at least one of the following publications:
4-Methyl-7-ethoxycoumarin

• The RIFM Safety Assessment on 4-Methyl-7-ethoxycoumarin if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
p-Methylhydrocinnamic aldehyde

CAS-No.: 5406-12-2
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Benzenepropanal, 4-methyl
p-Methylhydrocinnamaldehyde
p-Methylhydrocinnamaldehyde
3-(4-Methylphenyl)propanal
3-p-Tolylpropionaldehyde

History:
Publication date: 2008 (Amendment 43)

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: p-Methylhydrocinnamic aldehyde should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for p-Methylhydrocinnamic aldehyde and recommends not to use p-Methylhydrocinnamic aldehyde as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on p-Methylhydrocinnamic aldehyde is based on at least one of the following publications:

2008 (Amendment 43)
p-Methylhydrocinnamic aldehyde

• The RIFM Safety Assessment on p-Methylhydrocinnamic aldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Methyl methacrylate

CAS-No.: 80-62-6
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Methyl 2-methacrylate, 2-(methoxycarbonyl)-1-propene
Methyl 2-methyl-2-propenoate
2-Propenoic acid, 2-methyl-, methyl ester
MMA

History: Publication date: 2008 (Amendment 43)
Previous Publications: Not applicable.

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Methyl methacrylate should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Methyl methacrylate has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Methyl methacrylate and recommends not to use Methyl methacrylate as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Methyl methacrylate is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl methacrylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 3-Methyl-2(3)-nonenenitrile

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<th>Synonyms:</th>
<th>2-Nonenenitrile, 3-methyl-Citgrenile (commercial name)</th>
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<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
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**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** 3-Methyl-2(3)-nonenenitrile should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-2(3)-nonenenitrile and recommends not to use 3-Methyl-2(3)-nonenenitrile as or in fragrance ingredients in any finished product application.

**REFERENCES:**

The IFRA Standard on 3-Methyl-2(3)-nonenenitrile is based on at least one of the following publications:

- The RIFM Safety Assessment on 3-Methyl-2(3)-nonenenitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

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2008 (Amendment 43) 1/2
3-Methyl-2(3)-nonenenitrile


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Musk moskene

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<th><strong>CAS-No.:</strong></th>
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| **Synonyms:** | 1,1,3,3,5-Pentamethyl-4,6-dinitroindane  
1H-Indene, 2,3-dihydro-1,1,3,3,5-pentamethyl-4,6-dinitro- |
| **History:** | **Publication date:** 2008 (Amendment 43)  
**Previous Publications:** 2005 |
| **Implementation dates:** | **For new creation***: Not applicable.  
**For existing creation***: Not applicable. |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.*

### RECOMMENDATION:

**PROHIBITION**

### FRAGRANCE INGREDIENT PROHIBITION:

Musk moskene should not be used as a fragrance ingredient.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

INSUFFICIENT DATA

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk moskene and recommends not to use Musk moskene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

### REFERENCES:

The IFRA Standard on Musk moskene is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk moskene if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com](http://fragrancematerialsafetyresource.elsevier.com)
Musk moskene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Musk ambrette**

**CAS-No.:** 83-66-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Benzene, 1-(1,1-dimethylethyl)-2-methoxy-4-methyl-3,5-dinitro-1-tert-Butyl-2-methoxy-4-methyl-3,5-dinitrobenzene  
- 4-tert-Butyl-3-methoxy-2,6-dinitrotoluene  
- 6-tert-Butyl-3-methyl-2,4-dinitroanisole  
- 1-(1,1-Dimethylethyl)-2-methoxy-4-methyl-3,5-dinitrobenzene  
- 2,6-Dinitro-3-methoxy-1-methyl-4-tert-butylbenzene  
- 2,6-Dinitro-3-methoxy-4-tert-butyltoluene  
- 2,4-Dinitro-3-methyl-6-tert-butylanisole

**History:**  
- **Publication date:** 2006 (Amendment 40)  
- **Previous Publications:** 1981, 1994, 1995, 2002

**Implementation dates:**  
- For new creation*: Not applicable.  
- For existing creation*: Not applicable.  
  *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:** Musk ambrette should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:** NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** PHOTOSENSITIZATION, NEUROTOXICITY

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**  
The Expert Panel for Fragrance Safety reviewed all the available data for Musk ambrette and recommends not to use Musk ambrette as or in fragrance ingredients in any finished product application.

**REFERENCES:**

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2006 (Amendment 40) 1/2
The IFRA Standard on Musk ambrette is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk ambrette is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
**Amendment 43**

**Musk tibetene**

**CAS-No.:** 145-39-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 1-tert-Butyl-2,6-dinitro-3,4,5-trimethylbenzene
Benzene, 1-(1,1-dimethylethyl)-3,4,5-trimethyl-2,6-dinitro-

**History:**

- **Publication date:** 2008 (Amendment 43)
- **Previous Publications:** 2005

**Implementation dates:**

- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Musk tibetene should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Musk tibetene and recommends not to use Musk tibetene as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Musk tibetene is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk tibetene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Musk tibetene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Musk xylene

| CAS-No.: | 81-15-2 |
|-----------------------------|
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well. |

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<td>1-tert-Butyl-3,5-dimethyl-2,4,6-trinitrobenzene</td>
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<td>Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl-2,4,6-trinitro-</td>
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| History: | Publication date: | 2009 (Amendment 44) |
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| Previous Publications: | Not applicable. |

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<td>Musk xylene can be present in Musk ketone as an impurity. Please refer to the IFRA Specification Standard on Musk ketone.</td>
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<td>The Expert Panel for Fragrance Safety reviewed all the available data for Musk xylene and recommends not to use Musk xylene as or in fragrance ingredients in any finished product application.</td>
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</table>

<table>
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<tr>
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The IFRA Standard on Musk xylene is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk xylene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Nitrobenzene

CAS-No.: 98-95-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Benzene, nitro
Nitrobenzol
Mirbane oil

History: Publication date: 2006 (Amendment 40)
Previous Publications: 1974 2002

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
Nitrobenzene should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
ACUTE TOXICITY, SKIN TOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Nitrobenzene and recommends not to use Nitrobenzene as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on Nitrobenzene is based on at least one of the following publications:

• The RIFM Safety Assessment on Nitrobenzene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
Nitrobenzene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2-Pentylidene cyclohexanone

CAS-No.: 25677-40-1
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Cyclohexanone, 2-pentylidene-

History:
Publication date: 2006 (Amendment 40)

Implementation dates:
For new creation*: Not applicable.
For existing creation*: Not applicable.
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: 2-Pentylidene cyclohexanone should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Pentylidene cyclohexanone and recommends not to use 2-Pentylidene cyclohexanone as or in fragrance ingredients in any finished product application.

REFERENCES:
The IFRA Standard on 2-Pentylidene cyclohexanone is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Pentylidene cyclohexanone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
2-Pentylidene cyclohexanone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Phenyl acetone**

**CAS-No.:** 103-79-7

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Benzyl methyl ketone
- Methyl benzyl ketone
- 2-Propanone, 1-phenyl

**History:**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**

Phenyl acetone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl acetone and recommends not to use Phenyl acetone as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Phenyl acetone is based on at least one of the following publications:

- The RIFM Safety Assessment on Phenyl acetone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

---

2008 (Amendment 43) 1/2
Phenyl acetone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafrafrance.org.
**Phenyl benzoate**

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| Synonyms: | Benzoic acid, phenyl ester |

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**PROHIBITION**

**FRAGRANCE INGREDIENT PROHIBITION:**

Phenyl benzoate should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

INSUFFICIENT DATA

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Phenyl benzoate and recommends not to use Phenyl benzoate as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

**REFERENCES:**

The IFRA Standard on Phenyl benzoate is based on at least one of the following publications:

- The RIFM Safety Assessment on Phenyl benzoate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Phenyl benzoate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Pseudoionone

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<tr>
<td>Citrylideneacetone</td>
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<td>2,6-Dimethylundeca-2,6,8-trien-10-one</td>
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<tr>
<td>6,10-Dimethyl-3,5,9-undecatrien-2-one</td>
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<td>3,5,9-Undecatrien-2-one, 6,10-dimethyl-</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

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<th>PROHIBITION / SPECIFICATION</th>
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### FRAGRANCE INGREDIENT PROHIBITION:

Pseudoionone should not be used as a fragrance ingredient.

### FRAGRANCE INGREDIENT SPECIFICATION:

Pseudoionone should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Ionones is accepted.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudoionone and recommends not to use Pseudoionone as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

### REFERENCES:

2006 (Amendment 40) 1/2
The IFRA Standard on Pseudoionone is based on at least one of the following publications:

- The RIFM Safety Assessment on Pseudoionone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Opdyke D.L.J. (1975), Food and Cosmetics Toxicology 13, 549.

- Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 311.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Pseudo methylionones**

| CAS-No.: | 26651-96-7  
| 72968-25-3  
| 1117-41-5 |

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**
- 2,6-Dimethyl-dodeca-2,6,8-trien-10-one
- 7,11-Dimethyl-4,6,10-dodecatriien-3-one
- 7,11-Dimethyl-dodeca-4,6,10-trien-3-one
- 4,6,10-Dodecatriien-3-one, 7,11-dimethyl-3,6,10-Trimethylundeca-3,5,9-trien-2-one

**History:**
- Publication date: 2009 (Amendment 44)

**Implementation dates:**
- For new creation*: August 7, 2009
- For existing creation*: August 7, 2010

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT PROHIBITION:**
Pseudo methylionones should not be used as a fragrance ingredient.

**FRAGRANCE INGREDIENT SPECIFICATION:**
Pseudo methylionones should not be used as fragrance ingredient as such, but a level of up to 2% as an impurity in Methylionones is accepted.

**CONtributions FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Pseudo methylionones and recommends not to use Pseudo methylionones as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.
The IFRA Standard on Pseudo methylionones is based on at least one of the following publications:

• The RIFM Safety Assessment on Pseudo methylionones is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


• Opdyke, D.L.J. (1975), Food and Cosmetics Toxicology 13, 863.

• Ford R.A. et al. (1988), Food and Chemical Toxicology 26, 305 and 413.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Quinoline

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<th>1-Benzazine&lt;br&gt;2,3-Benzopyridine&lt;br&gt;Benzo(b)pyridine&lt;br&gt;Chinoleine&lt;br&gt;Leucoline&lt;br&gt;Quinoleine</th>
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### RECOMMENDATION:
PROHIBITION

### FRAGRANCE INGREDIENT PROHIBITION:
Quinoline should not be used as a fragrance ingredient.

### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
CARCINOGENICITY, MUTAGENICITY

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Quinoline and recommends not to use Quinoline as or in fragrance ingredients in any finished product application.

### REFERENCES:
The IFRA Standard on Quinoline is based on at least one of the following publications:
**Quinoline**

- The RIFM Safety Assessment on Quinoline is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
# Safrole, Isosafrole and Dihydrosafrole

## CAS-No.:
- 94-59-7
- 120-58-1
- 94-58-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

## Synonyms:
- **94-59-7:**
  - 1,3-Benzodioxole, 5-(2-propenyl)-
  - 3,4-Methylene dioxyallylbenzene
  - 4-Alllyl-1,2-methylene dioxybenzene
  - 5-Alllyl-1,3-benzodioxole
  - Safrol
- **120-58-1:**
  - 1,2-Methylenedioxy-4-propenylbenzene
  - 1,3-Benzodioxole, 5-(1-propenyl)-
  - 5-Prop-1-en-1-yl-1,3-benzodioxole
  - Iso-safrole
- **94-58-6:**
  - 1,3-Benzodioxole, 5-propyl-
  - 3,4-Methylenedioxypropylbenzene
  - 5-Propyl-1,3-benzodioxole

## History:
- **Publication date:** 1987 (Amendment 17)
- **Previous Publications:** 1976

## Implementation dates:
- For new creation*:
  - Not applicable.
- For existing creation*:
  - Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## Recommendation:
**PROHIBITION / RESTRICTION**

**Fragrance Ingredient Prohibition:**
Safrole, Isosafrole and/or Dihydrosafrole as such should not be used as fragrance ingredients.

The natural extracts containing Safrole, Isosafrole and/or Dihydrosafrole should not be used as substitutes for these ingredients.

**Maximum Acceptable Concentrations in the Finished Product (%):**

---

1987 (Amendment 17) 1/3
## Safrole, Isosafrole and Dihydrosafrole

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### Fragrance ingredient restriction - Note box

On the basis of established maximum concentration levels of this substance in commercially available natural sources (like essential oils, extracts and absolutes), exposure to this substance from the use of these oils and extracts is regarded acceptable as long as the total concentration of Safrole, Isosafrole and Dihydrosafrole in the finished consumer product does not exceed 0.01%.

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

See Annex on Contributions from Other Sources

### INTRINSIC PROPERTY DRIVING RISK

| CARCINOGENICITY |

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Safrole, Isosafrole and Dihydrosafrole and recommends not to use Safrole, Isosafrole and Dihydrosafrole as or in fragrance ingredients in any finished product application.

However, the presence of Safrole, Isosafrole and Dihydrosafrole in natural extracts used as ingredients in finished consumer products is tolerated only according to the upper concentration level mentioned in the Notebox if the natural extracts are not being used to provide an alternative, indirect source of the banned substance.
Amendment 17

Safrole, Isosafrole and Dihydrosafrole

REFERENCES:

The IFRA Standard on Safrole, Isosafrole and Dihydrosafrole is based on at least one of the following publications:

- The RIFM Safety Assessment on Safrole, Isosafrole and Dihydrosafrole is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Conclusions of the Scientific Committee on Cosmetology of the EEC on Safrole and on the similarity of the biological activity of these substances (Scientific Committee of Cosmetology of the EEC, opinion reached on September 2, 1980; Communication to the EEC Commission ENV/521/79 and IARC Monograph Vol. 10, 1976, 231-244).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 43

Santolina oil

CAS-No.: 84961-58-0
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Not applicable.

History: Publication date: 2008 (Amendment 43)  Previous Publications: 2006

Implementation dates: For new creation*: Not applicable.  For existing creation*: Not applicable.  *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION: Santolina oil should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK: INSUFFICIENT DATA

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Santolina oil and recommends not to use Santolina oil as or in fragrance ingredients in any finished product application until additional data is available and considered sufficient to support its safe use.

REFERENCES:

The IFRA Standard on Santolina oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Santolina oil if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Santolina oil


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Savin oil

**CAS-No.**

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The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms**

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<tr>
<td>Specification of Savin oil:</td>
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**History**

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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

PROHIBITION / SPECIFICATION

**FRAGRANCE INGREDIENT PROHIBITION:**

Savin oil should not be used as a fragrance ingredient.

Savin oil prepared from Juniperus sabina L. should not be used as a fragrance ingredient.

Only oils obtained from Juniperus phoenicea L. should be used, under the conditions set in the fragrance ingredient specification mentioned below.

**FRAGRANCE INGREDIENT SPECIFICATION:**

In the absence of an international standard, the following specifications for oils of Juniperus phoenicea L. are proposed:

- Density $d_{20/20}$ 0.864 - 0.873
- Refraction $n_{20 D}$ 1.4700 - 1.4720
- Rotation $\alpha_{20 D}$ -1° - +4°
- Acid value 0.4 - 1
- Ester value 2.5 - 7
Savin oil

- Ester value after acetylation 10 - 23
- Solubility 0.5-6 vol. in alcohol 96%, beyond that opalescence on dilution.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT: ACUTE TOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Savin oil and recommends not to use Savin oil (Juniperus sabina L.) as or in fragrance ingredients in any finished product application. In addition, they recommend to use Savin oil (Juniperus phoenicea L.) according to the specification mentioned above.

REFERENCES:
The IFRA Standard on Savin oil is based on at least one of the following publications:

- The RIFM Safety Assessment on Savin oil is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Toluene

<table>
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<tr>
<th><strong>CAS-No.:</strong></th>
<th>108-88-3</th>
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<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
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</table>

| **Synonyms:** | Toluol  
Methylbenzol  
Methylbenzene |
|---|---|

| **History:** | **Publication date:** 2004 (Amendment 38)  
**Previous Publications:** Not applicable. |
|---|---|

| **Implementation dates:** | **For new creation:** May 6, 2004  
**For existing creation:** May 6, 2005 |
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<td><em>These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</em></td>
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## Recommendation:

### Prohibition / Specification

<table>
<thead>
<tr>
<th><strong>Fragrance Ingredient Prohibition:</strong></th>
<th>Toluene should not be used as a fragrance ingredient.</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Fragrance Ingredient Specification:</strong></th>
<th>The level of Toluene has to be kept as low as practicable and should never exceed 100 ppm in the fragrance compound/mixture or fragrance oil.</th>
</tr>
</thead>
</table>

### Contributions from Other Sources:

| **None to consider beyond traces (see also the section on contributions from other sources in chapter 1 of the guidance for the use of IFRA Standards)** |
|---|---|

### Intrinsic Property Driving Risk Management:

| **Liver Toxicity** |
|---|---|

## Expert Panel for Fragrance Safety Rationale / Conclusion:

The Expert Panel for Fragrance Safety reviewed all the available data for Toluene and recommends not to use Toluene as or in fragrance ingredients in any finished product application other than described in the above fragrance ingredient specification.

## References:

2004 (Amendment 38)
The IFRA Standard on Toluene is based on at least one of the following publications:

• The RIFM Safety Assessment on Toluene is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


• Cosmetic Ingredient Review, Journal of the American College of Toxicology JACT 6 (1) 1987.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Sclareol

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<thead>
<tr>
<th>CAS-No.:</th>
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<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Labd-14-ene-8,13-diol</th>
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<tbody>
<tr>
<td>1-Naphthalenepropanol,decahydro-alpha-ethenyl-2-hydroxy- alpha,2,5,5,8apentamethyl-, (1R-(1-alpha(R*),2-beta,4a-beta,8a-alpha))-</td>
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</table>

<table>
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<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2005 (Amendment 39)</th>
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<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
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### Recommendation:

**Specification**

**Fragrance Ingredient Specification:**

Sclareol used as a fragrance ingredient should have a minimum purity of 98%.

**Flavor Requirements:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**Contributions from Other Sources:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Sclareol is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

**Intrinsic Property Driving Risk**

DERMAL SENSITIZATION

**Expert Panel for Fragrance Safety Rationale / Conclusion:**

2005 (Amendment 39)
The Expert Panel for Fragrance Safety reviewed all the available data for Sclareol. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Sclareol is based on at least one of the following publications:

- The RIFM Safety Assessment on Sclareol if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Pinacea derivatives**

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<th>CAS-No.:</th>
<th>Not applicable. The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.</th>
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<tr>
<td>Synonyms:</td>
<td>Derivatives from the Pine Family</td>
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| History: | Publication date: | 1994 (Amendment 28) | Previous Publications: | 1976 |

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<tr>
<th>Implementation dates:</th>
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<tr>
<td></td>
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</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**SPECIFICATION**

**FRAGRANCE INGREDIENT SPECIFICATION:**

Essential oils (e.g. Turpentine oil) and isolates (e.g. delta-3-Carene) derived from the Pinacea family, including Pinus and Abies genera, should only be used when the level of peroxides is kept to the lowest practicable level, for instance by adding antioxidants at the time of production. Such products should have a peroxide value of less than 10 millimoles peroxide per liter, determined according to the IFRA analytical methodology for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE FRAGRANCE MATERIAL SPECIFICATION

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Pinacea derivatives. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Pinacea derivatives is based on at least one of the following publications:

• The RIFM Safety Assessment on Pinacea derivatives is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


• Fd. Cosmet. Toxicol. 11, 1053 (1973); 16, 843 (1978);16, 853 (1978).

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 40

Nootkatone

**CAS-No.:** 4674-50-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 5,6-Dimethyl-8-isopropenylbicyclo(4.4.0)dec-1-en-3-one
- 4a,5-Dimethyl-1,2,3,4,4a,5,6,7-octahydro-7-keto-3-isopropenynaphthalene
- 4betaH,5alpha-Eremorphila-1(10),11-dien-2-one
- (4R-(4alpha,4a alpha,6beta))-4,4a,5,6,7,8-Hexahydro-4,4a-dimethyl-6-(1-methylvinyl)naphthalen-2(3H)-one
- 4,4a,5,6,7,8-Hexahydro-6-isopropenyl-4,4a-dimethyl-2(3H)-naphthalenone
- 2(3H)-Naphthalenone, 4,4a,5,6,7,8-hexahydro-4,4a-dimethyl-6-(1-methylethenyl)-
- (4R,4aS,6R)-

**History:**
- **Publication date:** 2006 (Amendment 40)
- **Previous Publications:** 1980

**Implementation dates:**
- For new creation*: December 11, 2006
- For existing creation*: December 11, 2007

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT SPECIFICATION:**
Nootkatone used as a fragrance ingredient should be at least 98% pure, with a melting point of at least 32°C. Lower purity grades may not be used as a fragrance ingredient.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

Nootkatone is found in natural extracts, but its natural contributions are not relevant for the fragrance ingredient specification mentioned above.

2006 (Amendment 40) 1/2
## Nootkatone

<table>
<thead>
<tr>
<th>INTRINSIC PROPERTY</th>
<th>DRIVING RISK</th>
<th>DERMAL SENSITIZATION</th>
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<tbody>
<tr>
<td>MANAGEMENT</td>
<td></td>
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### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Nootkatone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

### REFERENCES:

The IFRA Standard on Nootkatone is based on at least one of the following publications:

- The RIFM Safety Assessment on Nootkatone is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Limonene

**CAS-No.:**
- 138-86-3
- 7705-14-8
- 5989-27-5
- 5989-54-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- p-Mentha-1,8-diene
- 1-methyl-4-prop-1-en-2-ylcyclohexene
- 1-Methyl-4-(1-methylethenyl)cyclohexene
- 1-Methyl-4-isopropenyl-1-cyclohexene
- 4-Isopropenyl-1-methylcyclohexene
- Cyclohexene, 1-methyl-4-(1-methylethenyl)-Dipentene

**History:**
- **Publication date:** 1995 (Amendment 29)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- For new creation*: Not applicable.
- For existing creation*: Not applicable.

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT SPECIFICATION:**

Oxidation products of Limonene, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Limonene and natural products containing substantial amounts of it, should only be used when the level of (hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter, determined according to the IFRA analytical method for the determination of the peroxide value, which can be downloaded from the IFRA website (www.ifrafragrance.org).

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but
The IFRA Standard on Limonene is based on at least one of the following publications:

- The RIFM Safety Assessment on Limonene if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 38

Linalool

**CAS-No.**
- 78-70-6
- 126-90-9
- 126-91-0

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 78-70-6 (Linalool):
  - 1,6-Octadien-3-ol, 3,7-dimethyl-
  - 2,6-Dimethyl-2,7-octadien-6-ol
  - 2,7-Octadien-6-ol, 2,6-dimethyl-
  - 3,7-Dimethyl-1,6-octadien-3-ol
  - 3,7-Dimethylocta-1,6-dien-3-ol
  - Coriandrol
  - Licareol
  - Linalyl alcohol
- 126-90-9 (d-Linalool):
  - (S)-3,7-Dimethyl-1,6-octadien-3-ol
  - 1,6-Octadien-3-ol, 3,7-dimethyl-, (S)-
- 126-91-0 (l-Linalool):
  - (R)-3,7-Dimethyl-1,6-octadien-3-ol
  - 1,6-Octadien-3-ol, 3,7-dimethyl-, (R)-

**History:**
- **Publication date:** 2004 (Amendment 38)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- For new creation*: May 6, 2004
- For existing creation*: May 6, 2005

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT SPECIFICATION:**
Oxidation products of Linalool, especially hydroperoxides, have been demonstrated to be potent sensitizers. d-, l- and dl-Linalool and natural products containing substantial amounts of it, should only be used when the level of (hydro)peroxides is kept to the lowest practical level, for instance by adding antioxidants at the time of production. The addition of 0.1% BHT or α-Tocopherol for example has shown great efficiency. Such products should have a peroxide value of less than 20 millimoles per liter,
### Linalool

<table>
<thead>
<tr>
<th>Flavored Requirement:</th>
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<td>Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (<a href="http://www.iofi.org">www.iofi.org</a>). For more details see chapter 1 of the Guidance for the use of IFRA Standards.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Intrinsinc Property Driving Risk:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Sensitization</td>
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</tbody>
</table>

**Contributions from Other Sources:**

Natural products known to be rich in Linalool include bois de rose, coriander or ho wood oil.

**Expert Panel for Fragrance Safety Rationale / Conclusion:**

The Expert Panel for Fragrance Safety reviewed all the available data for Linalool. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

**References:**

The IFRA Standard on Linalool is based on at least one of the following publications:

- The RIFM Safety Assessment on Linalool is available at the RIFM Safety Assessment Sheet Database: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Amendment 44**

**Allyl esters**

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<th>CAS-No.:</th>
<th>Not applicable. The scope of this Standard includes any CAS number(s) used to identify these fragrance ingredients.</th>
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**History:**

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<td>For existing creation*:</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**SPECIFICATION**

**FRAGRANCE INGREDIENT SPECIFICATION:**

Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

IRRITATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl esters. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.
The IFRA Standard on Allyl esters is based on at least one of the following publications:

- The RIFM Safety Assessment on Allyl esters is available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Musk ketone

**CAS-No.:** 81-14-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
1-(4-tert-Butyl-2,6-dimethyl-3,5-dinitrophenyl) ethanone
4’-tert-butyl-2’,6’-dimethyl-3’,5’-dinitroacetophenone
3,5-Dinitro-2,6-dimethyl-4-tert-butylacetophenone
1-[4-(1,1-Dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]ethanone
Ethanone, 1-[4-(1,1-dimethylethyl)-2,6-dimethyl-3,5-dinitrophenyl]-

**History:**

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<td>January 11, 2012</td>
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*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**FRAGRANCE INGREDIENT SPECIFICATION:**

Musk xylene (CAS number 81-15-2), which has been prohibited for use in fragrance compounds for environmental reasons (vPvB), can be present in Musk ketone as an impurity. Musk ketone should only be used if it contains less than 0.1% of Musk xylene.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

SEE FRAGRANCE MATERIAL SPECIFICATION
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Musk ketone. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Musk ketone is based on at least one of the following publications:

- The RIFM Safety Assessment on Musk ketone if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- IFRA Standard on Musk xylene.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Propenylguaethol**

<table>
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<tr>
<th>CAS-No.:</th>
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<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
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</table>

| Synonyms: | 1-Ethoxy-2-hydroxy-4-propenylbenzene 2-Ethoxy-5-prop-1-en-1-ylphenol 2-Ethoxy-5-propenylphenol 3-Propenyl-6-ethoxyphenol 6-Ethoxy-m-anol Phenol, 2-ethoxy-5-(1-propenyl)- Vanitrope (commercial name) Isosafroeugenol (commercial name) |

| History: | Publication date: 2020 (Amendment 49) Previous Publications: Not applicable. |

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<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
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| RECOMMENDATION: | RESTRICTION |

| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%): |
|---------------|-----------------|-----------------|
| Category 1    | 0.18 %          | Category 7A     | 0.32 %          |
| Category 2    | 0.053 %         | Category 7B     | 0.32 %          |
| Category 3    | 0.11 %          | Category 8      | 0.071 %         |
| Category 4    | 0.99 %          | Category 9      | 0.75 %          |
| Category 5A   | 0.25 %          | Category 10A    | 0.75 %          |
| Category 5B   | 0.21 %          | Category 10B    | 3.7 %           |
| Category 5C   | 0.25 %          | Category 11A    | 0.071 %         |
| Category 5D   | 0.071 %         | Category 11B    | 0.071 %         |
Propenylguaethol

| Category 6 | 0.58 % | Category 12 | 58 % |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Propenylguaethol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Propenylguaethol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Propenylguaethol in the various product categories.

**REFERENCES:**
The IFRA Standard on Propenylguaethol is based on at least one of the following publications:

- The RIFM Safety Assessment on Propenylguaethol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Propenylguaethol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2-Methoxy-4-propylphenol

CAS-No.: 2785-87-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Phenol, 2-methoxy-4-propyl-
4-Propyl-ortho-methoxyphenol
4-Propylguaicol
5-Propyl-ortho-hydroxyanisole
Dihydroeugenol

History: Publication date: 2020 (Amendment 49) Previous Publications: Not applicable.

Implementation dates: For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.13 %</td>
<td>7A</td>
<td>1.5 %</td>
</tr>
<tr>
<td>2</td>
<td>0.039 %</td>
<td>7B</td>
<td>1.5 %</td>
</tr>
<tr>
<td>3</td>
<td>0.78 %</td>
<td>8</td>
<td>0.062 %</td>
</tr>
<tr>
<td>4</td>
<td>0.73 %</td>
<td>9</td>
<td>1.4 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.19 %</td>
<td>10A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.19 %</td>
<td>10B</td>
<td>5.1 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.19 %</td>
<td>11A</td>
<td>0.062 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.062 %</td>
<td>11B</td>
<td>0.062 %</td>
</tr>
<tr>
<td>6</td>
<td>0.43 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
2-Methoxy-4-propylphenol

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methoxy-4-propylphenol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methoxy-4-propylphenol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methoxy-4-propylphenol in the various product categories.

**REFERENCES:**
The IFRA Standard on 2-Methoxy-4-propylphenol is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Methoxy-4-propylphenol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2-Methoxy-4-propylphenol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**alpha-Bisabolol**

| CAS-No.: | 515-69-5  
|          | 23089-26-1  
|          | 23178-88-3  
|          | 78148-59-1  
|          | 76738-75-5  
|          | 72691-24-8 |

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- (R*,R*)-α,4-Dimethyl-α-(4-methyl-3-pentenyl)cyclohex-3-ene-1-methanol
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-pentenyl)-, (R*,R*)-6-Methyl-2-(4-methyl-3-cyclohexen-1-yl)-5-hepten-2-ol
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1-yl)-
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1-yl)-, (αS,1S)-
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1-yl)-, (αR,1R)-
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1-yl)-, (αR,1S)-
- 3-Cyclohexene-1-methanol, α,4-dimethyl-α-(4-methyl-3-penten-1-yl)-, (αS,1R)-
- alpha-Bisabolol
- Bisabolol
- Bisabolol nat. roh (Candela-Öl) (Commercial name)
- Dragosantol (Commercial name)

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- *For new creation:* February 10, 2021
- *For existing creation:* February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.42 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>4.6 %</td>
</tr>
</tbody>
</table>
alpha-Bisabolol

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5A</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.20 %</td>
</tr>
<tr>
<td>6</td>
<td>1.4 %</td>
</tr>
<tr>
<td>10A</td>
<td>4.6 %</td>
</tr>
<tr>
<td>10B</td>
<td>17 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.20 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.20 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:** SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Bisabolol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Bisabolol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Bisabolol in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Bisabolol is based on at least one of the following publications:
alpha-Bisabolol

- The RIFM Safety Assessment on alpha-Bisabolol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# p-Tolyl alcohol

**CAS-No.:** 589-18-4  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
(4-Methylphenyl)methanol  
Benzenemethanol, 4-methyl-  
p-Methylbenzyl alcohol  
p-Tolualcohol  
4-(Hydroxymethyl)toluene  
4-Methylbenzyl alcohol  
4-Tolylicarbinol  

## History:  
**Publication date:** 2020 (Amendment 49)  
**Previous Publications:** Not applicable.

## Implementation dates:  
*For new creation*: 
February 10, 2021  
*For existing creation*: 
February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.*

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.048 %</td>
</tr>
<tr>
<td>2</td>
<td>0.048 %</td>
</tr>
<tr>
<td>3</td>
<td>0.048 %</td>
</tr>
<tr>
<td>4</td>
<td>1.5 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.64 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.048 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.048 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.016 %</td>
</tr>
<tr>
<td>6</td>
<td>0.048 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.048 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.048 %</td>
</tr>
<tr>
<td>8</td>
<td>0.016 %</td>
</tr>
<tr>
<td>9</td>
<td>0.53 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.53 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.048 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.016 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.016 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
p-Tolyl alcohol

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Tolyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for p-Tolyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Tolyl alcohol in the various product categories.

**REFERENCES:**
The IFRA Standard on p-Tolyl alcohol is based on at least one of the following publications:

- The RIFM Safety Assessment on p-Tolyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

p-Tolyl alcohol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**p-Isopropylbenzyl alcohol**

| CAS-No.: 536-60-7 |
| The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well. |

**Synonyms:**
- (4-Isopropylphenyl)methanol
- Benzenemethanol, 4-(1-methylethyl)-
- p-iso-Propylbenzyl alcohol
- p-Cymen-7-ol
- Cumin alcohol
- Cuminic alcohol
- Cuminol
- Cuminyl alcohol

| History: |
| Publication date: 2020 (Amendment 49) |
| Previous Publications: Not applicable. |

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.40 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.80 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.8 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.21 %</td>
</tr>
</tbody>
</table>
**p-Isopropylbenzyl alcohol**

<table>
<thead>
<tr>
<th>Category 6</th>
<th>1.5 %</th>
<th>Category 12</th>
<th>No Restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Isopropylbenzyl alcohol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for p-Isopropylbenzyl alcohol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Isopropylbenzyl alcohol in the various product categories.

**REFERENCES:**

The IFRA Standard on p-Isopropylbenzyl alcohol is based on at least one of the following publications:

- **The RIFM Safety Assessment on p-Isopropylbenzyl alcohol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com**


2020 (Amendment 49) 2/3
p-Isopropylbenzyl alcohol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2,6,10-Trimethylundeca-5,9-dien-1-ol

**CAS-No.:**
- 24048-14-4
- 185019-19-6
- 58001-88-0
- 58001-87-9
- 1373932-23-0
- 1018832-07-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 24048-14-4: 2,6,10-Trimethylundeca-5,9-dienol
- 5,9-Undecadien-1-ol, 2,6,10-trimethyl-Dihydroapofarnesol
- Profarnesol
- 185019-19-6 and 58001-88-0: (E)-2,6,10-Trimethylundeca-5,9-dien-1-ol
- 58001-87-9: (Z)-2,6,10-Trimethylundeca-5,9-dien-1-ol
- 1373932-23-0: (2R,5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol
- 1018832-07-9: (2S, 5E)-2,6,10-Trimethylundeca-5,9-dien-1-ol

**History:**
- Publication date: 2020 (Amendment 49)
- Previous Publications: Not applicable.

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.21 %</td>
<td>7A</td>
<td>2.4 %</td>
</tr>
<tr>
<td>2</td>
<td>0.062 %</td>
<td>7B</td>
<td>2.4 %</td>
</tr>
</tbody>
</table>

2020 (Amendment 49)
2,6,10-Trimethylundeca-5,9-dien-1-ol

<table>
<thead>
<tr>
<th>Category 3</th>
<th>1.2 %</th>
<th>Category 8</th>
<th>0.12 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 4</td>
<td>1.2 %</td>
<td>Category 9</td>
<td>2.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.29 %</td>
<td>Category 10A</td>
<td>8.1 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.29 %</td>
<td>Category 10B</td>
<td>8.1 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.29 %</td>
<td>Category 11A</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.29 %</td>
<td>Category 11B</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.68 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

2,6,10-Trimethylundeca-5,9-dien-1-ol has been reported to be found in natural extracts but only at trace levels.

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,6,10-Trimethylundeca-5,9-dien-1-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2,6,10-Trimethylundeca-5,9-dien-1-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,6,10-Trimethylundeca-5,9-dien-1-ol in the various product categories.

REFERENCES:

The IFRA Standard on 2,6,10-Trimethylundeca-5,9-dien-1-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,6,10-Trimethylundeca-5,9-dien-1-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Cedrene

**CAS-No.:**

- 11028-42-5
- 469-61-4
- 546-28-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify these fragrance ingredients should be considered in scope as well.

**Synonyms:**

- 11028-42-5: Cedr-8-ene
- 469-61-4: α-Cedrene Cedr-8-ene
  1H-3a,7-Methanoazulene, 2,3,4,7,8,8a-hexahydro-3,6,8,8-tetramethyl-, (3R-(3-α,3a-β,8a-α))
- 546-28-1: β.-Cedrene
  1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methylene-, [3R-(3alpha,3abeta,7beta,8alpha)]-
  Cedr-8(15)-ene

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
</tr>
</thead>
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<tr>
<td>Previous Publications:</td>
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**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>0.27 %</td>
</tr>
<tr>
<td>2</td>
<td>0.080 %</td>
</tr>
<tr>
<td>3</td>
<td>1.6 %</td>
</tr>
<tr>
<td>4</td>
<td>1.5 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.38 %</td>
</tr>
<tr>
<td>7A</td>
<td>3.1 %</td>
</tr>
<tr>
<td>7B</td>
<td>3.1 %</td>
</tr>
<tr>
<td>8</td>
<td>0.16 %</td>
</tr>
<tr>
<td>9</td>
<td>2.9 %</td>
</tr>
<tr>
<td>10A</td>
<td>11 %</td>
</tr>
</tbody>
</table>

---

2020 (Amendment 49) 1/3
Amendment 49

Cedrene

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>5B</td>
<td>0.38 %</td>
<td>10B</td>
<td>11 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.38 %</td>
<td>11A</td>
<td>5.8 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.38 %</td>
<td>11B</td>
<td>5.8 %</td>
</tr>
<tr>
<td>6</td>
<td>0.88 %</td>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES: SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

The natural contribution of Cedrene is determined by the sum of the natural contributions of each of its isomers.

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cedrene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Cedrene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cedrene in the various product categories.

REFERENCES:
The IFRA Standard on Cedrene is based on at least one of the following publications:

- The RIFM Safety Assessment on Cedrene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 4-Phenyl-3-buten-2-ol

**CAS-No.**

17488-65-2

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**

- 3-Buten-2-ol, 4-phenyl-
- 4-Phenylbut-3-en-2-ol
- Methyl styryl carbinol

**History:**

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>February 10, 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>February 10, 2022</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
4-Phenyl-3-buten-2-ol

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

4-Phenyl-3-buten-2-ol has been found in natural extracts but only at trace levels.

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT: DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Phenyl-3-buten-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Phenyl-3-buten-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Phenyl-3-buten-2-ol in the various product categories.

REFERENCES:

The IFRA Standard on 4-Phenyl-3-buten-2-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 4-Phenyl-3-buten-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

4-Phenyl-3-buten-2-ol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Amendment 49**

**Longifolene**

**CAS-No.:**
- 475-20-7
- 16846-09-6
- 19067-29-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 4,8,8-Trimethyl-9-methylene-decahydro-1,4-methanoazulene
- 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-
- 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, [1S-(1α,3αβ,4α,8aβ)]-
- 1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-, (1R,3αS,4R,8aR)-

**History:**
- Publication date: 2020 (Amendment 49)
- Previous Publications: Not applicable.

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.080 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.6 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.5 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>3.1 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>3.1 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
**Longifolene**

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Longifolene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Longifolene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Longifolene in the various product categories.

**REFERENCES:**
The IFRA Standard on Longifolene is based on at least one of the following publications:

- The RIFM Safety Assessment on Longifolene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2020 (Amendment 49)
Longifolene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 4-Hydroxy-2,5-dimethyl-3(2H)-furanone

**CAS-No.:** 3658-77-3  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 3(2H)-Furanone, 4-hydroxy-2,5-dimethyl-2,5-Dimethyl-4-hydroxy-2,3-dihydrofuran-3-one  
4-Hydroxy-2,5-dimethylfuran-3(2H)-one  
Dimethylhydroxy furanone  
Strawberry furanone  
Furaneol (Commercial name)  
Neofuraneol (Commercial name)  
Pineapple compound (Commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: Not applicable.

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.045 %</td>
</tr>
<tr>
<td>2</td>
<td>0.014 %</td>
</tr>
<tr>
<td>3</td>
<td>0.27 %</td>
</tr>
<tr>
<td>4</td>
<td>0.25 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.021 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.52 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.52 %</td>
</tr>
<tr>
<td>8</td>
<td>0.021 %</td>
</tr>
<tr>
<td>9</td>
<td>0.49 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.49 %</td>
</tr>
<tr>
<td>10B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.021 %</td>
</tr>
</tbody>
</table>
4-Hydroxy-2,5-dimethyl-3(2H)-furanone

| Category 6 | 0.15 % | Category 12 | No Restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

4-Hydroxy-2,5-dimethyl-3(2H)-furanone has been found in natural extracts but only at trace levels.

**INRINSIC PROPERTY MANAGEMENT:**

| PROPERTY | DRIVING RISK | DERMAL SENSITIZATION AND SYSTEMIC TOXICITY |

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 4-Hydroxy-2,5-dimethyl-3(2H)-furanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Hydroxy-2,5-dimethyl-3(2H)-furanone in the various product categories.

**REFERENCES:**
The IFRA Standard on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone is based on at least one of the following publications:

- The RIFM Safety Assessment on 4-Hydroxy-2,5-dimethyl-3(2H)-furanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
4-Hydroxy-2,5-dimethyl-3(2H)-furanone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Farnesal**

<table>
<thead>
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<th>CAS-No.:</th>
<th>19317-11-4</th>
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<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>2,6,10-Dodecatrienal, 3,7,11-trimethyl-3,7,11-Trimethyl dodecatrien-2,6,10-al-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,7,11-Trimethyl-2,6,10-dodecatrienal</td>
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<td>3,7,11-Trimethyldec-2,6,10-trienal</td>
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**History:**

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<th>2020 (Amendment 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Publications:</td>
<td>Not applicable.</td>
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**Implementation dates:**

- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.11 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 7A</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.57 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.57 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.2 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of
Farnesal

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES: SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Farnesal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Farnesal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Farnesal in the various product categories.

REFERENCES:

The IFRA Standard on Farnesal is based on at least one of the following publications:

- The RIFM Safety Assessment on Farnesal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


**Farnesal**

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at [www.ifrafragrance.org](http://www.ifrafragrance.org).
Amendment 49

3,7-Dimethyl-2,6-nonadien-1-al

CAS-No.: 41448-29-7
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2,6-Nonadien-1-al, 3,7-dimethyl-3,7-Dimethylnona-2,6-dienal
Ethyl citral

History: Publication date: 2020 (Amendment 49) Previous Publications: Not applicable.

Implementation dates: For new creation*: February 10, 2021
For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.11 %</td>
</tr>
<tr>
<td>2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>3</td>
<td>0.65 %</td>
</tr>
<tr>
<td>4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.051 %</td>
</tr>
<tr>
<td>6</td>
<td>0.16 %</td>
</tr>
<tr>
<td>7A</td>
<td>1.2 %</td>
</tr>
<tr>
<td>7B</td>
<td>1.2 %</td>
</tr>
<tr>
<td>8</td>
<td>0.051 %</td>
</tr>
<tr>
<td>9</td>
<td>0.16 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.16 %</td>
</tr>
<tr>
<td>10B</td>
<td>4.2 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.051 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.051 %</td>
</tr>
<tr>
<td>12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
<table>
<thead>
<tr>
<th></th>
<th>3,7-Dimethyl-2,6-nonadien-1-al</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (<a href="http://www.iofi.org">www.iofi.org</a>). For more details see chapter 1 of the Guidance for the use of IFRA Standards.</td>
<td></td>
</tr>
<tr>
<td>CONTRIBUTIONS FROM OTHER SOURCES:</td>
<td>NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)</td>
</tr>
<tr>
<td>INTRINSIC PROPERTY DRIVING RISK</td>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
</tr>
<tr>
<td>RIFM SUMMARIES:</td>
<td>Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category. Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-2,6-nonadien-1-al, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: <a href="http://fragrancematerialsafetyresource.elsevier.com/">http://fragrancematerialsafetyresource.elsevier.com/</a>.</td>
</tr>
<tr>
<td>EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:</td>
<td>The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-2,6-nonadien-1-al and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,7-Dimethyl-2,6-nonadien-1-al in the various product categories.</td>
</tr>
</tbody>
</table>
3,7-Dimethyl-2,6-nonadien-1-al


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## 5,9-Dimethyl-4,8-decadienal

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>762-26-5</th>
</tr>
</thead>
</table>
| Synonyms: | 4,8-Decadienal, 5,9-dimethyl-5,9-Dimethyldeca-4,8-dienal
              | Geraldehyde (Commercial name)
              | Geranyl Acetaldehyde (Commercial name) |

### History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** Not applicable.

### Implementation dates:
- **For new creation***: February 10, 2021
- **For existing creation***: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

<table>
<thead>
<tr>
<th><strong>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5A</td>
</tr>
<tr>
<td>5B</td>
</tr>
<tr>
<td>5C</td>
</tr>
<tr>
<td>5D</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

### Flavor Requirements:
Due to the possible ingestion of small amounts of
5,9-Dimethyl-4,8-decadienal

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5,9-Dimethyl-4,8-decadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 5,9-Dimethyl-4,8-decadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5,9-Dimethyl-4,8-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 5,9-Dimethyl-4,8-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 5,9-Dimethyl-4,8-decadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


5,9-Dimethyl-4,8-decadienal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3,7-Dimethyl-3,6-octadienal

| CAS-No.: | 55722-59-3  
|         | 1754-00-3  
|         | 72203-98-6  
|         | 72203-97-5  |

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
3,6-Octadienal, 3,7-dimethyl- 
3,7-Dimethylocta-3,6-dienal 
(E)-3,7-Dimethyl-3,6-octadienal 
(Z)-3,7-Dimethyl-3,6-octadienal 
Isocitral (Commercial name) 
Isogeranial (Commercial name) 
Isoneral (Commercial name)

**History:**
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** Not applicable.

**Implementation dates:**
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- **RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.54 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.030 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.76 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.030 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.010 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.79 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.79 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.2 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.010 %</td>
</tr>
</tbody>
</table>
3,7-Dimethyl-3,6-octadienal

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.010 %</th>
<th>Category 11B</th>
<th>0.010 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>1.3 %</td>
<td>Category 12</td>
<td>53 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

The natural contribution of 3,7-Dimethyl-3,6-octadienal is determined by the sum of the natural contributions of each of its isomers.

**INTRINSIC PROPERTY DRIVING RISK:**

| DERMAL SENSITIZATION AND SYSTEMIC TOXICITY |

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,7-Dimethyl-3,6-octadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 3,7-Dimethyl-3,6-octadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,7-Dimethyl-3,6-octadienal in the various product categories.

**REFERENCES:**

The IFRA Standard on 3,7-Dimethyl-3,6-octadienal is based on at least one of the following publications:

- The RIFM Safety Assessment on 3,7-Dimethyl-3,6-octadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
3,7-Dimethyl-3,6-octadienal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Citronellal**

### CAS-No.: 106-23-0
5949-05-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- 106-23-0: 2,3-Dihydrocitral, 3,7-Dimethyl-6-octenal, 3,7-Dimethylocct-6-enal, 6-Octenal, 3,7-dimethyl-
  Citronellal Extra (Commercial name), Rhodinal (Commercial name)
- 5949-05-3: 6-Octenal, 3,7-dimethyl-, (3S)-1-Citronellal

### History:
- Publication date: 2020 (Amendment 49)
- Previous Publications: Not applicable.

### Implementation dates:
- For new creation*: February 10, 2021
- For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:
**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.026 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.33 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.017 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>2.3 %</td>
</tr>
</tbody>
</table>
Citronellal

<table>
<thead>
<tr>
<th>Category 5C</th>
<th>0.10 %</th>
<th>Category 11A</th>
<th>0.017 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5D</td>
<td>0.017 %</td>
<td>Category 11B</td>
<td>0.017 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.82 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Citronellal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellal in the various product categories.

**REFERENCES:**
The IFRA Standard on Citronellal is based on at least one of the following publications:

- The RIFM Safety Assessment on Citronellal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Citronellal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 4,8-Dimethyl-4,9-decadienal

**CAS-No.:** 71077-31-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 4,9-Decadienal, 4,8-dimethyl-Aldehyde DMD (Commercial name)  
Floral Super (Commercial name)

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2020 (Amendment 49)</th>
<th>Previous Publications:</th>
<th>Not applicable.</th>
</tr>
</thead>
</table>

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** **RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.042 %</th>
<th>Category 7A</th>
<th>0.48 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.013 %</td>
<td>Category 7B</td>
<td>0.48 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.25 %</td>
<td>Category 8</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.24 %</td>
<td>Category 9</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.060 %</td>
<td>Category 10A</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.060 %</td>
<td>Category 10B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.060 %</td>
<td>Category 11A</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.020 %</td>
<td>Category 11B</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.14 %</td>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
4,8-Dimethyl-4,9-decadienal

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4,8-Dimethyl-4,9-decadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4,8-Dimethyl-4,9-decadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4,8-Dimethyl-4,9-decadienal in the various product categories.

REFERENCES:

The IFRA Standard on 4,8-Dimethyl-4,9-decadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 4,8-Dimethyl-4,9-decadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


4,8-Dimethyl-4,9-decadienal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 49
cis,trans-4-(Isopropyl)cyclohexanemethanol

| CAS-No.: | 5502-75-0  
          | 13828-37-0  
          | 13674-19-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well. |
| Synonyms: | (4-propan-2-ylcyclohexyl)methanol  
4-(1-methylethyl)-cyclohexanemethanol  
4-Isopropylcyclohexylmethanol  
(4-Isopropylcyclohexyl)methanol  
Reaction mass of trans-4-(isopropyl)cyclohexanemethanol and cis-4-(isopropyl)cyclohexanemethanol  
cis-4-(Isopropyl)cyclohexanemethanol  
trans-4-(Isopropyl)cyclohexanemethanol  
Cyclohexanemethanol, 4-(1-methylethyl)-, cis  
Cyclohexanemethanol, 4-(1-methylethyl)-, trans  
p-Menthan-7-ol  
cis-p-Menthan-7-ol  
trans-p-Menthan-7-ol  
Mayol (commercial name)  
Meijiff (commercial name) |
| History: | Publication date: 2020 (Amendment 49)  
Previous Publications: Not applicable. |
| Implementation dates: | For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace. |
| RECOMMENDATION: | RESTRICTION |
| MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%): | Category 1 0.25 %  
Category 2 0.39 %  
Category 3 0.099 %  
Category 4 4.7 %  
Category 7A 0.13 %  
Category 7B 0.13 %  
Category 8 0.049 %  
Category 9 0.39 % |
### cis,trans-4-(Isopropyl)cyclohexanemethanol

<table>
<thead>
<tr>
<th>Category 5A</th>
<th>1.2 %</th>
<th>Category 10A</th>
<th>0.39 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5B</td>
<td>0.15 %</td>
<td>Category 10B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.20 %</td>
<td>Category 11A</td>
<td>0.049 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.049 %</td>
<td>Category 11B</td>
<td>0.049 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0099 %</td>
<td>Category 12</td>
<td>28 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis,trans-4-(Isopropyl)cyclohexanemethanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for cis,trans-4-(Isopropyl)cyclohexanemethanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis,trans-4-(Isopropyl)cyclohexanemethanol in the various product categories.
REFERENCES:

The IFRA Standard on cis,trans-4-(Isopropyl)cyclohexanemethanol is based on at least one of the following publications:

- The RIFM Safety Assessment on cis,trans-4-(Isopropyl)cyclohexanemethanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**4-(Isopropyl)-β.-methylcyclohexanethanol**

**CAS-No.:** 67634-03-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
2-(4-Isopropylocyclohexyl)propan-1-ol  
Cyclohexaneethanol, β.-methyl-4-(1-methylethyl)  
Rodipol C (Commercial name)

**History:**  
Publication date: 2020 (Amendment 49)  
Previous Publications: Not applicable.

**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.26 %</td>
</tr>
<tr>
<td>2</td>
<td>0.39 %</td>
</tr>
<tr>
<td>3</td>
<td>0.26 %</td>
</tr>
<tr>
<td>4</td>
<td>6.4 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.52 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.26 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.086 %</td>
</tr>
<tr>
<td>6</td>
<td>0.26 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.26 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>8</td>
<td>0.086 %</td>
</tr>
<tr>
<td>9</td>
<td>4.9 %</td>
</tr>
<tr>
<td>10A</td>
<td>4.9 %</td>
</tr>
<tr>
<td>10B</td>
<td>1.0 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.086 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.086 %</td>
</tr>
<tr>
<td>12</td>
<td>20 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
4-(Isopropyl)-.beta.-methylcyclohexanethanol

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(Isopropyl)-.beta.-methylcyclohexanethanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-(Isopropyl)-.beta.-methylcyclohexanethanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-(Isopropyl)-.beta.-methylcyclohexanethanol in the various product categories.

REFERENCES:

The IFRA Standard on 4-(Isopropyl)-.beta.-methylcyclohexanethanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(Isopropyl)-.beta.-methylcyclohexanethanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

4-(Isopropyl)-.beta.-methylcyclohexanethanol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Cyclohexanemethanol, 2,4-dimethyl-

### CAS-No.:
68480-15-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- (2,4-Dimethylcyclohexyl)methanol
- 2,4-Dimethylcyclohexanemethanol

### History:
- **Publication date:** 2020 (Amendment 49)
- **Previous Publications:** Not applicable.

### Implementation dates:
- **For new creation***: February 10, 2021
- **For existing creation***: February 10, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>% Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>2</td>
<td>0.39 %</td>
</tr>
<tr>
<td>3</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>4</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>5A</td>
<td>1.3 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.00043 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>8</td>
<td>0.00043 %</td>
</tr>
<tr>
<td>9</td>
<td>3.1 %</td>
</tr>
<tr>
<td>10A</td>
<td>3.1 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.0013 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.00043 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.00043 %</td>
</tr>
<tr>
<td>12</td>
<td>0.0013 %</td>
</tr>
</tbody>
</table>

### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
Cyclohexanemethanol, 2,4-dimethyl-

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexanemethanol, 2,4-dimethyl-, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexanemethanol, 2,4-dimethyl- and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexanemethanol, 2,4-dimethyl- in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexanemethanol, 2,4-dimethyl- is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexanemethanol, 2,4-dimethyl- if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for...

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

CAS-No.: 107898-54-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 4-Penten-2-ol, 3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-
(+/-) trans-3,3-Dimethyl-5-(2,2,3-trimethyl-cyclopent-3-en-1-yl)pent-4-en-2-ol
Mysantol (Commercial name)
Polysantol (Commercial name)

History: Publication date: 2020 (Amendment 49) Previous Publications: Not applicable.

Implementation dates: For new creation*: February 10, 2021 For existing creation*: February 10, 2022
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.031 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.057 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.27 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.031 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.63 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.63 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.0 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.091 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of

2020 (Amendment 49) 1/3
3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

Contributions from Other Sources:
None to consider beyond traces (See also the Section on Contributions from Other Sources in Chapter 1 of the Guidance for the Use of IFRA Standards)

Intrinsic Property Driving Risk
Dermal Sensitization and Systemic Toxicity

RIFM Summaries:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

Expert Panel for Fragrance Safety Rationale / Conclusion:
The Expert Panel for Fragrance Safety reviewed all the available data for 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol in the various product categories.

References:
The IFRA Standard on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

3,3-Dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

**CAS-No.:** 65113-99-7  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
3-Cyclopentene-1-butanol, α,β,2,2,3-pentamethyl-3-Methyl-5-(2,2,3-trimethylcyclopent-3-en-1-yl)pentan-2-ol  
a,b,2,2,3-Pentamethylcyclopent-3-ene-1-butanol  
Sandal Series G (Commercial name)  
Sandalore (Commercial name)

**History:**  
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Implementation dates:**  
| For new creation*: | February 10, 2021 |
| For existing creation*: | February 10, 2022 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5A</th>
<th>Category 5B</th>
<th>Category 5C</th>
<th>Category 5D</th>
<th>Category 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.21 %</td>
<td>0.062 %</td>
<td>1.2 %</td>
<td>1.2 %</td>
<td>0.29 %</td>
<td>0.29 %</td>
<td>0.29 %</td>
<td>0.29 %</td>
<td>0.68 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Category 7A</td>
<td>Category 7B</td>
<td>Category 8</td>
<td>Category 9</td>
<td>Category 10A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.4 %</td>
<td>2.4 %</td>
<td>0.12 %</td>
<td>2.3 %</td>
<td>8.1 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Category 7B</td>
<td>Category 8</td>
<td></td>
<td></td>
<td>Category 10A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.1 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Category 11A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.5 %</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Category 11B</td>
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<td></td>
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<td></td>
<td>4.5 %</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Category 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No Restriction</td>
</tr>
</tbody>
</table>
### 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol

#### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

#### INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

#### RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol in the various product categories.

#### REFERENCES:
The IFRA Standard on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol is based on at least one of the following publications:

- The RIFM Safety Assessment on 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

**CAS-No.:** 65114-03-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- 2-Methyl-4-(2,2,3-trimethylcyclopent-3-en-1-yl)butanal  
- 3-Cyclopentene-1-butanal, α,2,2,3-tetramethyl-  
- Florenza (commercial name)  
- Santafleur (commercial name)

**History:**  
- **Publication date:** 2020 (Amendment 49)  
- **Previous Publications:** Not applicable.

**Implementation dates:**  
- **For new creation*:** February 10, 2021  
- **For existing creation*:** February 10, 2022  
  
  *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.011 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.44 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.44 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.023 %</td>
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<tr>
<td>Category 9</td>
<td>0.42 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>1.5 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>1.5 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.83 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.83 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No Restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of
alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

Contributions from other sources: 

None to consider beyond traces (See also the section on contributions from other sources in chapter 1 of the Guidance for the use of IFRA Standards)

Intrinsic property driving risk: Dermal sensitization

RIFM Summaries:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

Expert panel for fragrance safety rationale / conclusion:

The Expert Panel for Fragrance Safety reviewed all the available data for alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde in the various product categories.

References:

The IFRA Standard on alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

**alpha,2,2,3-Tetramethylcyclopent-3-ene-1-butyraldehyde**


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Isobutyl N-methylanthranilate

<table>
<thead>
<tr>
<th><strong>CAS-No.</strong></th>
<th>65505-24-0</th>
</tr>
</thead>
</table>
| **Synonyms:** | Benzoic acid, 2-(methylamino)-, 2-methylpropyl ester
| | Isobutyl 2-(methylamino)benzoate |

<table>
<thead>
<tr>
<th><strong>History:</strong></th>
<th><strong>Publication date:</strong> 2009 (Amendment 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous Publications:</strong></td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Implementation dates:</strong></th>
<th>For new creation*: August 7, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>August 7, 2010</td>
</tr>
<tr>
<td>*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.</td>
<td></td>
</tr>
</tbody>
</table>

**RECOMMENDATION:**

**SPECIFICATION**

**FRAGRANCE INGREDIENT SPECIFICATION:**
The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
POTENTIAL OF NITROSAMINE FORMATION

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

---

2009 (Amendment 44) 1/2
Isobutyl N-methylanthranilate

The Expert Panel for Fragrance Safety reviewed all the available data for Isobutyl N-methylanthranilate. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on Isobutyl N-methylanthranilate is based on at least one of the following publications:

- The RIFM Safety Assessment on Isobutyl N-methylanthranilate if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com


- Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 44

**p-Methyltetrahydroquinoline**

**CAS-No.:** 91-61-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 6-Methyl-1,2,3,4-tetrahydroquinoline  
Quinoline, 1,2,3,4-tetrahydro-6-methyl-1,2,3,4-Tetrahydro-6-methylquinoline  
Tetrahydro-p-methylquinoline

**History:**  
**Publication date:** 2009 (Amendment 44)  
**Previous Publications:** Not applicable.

**Implementation dates:**  
For new creation*: August 7, 2009  
For existing creation*: August 7, 2010  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**SPECIFICATION**

**FRAGRANCE INGREDIENT SPECIFICATION:**  
The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**  
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**  
POTENTIAL OF NITROSAMINE FORMATION
The Expert Panel for Fragrance Safety reviewed all the available data for \emph{p-Methyltetrahydroquinoline}. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

\textbf{REFERENCES:}

The IFRA Standard on \textit{p-Methyltetrahydroquinoline} is based on at least one of the following publications:

- The RIFM Safety Assessment on \textit{p-Methyltetrahydroquinoline} if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# 1,2,3,4-Tetrahydro-4-methylquinoline

## CAS-No.: 19343-78-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

## Synonyms:
- 4-Methyl-1,2,3,4-tetrahydroquinoline
- Quinoline, 1,2,3,4-tetrahydro-4-methyl-
- 1,2,3,4-Tetrahydrolepilide
- 1,2,3,4-Tetrahydro-4-methylquinoline

## History:
- **Publication date:** 2009 (Amendment 44)
- **Previous Publications:** Not applicable.

## Implementation dates:
- **For new creation***: August 7, 2009
- **For existing creation***: August 7, 2010

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

### FRAGRANCE INGREDIENT SPECIFICATION:

The material has been identified for having the potential of forming nitrosamines in nitrosating systems. Downstream users therefore have to be notified of the presence of the material and its potential, to be able to consider adequate protective measures.

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

POTENTIAL OF NITROSAMINE FORMATION
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 1,2,3,4-Tetrahydro-4-methylquinoline. Based on their expert judgement, they recommend to use the fragrance ingredient according to its specification mentioned above.

REFERENCES:

The IFRA Standard on 1,2,3,4-Tetrahydro-4- methylquinoline is based on at least one of the following publications:

- The RIFM Safety Assessment on 1,2,3,4-Tetrahydro-4- methylquinoline if available at the RIFM Safety Assessment Sheet Database: http://fragrancematerialsafetyresource.elsevier.com/.


- Nitrosamine policy as contained in the EU Cosmetics Directive 76/768/EEC and its Amendments.

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**4-(4-Hydroxyphenyl)butan-2-one**

**CAS-No.:** 5471-51-2  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
p-Hydroxybenzylacetone  
1-p-Hydroxyphenyl-3-butanone  
2-Butanone, 4-(4-hydroxyphenyl)-  
4-(p-Hydroxyphenyl)-2-butanone  
Raspberry ketone  
Corps N 112 (commercial name)  
Frambinon (commercial name)  
Oxanone (commercial name)  
Oxyphenylon (commercial name)

**History:**  
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
<th>Not applicable.</th>
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<tbody>
<tr>
<td>2020 (Amendment 49)</td>
<td>Not applicable.</td>
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**Implementation dates:**  
For new creation*: February 10, 2021  
For existing creation*: February 10, 2022  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>% Concentration</th>
<th>Category</th>
<th>% Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.68 %</td>
<td>7A</td>
<td>0.41 %</td>
</tr>
<tr>
<td>2</td>
<td>1.0 %</td>
<td>7B</td>
<td>0.41 %</td>
</tr>
<tr>
<td>3</td>
<td>0.27 %</td>
<td>8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>4</td>
<td>1.0 %</td>
<td>9</td>
<td>1.0 %</td>
</tr>
<tr>
<td>5A</td>
<td>1.0 %</td>
<td>10A</td>
<td>1.0 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.14 %</td>
<td>10B</td>
<td>1.0 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.27 %</td>
<td>11A</td>
<td>0.045 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.045 %</td>
<td>11B</td>
<td>0.045 %</td>
</tr>
</tbody>
</table>
4-(4-Hydroxyphenyl)butan-2-one

| Category 6 | 0.82 % | Category 12 | 78 % |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

4-(4-Hydroxyphenyl)butan-2-one has been found in natural extracts but only at trace levels.

**INTRINSIC PROPERTY MANAGING RISK:**
DEPIGMENTATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-(4-Hydroxyphenyl)butan-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 4-(4-Hydroxyphenyl)butan-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-(4-Hydroxyphenyl)butan-2-one in the various product categories.

**REFERENCES:**
The IFRA Standard on 4-(4-Hydroxyphenyl)butan-2-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-(4-Hydroxyphenyl)butan-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
4-(4-Hydroxyphenyl)butan-2-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Mintlactone

**CAS-No.:**
- 13341-72-5
- 38049-04-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Mintlactone
- 2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-3,6-dimethyl-
- 3,6-Dimethyl-5,6,7,7a-tetrahydro-1-benzofuran-2(4H)-one
- 3,6-Dimethyl-5,6,7,7a-tetrahydro-2(4H)benzo-furanone
- 5,6,7,7a-Tetrahydro-3,6-dimethyl-(4H)-benzofuran-2-one
- Dehydroxymenthofurolactone
- Menthofurolactone
- Mint furanone
- 2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-3,6-dimethyl-, (6R,7aR)-(-)-Mintlactone

**History:**
- Publication date: 2021 (Amendment 50)
- Previous Publications: Not applicable

**Implementation dates:**
- For new creation*: August 30, 2021
- For existing creation*: July 30, 2022

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** PROHIBITION

**FRAGRANCE INGREDIENT PROHIBITION:**
Mintlactone should not be used as a fragrance ingredient.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:** GENOTOXICITY

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The material Mintalctone has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it cannot be safely used as a fragrance ingredient. If the substance is found as an impurity in other
Mintelactone

fragrance ingredients, leading to trace level presence in finished products, please check the latest version of the Guidance to the IFRA Standards for the respective IFRA procedure.

REFERENCES:

The IFRA Standard on Mintlactone is based on at least one of the following publications:

• The RIFM Safety Assessment on Mintlactone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Ethyl isopropyl bicycloheptene-2-carboxylate

**CAS-No.:**
116044-44-1  
116126-82-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Ethyl isopropyl bicycloheptene-2-carboxylate  
- (2-endo,3-exo)-Ethyl 3-(1-methylethyl)bicyclo[2.2.1]hept-5-ene-2-carboxylate  
- (2-endo,3-exo)-Ethyl 3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate  
- Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-(1-methylethyl)-, ethyl ester, (2-endo,3-exo)-  
- Ethyl (2S,3S)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate  
- 3-(1-Methyl ethyl) bicyclo[2.2.1] hept-5-ene-2-carboxylic acid ethyl ester  
- Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-(1-methylethyl)-, ethyl ester, (2-exo,3-endo)-  
- Ethyl (2R,3R)-3-isopropylbicyclo[2.2.1]hept-5-ene-2-carboxylate  
- Herbanate (commercial name)

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
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</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Implementation dates:**

<table>
<thead>
<tr>
<th>For new creation*:</th>
<th>March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>October 30, 2025</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.94 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.61 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.61 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.080 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.080 %</td>
</tr>
</tbody>
</table>
Amendment 51

**Ethyl isopropyl bicycloheptene-2-carboxylate**

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.080 %</th>
<th>Category 11B</th>
<th>0.080 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.15 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ethyl isopropyl bicycloheptene-2-carboxylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl isopropyl bicycloheptene-2-carboxylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ethyl isopropyl bicycloheptene-2-carboxylate in the various product categories.

**REFERENCES:**
The IFRA Standard on Ethyl isopropyl bicycloheptene-2-carboxylate is based on at least one of the following publications:

- The RIFM Safety Assessment on Ethyl isopropyl bicycloheptene-2-carboxylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

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2023 (Amendment 51) 2/3
Ethyl isopropyl bicycloheptene-2-carboxylate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Tetramethyl bicyclo-2-heptene-2-propionaldehyde

**CAS-No.:** 33885-52-8  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Tetramethyl bicyclo-2-heptene-2-propionaldehyde  
- \(\alpha,\alpha,6,6\)-Tetramethyl-2-norpinene-2-propionaldehyde  
- \(\alpha,\alpha,6,6\)-Tetramethylbicyclo[3.1.1]hept-2-ene-2-propionaldehyde  
- \(\alpha,\alpha,6,6\)-Tetramethylbicyclo[3.1.1]hept-2-ene-2-propionaldehyde  
- \(3-(6,6\)-Dimethylbicyclo[3.1.1]hept-2-en-2-yl\)-2,2-dimethylpropanal  
- Bicyclo[3.1.1]hept-2-ene-2-propanal, \(\alpha,\alpha,6,6\)-tetramethyl- 
- Bicyclo[3.1.1]hept-2-ene-2-propanal, \(\alpha,\alpha,6,6\)-tetramethyl- 
- PIBA (commercial name)  
- Pinyl iso butyraldehyde (commercial name)

**History:**  
**Publication date:** 2023 (Amendment 51)  
**Previous Publications:** Not applicable

**Implementation dates:**  
*For new creation:* March 30, 2024  
*For existing creation:* October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.019 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.0041 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.0041 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.00046 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.087 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.0096 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.00046 %</td>
</tr>
</tbody>
</table>
Tetramethyl bicyclo-2-heptene-2-propionaldehyde

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.00046 %</th>
<th>Category 11B</th>
<th>0.00046 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.0014 %</td>
<td>Category 12</td>
<td>25 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Tetramethyl bicyclo-2-heptene-2-propionaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Tetramethyl bicyclo-2-heptene-2-propionaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Tetramethyl bicyclo-2-heptene-2-propionaldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on Tetramethyl bicyclo-2-heptene-2-propionaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Tetramethyl bicyclo-2-heptene-2-propionaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
Tetramethyl bicyclo-2-heptene-2-propionaldehyde


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>70788-30-6</th>
</tr>
</thead>
</table>
| **Synonyms:** | 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol  
1-(Trimethylcyclohexyl)-hexanol  
2,2,6-Trimethyl-α-propylcyclohexanepropanol  
2,2,6-Trimethyl-α-propylcyclohexanepropanol  
Cyclohexanepropanol, 2,2,6-trimethyl-α-propyl-  
Cyclohexanepropanol, 2,2,6-trimethyl-α-propyl-  
Norlimbanol (commercial name)  
Norlimbanol Dextrol (commercial name)  
Timberol (commercial name)  
Karmawood (commercial name) |

| History: | Publication date: 2023 (Amendment 51)  
Previous Publications: Not applicable |

| Implementation dates: | For new creation*: March 30, 2024  
For existing creation*: October 30, 2025 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.071 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.51 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.6 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.68 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.7 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.11 %</td>
</tr>
</tbody>
</table>
1-(2,2,6-Trimethylcyclohexyl)-3-hexanol

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.11 %</th>
<th>Category 11B</th>
<th>0.11 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.17 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol in the various product categories.

**REFERENCES:**
The IFRA Standard on 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol is based on at least one of the following publications:

• The RIFM Safety Assessment on 1-(2,2,6-Trimethylcyclohexyl)-3-hexanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2023 (Amendment 51)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol

#### CAS-No.: 139504-68-0

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

#### Synonyms:
- 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol
- 1-(2-tert-Butylcyclohexyl)oxybutan-2-ol
- 1-[(2-tert-Butylcyclohexyl)oxy]butan-2-ol
- 1-(2-t.-Butyl cyclohexyloxy)-2-butanol
- 1-(2-t-Butylcyclohexyl)oxybutan-2-ol
- 1-[(2-t-Butylcyclohexyl)oxy]butan-2-ol
- Amber Core (commercial name)
- Coramber (commercial name)

#### History:
- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

#### Implementation dates:
- **For new creation:** March 30, 2024
- **For existing creation:** October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION: RESTRICTION

#### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.071 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.4 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>2.7 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.7 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.6 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>9.3 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.11 %</td>
</tr>
</tbody>
</table>
1-(2-tert.-Butyl cyclohexyloxy)-2-butanol

| Category 6 | 0.75 % | Category 12 | No restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol in the various product categories.

**REFERENCES:**
The IFRA Standard on 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-(2-tert.-Butyl cyclohexyloxy)-2-butanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3,6,7-Trimethyl-2,6-octadienal

**CAS-No.:** 1891-67-4
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
3,6,7-Trimethyl-2,6-octadienal
2,6-Octadienal, 3,6,7-trimethyl-

**History:**
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

**Implementation dates:**
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.011 %</td>
</tr>
<tr>
<td>2</td>
<td>0.032 %</td>
</tr>
<tr>
<td>3</td>
<td>0.023 %</td>
</tr>
<tr>
<td>4</td>
<td>0.60 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.15 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.034 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.069 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.011 %</td>
</tr>
<tr>
<td>6</td>
<td>0.011 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.011 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.011 %</td>
</tr>
<tr>
<td>8</td>
<td>0.011 %</td>
</tr>
<tr>
<td>9</td>
<td>0.24 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.011 %</td>
</tr>
<tr>
<td>10B</td>
<td>2.4 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.011 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.011 %</td>
</tr>
<tr>
<td>12</td>
<td>80 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
3,6,7-Trimethyl-2,6-octadienal

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,6,7-Trimethyl-2,6-octadienal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3,6,7-Trimethyl-2,6-octadienal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,6,7-Trimethyl-2,6-octadienal in the various product categories.

REFERENCES:

The IFRA Standard on 3,6,7-Trimethyl-2,6-octadienal is based on at least one of the following publications:

• The RIFM Safety Assessment on 3,6,7-Trimethyl-2,6-octadienal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


3,6,7-Trimethyl-2,6-octadienal

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
2,4,4,7-Tetramethyl-6-octen-3-one

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>74338-72-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>2,4,4,7-Tetramethyl-6-octen-3-one Claritone (commercial name)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date: 2023 (Amendment 51)</th>
<th>Previous Publications: Not applicable</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>Implementation dates:</th>
<th>For new creation*: March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*: October 30, 2025</td>
<td></td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
### 2,4,4,7-Tetramethyl-6-octen-3-one

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,4,4,7-Tetramethyl-6-octen-3-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2,4,4,7-Tetramethyl-6-octen-3-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,4,4,7-Tetramethyl-6-octen-3-one in the various product categories.

**REFERENCES:**

The IFRA Standard on 2,4,4,7-Tetramethyl-6-octen-3-one is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,4,4,7-Tetramethyl-6-octen-3-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2023 (Amendment 51)
2,4,4,7-Tetramethyl-6-octen-3-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**2-Cyclohexylidene-2-ortho-tolylacetonitrile**

**CAS-No.:** 916887-53-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Cyclohexylidene-2-ortho-tolylacetonitrile
- 2-Cyclohexylidene-2-o-tolylacetonitrile
- Benzeneacetonitrile, alpha-cyclohexylidene-2-methyl-
- Benzeneacetonitrile, α-cyclohexylidene-2-methyl-
- Petalia (commercial name)

**History:**

<table>
<thead>
<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For existing creation*:</td>
<td>October 30, 2025</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.066 %</td>
<td>7A</td>
<td>0.99 %</td>
</tr>
<tr>
<td>2</td>
<td>0.027 %</td>
<td>7B</td>
<td>0.99 %</td>
</tr>
<tr>
<td>3</td>
<td>0.33 %</td>
<td>8</td>
<td>0.043 %</td>
</tr>
<tr>
<td>4</td>
<td>0.52 %</td>
<td>9</td>
<td>1.0 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.13 %</td>
<td>10A</td>
<td>0.066 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.13 %</td>
<td>10B</td>
<td>3.6 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.13 %</td>
<td>11A</td>
<td>0.043 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.043 %</td>
<td>11B</td>
<td>0.043 %</td>
</tr>
<tr>
<td>6</td>
<td>0.066 %</td>
<td>12</td>
<td>66 %</td>
</tr>
</tbody>
</table>
2-Cyclohexylidene-2-ortho-tolylacetonitrile

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Cyclohexylidene-2-ortho-tolylacetonitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Cyclohexylidene-2-ortho-tolylacetonitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Cyclohexylidene-2-ortho-tolylacetonitrile in the various product categories.

**REFERENCES:**
The IFRA Standard on 2-Cyclohexylidene-2-ortho-tolylacetonitrile is based on at least one of the following publications:


2-Cyclohexylidene-2-ortho-tolylacetonitrile


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 51

Ethyl and Methyl furaneol

**CAS-No.:**
- 27538-09-6
- 27538-10-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2-Ethyl-4-hydroxy-5-methylfuran-3-one
- Ethyl furaneol
- Methyl furaneol
- 2-Ethyl-4-hydroxy-5-methyl-3(2H)-furanone
- 3(2H)-Furanone, 5-ethyl-4-hydroxy-2-methyl-5-Ethyl-4-hydroxy-2-methyl-3(2H)-furanone
- 5-Ethyl-4-hydroxy-2-methylfuran-3(2H)-one
- 2-Ethyl-4-hydroxy-5-methylfuran-3(2H)-one
- 3(2H)-Furanone, 2-ethyl-4-hydroxy-5-methyl-Homofuraneol
- Maltarome (commercial name)
- Homofuronol (commercial name)

**History:**

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Implementation dates:**

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1: 0.045 %</td>
</tr>
<tr>
<td>Category 2: 0.014 %</td>
</tr>
<tr>
<td>Category 3: 0.27 %</td>
</tr>
<tr>
<td>Category 4: 0.25 %</td>
</tr>
<tr>
<td>Category 5A: 0.064 %</td>
</tr>
<tr>
<td>Category 5B: 0.064 %</td>
</tr>
</tbody>
</table>
Ethyl and Methyl furaneol

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.021 %</td>
</tr>
<tr>
<td>6</td>
<td>0.15 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.021 %</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Ethyl and Methyl furaneol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Ethyl and Methyl furaneol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Ethyl and Methyl furaneol in the various product categories.

**REFERENCES:**

The IFRA Standard on Ethyl and Methyl furaneol is based on at least one of the following publications:

- The RIFM Safety Assessment on Ethyl and Methyl furaneol if available at the RIFM Fragrance Material

2023 (Amendment 51)
Ethyl and Methyl furaneol

Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## 2-Hexyldienecyclohexan-1-one

### CAS-No.: 16429-07-5
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms: 2-Hexyldienecyclohexan-1-one  
2-Hexyldienecyclohexanone  
Cyclohexanone, 2-hexylidene-

### History:  
| Publication date: | 2023 (Amendment 51) | Previous Publications: | Not applicable |

### Implementation dates:  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION: RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):  

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.023 %</td>
<td>Category 7A</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0069 %</td>
<td>Category 7B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.14 %</td>
<td>Category 8</td>
<td>0.014 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.13 %</td>
<td>Category 9</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.033 %</td>
<td>Category 10A</td>
<td>0.90 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.033 %</td>
<td>Category 10B</td>
<td>0.90 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.033 %</td>
<td>Category 11A</td>
<td>0.50 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.033 %</td>
<td>Category 11B</td>
<td>0.50 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.076 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

### FLAVOR REQUIREMENTS:  
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in

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2023 (Amendment 51)
2-Hexylidenecyclohexan-1-one

| Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards. |

| CONTRIBUTIONS FROM OTHER SOURCES: | NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS) |

| INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: | DERMAL SENSITIZATION |

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Hexylidenecyclohexan-1-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Hexylidenecyclohexan-1-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Hexylidenecyclohexan-1-one in the various product categories.

REFERENCES:

The IFRA Standard on 2-Hexylidenecyclohexan-1-one is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Hexylidenecyclohexan-1-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2-Hexylidenecyclohexan-1-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 2-Methyl-2-pentenal

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>623-36-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>2-Methyl-2-pentenal 2-Methylpent-2-enal 2-Pentenal, 2-methyl-2,4-Dimethylcrotonaldehyde α-Methyl-β-ethyacrolein alpha-Methyl-beta-ethyacrolein</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
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<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>March 30, 2024</th>
<th>For existing creation*:</th>
<th>October 30, 2025</th>
</tr>
</thead>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION: RESTRICTION

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0014 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.00041 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0083 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.0077 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.0020 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0020 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.0020 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.00067 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.0045 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.016 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.016 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.00067 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.015 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.054 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.00067 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.00067 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>
2-Methyl-2-pentenal

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Methyl-2-pentenal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 2-Methyl-2-pentenal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Methyl-2-pentenal in the various product categories.

**REFERENCES:**

The IFRA Standard on 2-Methyl-2-pentenal is based on at least one of the following publications:

- The RIFM Safety Assessment on 2-Methyl-2-pentenal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


<table>
<thead>
<tr>
<th><strong>2-Methyl-2-pentenal</strong></th>
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</thead>
</table>


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 51

2-Octen-4-one

CAS-No.: 4643-27-0
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 2-Octen-4-one
Butyl propenyl ketone
Oct-2-en-4-one
Propenyl butyl ketone
Strawbinone (commercial name)

History: Publication date: 2023 (Amendment 51) Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0085 %</td>
<td>7A</td>
<td>0.096 %</td>
</tr>
<tr>
<td>2</td>
<td>0.0025 %</td>
<td>7B</td>
<td>0.096 %</td>
</tr>
<tr>
<td>3</td>
<td>0.051 %</td>
<td>8</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>4</td>
<td>0.047 %</td>
<td>9</td>
<td>0.092 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.012 %</td>
<td>10A</td>
<td>0.33 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.012 %</td>
<td>10B</td>
<td>0.33 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.012 %</td>
<td>11A</td>
<td>0.18 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.012 %</td>
<td>11B</td>
<td>0.18 %</td>
</tr>
<tr>
<td>6</td>
<td>0.028 %</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>
2-Octen-4-one

FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2-Octen-4-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 2-Octen-4-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2-Octen-4-one in the various product categories.

REFERENCES:
The IFRA Standard on 2-Octen-4-one is based on at least one of the following publications:

• The RIFM Safety Assessment on 2-Octen-4-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

2-Octen-4-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Methyl lavender ketone

### CAS-No.

<table>
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<th>Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>67801-33-6</td>
<td></td>
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<tr>
<td>67633-95-8</td>
<td></td>
</tr>
</tbody>
</table>

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:

- Methyl lavender ketone
- 2-Nonanone, 3-(hydroxymethyl)-
- 3-(Hydroxymethyl)nonan-2-one
- Herbal ketone
- 2-Acetyl-1-octanol
- 1-Hydroxydecan-3-one
- 3-Decanone, 1-hydroxy
- 1-Hydroxy-3-decanone
- Ethyl hydroxyheptyl ketone

### History:

- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

### Implementation dates:

- **For new creation:** March 30, 2024
- **For existing creation:** October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.015 %</td>
</tr>
<tr>
<td>2</td>
<td>0.0044 %</td>
</tr>
<tr>
<td>3</td>
<td>0.088 %</td>
</tr>
<tr>
<td>4</td>
<td>0.082 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.021 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.021 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.17 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.17 %</td>
</tr>
<tr>
<td>7C</td>
<td>0.17 %</td>
</tr>
<tr>
<td>8</td>
<td>0.0086 %</td>
</tr>
<tr>
<td>9</td>
<td>0.16 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.57 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.57 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.32 %</td>
</tr>
</tbody>
</table>
## Methyl lavender ketone

<table>
<thead>
<tr>
<th>Category</th>
<th>0.021 %</th>
<th>Category</th>
<th>0.32 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5D</td>
<td></td>
<td>Category 11B</td>
<td></td>
</tr>
<tr>
<td>Category 6</td>
<td>0.048 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK

**DERMAL SENSITIZATION**

### RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl lavender ketone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Methyl lavender ketone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl lavender ketone in the various product categories.

### REFERENCES:
The IFRA Standard on Methyl lavender ketone is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl lavender ketone if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Methyl lavender ketone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3,4,5,6,6-Pentamethylhept-3-en-2-one

CAS-No.: 81786-74-5
81786-73-4
86115-11-9
81786-75-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
3,4,5,6,6-Pentamethylhept-3-en-2-one
2-Heptanone, 3,5,6,6-tetramethyl-4-methylene-
3,5,6,6-Tetramethyl-4-methyleneheptan-2-one
3,5,6,6-Tetramethyl-4-methylidenheptan-2-one
(Z)-3,4,5,6,6-Pentamethylhept-3-en-2-one
3-Hepten-2-one, 3,4,5,6,6-pentamethyl-, (Z)-
3-Hepten-2-one, 3,4,5,6,6-pentamethyl-
(E)-3,4,5,6-Pentamethylhept-3-en-2-one
3-Hepten-2-one, 3,4,5,6-pentamethyl-, (E)-
Koavone (commercial name)
Acetyl Diisoamylene (commercial name)

History:
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.0095 %</th>
<th>Category 7A</th>
<th>0.086 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.10 %</td>
<td>Category 7B</td>
<td>0.086 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.019 %</td>
<td>Category 8</td>
<td>0.0032 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.9 %</td>
<td>Category 9</td>
<td>0.39 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.26 %</td>
<td>Category 10A</td>
<td>0.39 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.029 %</td>
<td>Category 10B</td>
<td>2.6 %</td>
</tr>
</tbody>
</table>
3,4,5,6,6-Pentamethylhept-3-en-2-one

<table>
<thead>
<tr>
<th>Category</th>
<th>% Conc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.0095%</td>
</tr>
<tr>
<td>5D</td>
<td>0.0032%</td>
</tr>
<tr>
<td>6</td>
<td>0.0095%</td>
</tr>
<tr>
<td>11A</td>
<td>0.0032%</td>
</tr>
<tr>
<td>11B</td>
<td>0.0032%</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3,4,5,6,6-Pentamethylhept-3-en-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 3,4,5,6,6-Pentamethylhept-3-en-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3,4,5,6,6-Pentamethylhept-3-en-2-one in the various product categories.

**REFERENCES:**
The IFRA Standard on 3,4,5,6,6-Pentamethylhept-3-en-2-one is based on at least one of the following publications:
3,4,5,6,6-Pentamethylhept-3-en-2-one

- The RIFM Safety Assessment on 3,4,5,6,6-Pentamethylhept-3-en-2-one if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3-Methyl-5-phenylpent-2-enenitrile

CAS-No.: 53243-60-0
53243-59-7
93893-89-1

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
3-Methyl-5-phenylpent-2-enenitrile
2-Pentenenitrile, 3-methyl-5-phenyl- (isomer unspecified)
(Z)-3-Methyl-5-phenylpent-2-enenitrile
2-Pentenenitrile, 3-methyl-5-phenyl-, (Z)-
(E)-3-Methyl-5-phenylpent-2-enenitrile
2-Pentenenitrile, 3-methyl-5-phenyl-, (E)-
Citronitrile (commercial name)

History:
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.021 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0062 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.029 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.029 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.029 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0097 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0097 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.81 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.81 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.0097 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.0097 %</td>
</tr>
</tbody>
</table>
3-Methyl-5-phenylpent-2-enenitrile

| Category 6 | 0.065 % | Category 12 | 65 % |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Methyl-5-phenylpent-2-enenitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 3-Methyl-5-phenylpent-2-enenitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Methyl-5-phenylpent-2-enenitrile in the various product categories.

**REFERENCES:**
The IFRA Standard on 3-Methyl-5-phenylpent-2-enenitrile is based on at least one of the following publications:

- The RIFM Safety Assessment on 3-Methyl-5-phenylpent-2-enenitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
3-Methyl-5-phenylpent-2-enenitrile


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3-Octen-2-one

CAS-No.: 1669-44-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 3-Octen-2-one
Oct-3-en-2-one
Methyl hexenyl ketone
1-Hexenyl methyl ketone

History: Publication date: 2023 (Amendment 51) Previous Publications: Not applicable

Implementation dates: For new creation*: March 30, 2024 For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0085 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0025 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.051 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.047 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.012 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.028 %</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of
### 3-Octen-2-one

<table>
<thead>
<tr>
<th>CONTRIBUTIONS FROM OTHER SOURCES:</th>
<th>NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)</th>
</tr>
</thead>
</table>

**INTRINSIC PROPERTY DRIVING RISK: DERMAL SENSITIZATION**

#### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 3-Octen-2-one, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 3-Octen-2-one and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 3-Octen-2-one in the various product categories.

#### REFERENCES:

The IFRA Standard on 3-Octen-2-one is based on at least one of the following publications:

- The RIFM Safety Assessment on 3-Octen-2-one if available at the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/)


3-Octen-2-one


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Dimethyl octenone

**CAS-No.:** 2550-11-0  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Dimethyl octenone  
4,7-Dimethyloct-6-en-3-one  
6-Octen-3-one, 4,7-dimethyl-

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
<th>Previous Publications:</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

**Implementation dates:**  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:  
**RESTRICTION**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
</tr>
<tr>
<td>Category 2</td>
</tr>
<tr>
<td>Category 3</td>
</tr>
<tr>
<td>Category 4</td>
</tr>
<tr>
<td>Category 5A</td>
</tr>
<tr>
<td>Category 5B</td>
</tr>
<tr>
<td>Category 5C</td>
</tr>
<tr>
<td>Category 5D</td>
</tr>
<tr>
<td>Category 6</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in...
Dimethyl octenone

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Dimethyl octenone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Dimethyl octenone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Dimethyl octenone in the various product categories.

REFERENCES:
The IFRA Standard on Dimethyl octenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Dimethyl octenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Dimethyl octenone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Isopentylcyclohexanone

**CAS-No.:** 16587-71-6  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Isopentylcyclohexanone  
- 4-(1,1-Dimethylpropyl)cyclohexanone  
- 4-t-Amylcyclohexanone  
- 4-tert-Pentylcyclohexanone  
- Cyclohexanone, 4-(1,1-dimethylpropyl)-  
- p-tert Amyl cyclohexanone  
- Orris hexanone  
- 4-(2-Methylbutan-2-yl)cyclohexan-1-one  
- Orivone (commercial name)

**History:**  
- **Publication date:** 2023 (Amendment 51)  
- **Previous Publications:** Not applicable

**Implementation dates:**  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
- RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0080 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.29 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.013 %</td>
</tr>
</tbody>
</table>
**Isopentylcyclohexanone**

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.013 %</th>
<th>Category 11B</th>
<th>0.013 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.061 %</td>
<td>Category 12</td>
<td>61 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isopentylcyclohexanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Isopentylcyclohexanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isopentylcyclohexanone in the various product categories.

**REFERENCES:**
The IFRA Standard on Isopentylcyclohexanone is based on at least one of the following publications:

- The RIFM Safety Assessment on Isopentylcyclohexanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
Isopentylcyclohexanone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Woody furan

**CAS-No.:**
351343-77-6
338735-71-0
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
Woody furan
2,6,6,7,8,8-hexamethyldecahydro-2H-indeno[4,5-b]furan
Decahydro-2,6,6,7,8,8-hexamethyl-2H-indeno[4,5-b]furan
8H-Indeno(4,5-B)furan,2,3,3a,4,5,5a,6,7,8a,9-decahydro-2,6,6,7,8,8-hexamethyl (mixture of isomers)
1H-Indene, 2,3,3a,4,5,7a-hexahydro-1,1,2,3,3-pentamethyl-6-(2-propenyl)-Trisamber (commercial name)
Tris amber super (commercial name)

**History:**
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

**Implementation dates:**
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.17 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.050 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.94 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.24 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.080 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>1.9 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.080 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>4.1 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>6.6 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.080 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.080 %</td>
</tr>
</tbody>
</table>
### Woody furan

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.56 %</th>
<th>Category 12</th>
<th>No restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
None to consider beyond traces (see also the section on contributions from other sources in chapter 1 of the guidance for the use of IFRA Standards)

**INTRINSIC PROPERTY DRIVING RISK:**
Dermal sensitization and systemic toxicity

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Woody furan, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Woody furan and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Woody furan in the various product categories.

**REFERENCES:**
The IFRA Standard on Woody furan is based on at least one of the following publications:

- The RIFM Safety Assessment on Woody furan if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/
Woody furan


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Amendment 51

**Allyl 3-cyclohexylpropionate**

**CAS-No.:** 2705-87-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
- Allyl 3-cyclohexylpropionate  
- 2-Propen-1-yl cyclohexanepropionate  
- Allyl 3-cyclohexylpropanoate  
- Allyl beta-cyclohexylpropionate  
- Allyl cyclohexanepropionate  
- Allyl cyclohexylpropionate  
- Allyl hexahydrophenylpropionate  
- Cyclohexanepropionic acid, 2-propenyl ester  
- Prop-2-yl 3-cyclohexylpropanoate  
- Cyclohexylpropionic acid allyl ester

**History:**  
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Implementation dates:**  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION / SPECIFICATION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.085 %</td>
</tr>
<tr>
<td>2</td>
<td>0.025 %</td>
</tr>
<tr>
<td>3</td>
<td>0.35 %</td>
</tr>
<tr>
<td>4</td>
<td>0.47 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.12 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.70 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>8</td>
<td>0.040 %</td>
</tr>
<tr>
<td>9</td>
<td>0.92 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.7 %</td>
</tr>
<tr>
<td>10B</td>
<td>3.3 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.040 %</td>
</tr>
</tbody>
</table>
Amendment 51

Allyl 3-cyclohexylpropionate

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.040 %</th>
<th>Category 11B</th>
<th>0.040 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.28 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FRAGRANCE INGREDIENT SPECIFICATION:**

According to the IFRA Specification Standard of Allyl esters, Allyl esters should only be used when the level of free Allylalcohol in the ester is less than 0.1%. This recommendation is based on the delayed irritant potential of Allylalcohol. Please also refer to the IFRA Specification Standard Allyl esters.

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Allyl 3-cyclohexylpropionate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Allyl 3-cyclohexylpropionate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Allyl 3-cyclohexylpropionate in the various product categories.

2023 (Amendment 51)
In addition, they recommend to use Allyl 3-cyclohexylpropionate according to the specification above mentioned.

REFERENCES:

The IFRA Standard on Allyl 3-cyclohexylpropionate is based on at least one of the following publications:

• The RIFM Safety Assessment on Allyl 3-cyclohexylpropionate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
alpha-Amylcinnamaldehyde diethyl acetal

**CAS-No.:** 60763-41-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
alpha-Amylcinnamaldehyde diethyl acetal  
α-Amylcinnamaldehyde diethyl acetal  
[2-(Diethoxymethyl)hept-1-en-1-yl]benzene  
1,1-Diethoxy-2-amyl-3-phenyl-2-propene  
1,1-Diethoxy-2-amyl-3-phenylacrolein  
2-Diethoxymethyl-1-phenylhept-1-ene  
Benzene, [2-(diethoxymethyl)-1-heptenyl]-  
2-(Diethoxymethyl)hept-1-enylbenzene

**History:**  
Publication date: 2023 (Amendment 51)  
Previous Publications: Not applicable

**Implementation dates:**  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.063 %</td>
</tr>
<tr>
<td>2</td>
<td>0.019 %</td>
</tr>
<tr>
<td>3</td>
<td>0.38 %</td>
</tr>
<tr>
<td>4</td>
<td>0.35 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.089 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.089 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.089 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.089 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.72 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.72 %</td>
</tr>
<tr>
<td>8</td>
<td>0.037 %</td>
</tr>
<tr>
<td>9</td>
<td>0.69 %</td>
</tr>
<tr>
<td>10A</td>
<td>2.5 %</td>
</tr>
<tr>
<td>10B</td>
<td>2.5 %</td>
</tr>
<tr>
<td>11A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>11B</td>
<td>1.4 %</td>
</tr>
</tbody>
</table>
alpha-Amylcinnamicaldehyde diethyl acetal

| Category 6 | 0.21 % | Category 12 | No restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amylcinnamicaldehyde diethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amylcinnamicaldehyde diethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amylcinnamicaldehyde diethyl acetal in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Amylcinnamicaldehyde diethyl acetal is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Amylcinnamicaldehyde diethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
alpha-Amylcnnamicaldehyde diethyl acetal


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
alpha-Amylcinnamaldehyde dimethyl acetal

**CAS-No.:** 91-87-2
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- alpha-Amylcinnamaldehyde dimethyl acetal
- α-Amylcinnamaldehyde dimethyl acetal
- alpha-Amylcinnamaldehyde dimethyl acetal
- β-Amylcinnamaldehyde dimethyl acetal
- [2-(Dimethoxymethyl)hept-1-en-1-yl]benzene
- 1,1-Dimethoxy-2-amyl-3-phenyl-2-propene
- 1,1-Dimethoxy-2-benzylideneheptane
- alpha-Amyl-beta-phenylacrolein dimethyl acetal
- α-Amyl-β-phenylacrolein dimethyl acetal
- alpha-Pentylcinnamaldehyde dimethyl acetal
- α-Pentylcinnamaldehyde dimethyl acetal
- Benzene, [2-(dimethoxymethyl)-1-heptenyl]-
- [2-(Dimethoxymethyl)-1-heptenyl]benzene

**History:**
- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.063 %</th>
<th>Category 7A</th>
<th>0.72 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.019 %</td>
<td>Category 7B</td>
<td>0.72 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.38 %</td>
<td>Category 8</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.35 %</td>
<td>Category 9</td>
<td>0.69 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.089 %</td>
<td>Category 10A</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.089 %</td>
<td>Category 10B</td>
<td>2.5 %</td>
</tr>
</tbody>
</table>
alpha-Amylcinnamaldehyde dimethyl acetal

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C</td>
<td>0.089 %</td>
<td>11A</td>
<td>1.4 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.089 %</td>
<td>11B</td>
<td>1.4 %</td>
</tr>
<tr>
<td>6</td>
<td>0.21 %</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Amylcinnamaldehyde dimethyl acetal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Amylcinnamaldehyde dimethyl acetal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Amylcinnamaldehyde dimethyl acetal in the various product categories.

**REFERENCES:**
The IFRA Standard on alpha-Amylcinnamaldehyde dimethyl acetal is based on at least one of the following publications:
• The RIFM Safety Assessment on alpha-Amylcinnamaldehyde dimethyl acetal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# alpha-Cyclohexylidene benzeneacetonitrile

## CAS-No.: 10461-98-0
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

## Synonyms:
- alpha-Cyclohexylidene benzeneacetonitrile
- α-Cyclohexylidene benzeneacetonitrile
- δ.1.,α.-Cyclohexaneacetonitrile, α.-phenyl-2-Cyclohexylidene-2-phenylacetonitrile
- Benzeneacetonitrile, alpha-cyclohexylidene-
- Benzeneacetonitrile, α-cyclohexylidene-
- Peonile (commercial name)
- Rosinile (commercial name)
- Sensinile (commercial name)

## History:
- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

## Implementation dates:
- **For new creation:** March 30, 2024
- **For existing creation:** October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:
- RESTRICTION

## MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.052 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.47 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.52 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.94 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.94 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.043 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.6 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.043 %</td>
</tr>
</tbody>
</table>
alpha-Cyclohexylidene benzeneacetonitrile

<table>
<thead>
<tr>
<th>Category</th>
<th>0.043 %</th>
<th>Category</th>
<th>0.043 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.052 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for alpha-Cyclohexylidene benzeneacetonitrile, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for alpha-Cyclohexylidene benzeneacetonitrile and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of alpha-Cyclohexylidene benzeneacetonitrile in the various product categories.

**REFERENCES:**

The IFRA Standard on alpha-Cyclohexylidene benzeneacetonitrile is based on at least one of the following publications:

- The RIFM Safety Assessment on alpha-Cyclohexylidene benzeneacetonitrile if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
alpha-Cyclohexylidene benzeneacetonitrile


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 5-Hexen-1-yl 2-methylbutanoate

**CAS-No.:** 155514-23-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
5-Hexen-1-yl 2-methylbutanoate  
Hex-5-en-1-yl 2-methylbutanoate  
Butanoic acid, 2-methyl-, 5-hexen-1-yl ester  
Fructose (commercial name)

**History:**  
| Publication date: | 2023 (Amendment 51) | Previous Publications: | Not applicable |

**Implementation dates:**  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

#### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.034 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.69 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.64 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.38 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.068 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>2.5 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>2.5 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of...
### 5-Hexen-1-yl 2-methylbutanoate

<table>
<thead>
<tr>
<th>CONCENTRATION LIMITS</th>
<th>0.1%</th>
</tr>
</thead>
</table>

**Amendment 51**

**2023 (Amendment 51)**

**IFRA STANDARD**

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 5-Hexen-1-yl 2-methylbutanoate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for 5-Hexen-1-yl 2-methylbutanoate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 5-Hexen-1-yl 2-methylbutanoate in the various product categories.

**REFERENCES:**

The IFRA Standard on 5-Hexen-1-yl 2-methylbutanoate is based on at least one of the following publications:

- The RIFM Safety Assessment on 5-Hexen-1-yl 2-methylbutanoate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

5-Hexen-1-yl 2-methylbutanoate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Carvyl acetate**

**CAS-No.:**
- 97-42-7
- 1205-42-1
- 1134-95-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- Carvyl acetate
- 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate
- 5-Isopropenyl-2-methylcyclohex-2-en-1-yl acetate
- p-Mentha-6,8-dien-2-yl acetate
- p-Mentha-6,8-dien-2-ol, acetate
- 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate, cis-
- 5-Isopropenyl-2-methylcyclohex-2-en-1-yl acetate, cis-
- p-Mentha-6,8-dien-2-ol, acetate, cis-
- l-1-p-Mentha-6,8(9)-dien-2-yl acetate
- cis-Carvyl acetate
- laevo-Carvyl acetate
- 1-Carvyl acetate
- cis-2-Methyl-5-(1-methylvinyl)cyclohex-2-en-1-yl acetate
- 2-Cyclohexen-1-ol, 2-methyl-5-(1-methylethenyl)-, acetate, trans-
- 5-Isopropenyl-2-methyl-2-cyclohexen-1-yl acetate, trans-
- p-Mentha-6,8-dien-2-ol, acetate, trans-
- trans-Carvyl acetate
- (E)-Carvyl acetate
- Carvyl acetate E

**History:**

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<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Implementation dates:**

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.042 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.48 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.48 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.025 %</td>
</tr>
</tbody>
</table>
Carvyl acetate

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.24%</td>
</tr>
<tr>
<td>5A</td>
<td>0.060%</td>
</tr>
<tr>
<td>5B</td>
<td>0.060%</td>
</tr>
<tr>
<td>5C</td>
<td>0.060%</td>
</tr>
<tr>
<td>5D</td>
<td>0.060%</td>
</tr>
<tr>
<td>6</td>
<td>0.14%</td>
</tr>
<tr>
<td>9</td>
<td>0.46%</td>
</tr>
<tr>
<td>10A</td>
<td>1.7%</td>
</tr>
<tr>
<td>10B</td>
<td>1.7%</td>
</tr>
<tr>
<td>11A</td>
<td>0.92%</td>
</tr>
<tr>
<td>11B</td>
<td>0.92%</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

**INTRINSIC PROPERTY DRIVING RISK**
- Dermal sensitization

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Carvyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvyl acetate in the various product categories.

**REFERENCES:**
Carvyl acetate

The IFRA Standard on Carvyl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on Carvyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
cis-3-Heptenyl acetate

**CAS-No.:** 1576-78-9

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- cis-3-Heptenyl acetate
- (Z)-Hept-3-enyl acetate
- 3-Hepten-1-ol, acetate, (Z)-Hept-3-en-1-yl acetate
- 3-Hepten-1-yl acetate
- (Z)-3-hepten-1-yl acetate
- Violana (commercial name)

**History:**

**Publication date:** 2023 (Amendment 51)

**Previous Publications:** Not applicable

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:** RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>
### cis-3-Heptenyl acetate

#### FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

#### CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

#### INTRINSIC PROPERTY DRIVING RISK
| MANAGEMENT | DERMAL SENSITIZATION AND SYSTEMIC TOXICITY |

#### RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Heptenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

#### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Heptenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Heptenyl acetate in the various product categories.

#### REFERENCES:
The IFRA Standard on cis-3-Heptenyl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on cis-3-Heptenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

cis-3-Heptenyl acetate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
cis-3-Hexenyl isovalerate

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>35154-45-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

| Synonyms: | cis-3-Hexenyl isovalerate  
(Z)-Hex-3-enyl isovalerate  
Hex-3-en-1-yl 3-methylbutanoate  
Isovaleric acid, 3-hexenyl ester, (z)-  
(Z)-3-Hexen-1-yl isovalerate |

| History: | Publication date: 2023 (Amendment 51)  
Previous Publications: Not applicable |

| Implementation dates: | For new creation*: March 30, 2024  
For existing creation*: October 30, 2025 |

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.|

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.077 %</th>
<th>Category 7A</th>
<th>0.88 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
<td>Category 8</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
<td>Category 10A</td>
<td>1.8 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
<td>Category 11A</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.037 %</td>
<td>Category 11B</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>
cis-3-Hexenyl isovalerate

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Hexenyl isovalerate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Hexenyl isovalerate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Hexenyl isovalerate in the various product categories.

**REFERENCES:**
The IFRA Standard on cis-3-Hexenyl isovalerate is based on at least one of the following publications:

- The RIFM Safety Assessment on cis-3-Hexenyl isovalerate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


cis-3-Hexenyl isovalerate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**cis-3-Hexenyl methyl carbonate**

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>67633-96-9</th>
</tr>
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<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>cis-3-Hexenyl methyl carbonate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonic acid, 3-hexenyl methyl ester, (Z)-</td>
<td></td>
</tr>
<tr>
<td>cis-3-Hexenyl carbonate</td>
<td></td>
</tr>
<tr>
<td>cis-3-Hexenyl methyl carbonate</td>
<td></td>
</tr>
<tr>
<td>Hex-3-en-1-yl methyl carbonate</td>
<td></td>
</tr>
<tr>
<td>Methyl cis-3-hexenyl carbonate (Z)-3-Hexen-1-yl methyl carbonate</td>
<td></td>
</tr>
<tr>
<td>Liffarome (commercial name)</td>
<td></td>
</tr>
<tr>
<td>Leafovert (commercial name)</td>
<td></td>
</tr>
<tr>
<td>Vertelione (commercial name)</td>
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</tbody>
</table>

**History:**

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<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
</tr>
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<tbody>
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<td>Previous Publications:</td>
<td>Not applicable</td>
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**Implementation dates:**

<table>
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<tr>
<th>For new creation*:</th>
<th>March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>October 30, 2025</td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>Category 1</th>
<th>0.10 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 7A</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.030 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.60 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.047 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.56 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.9 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.9 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.14 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.047 %</td>
</tr>
</tbody>
</table>
cis-3-Hexenyl methyl carbonate

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.047 %</th>
<th>Category 11B</th>
<th>0.047 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.33 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Hexenyl methyl carbonate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Hexenyl methyl carbonate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Hexenyl methyl carbonate in the various product categories.

**REFERENCES:**
The IFRA Standard on cis-3-Hexenyl methyl carbonate is based on at least one of the following publications:

- The RIFM Safety Assessment on cis-3-Hexenyl methyl carbonate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com
cis-3-Hexenyl methyl carbonate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
cis-3-Nonenyl acetate

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>13049-88-2</th>
<th>Synonyms:</th>
<th>cis-3-Nonenyl acetate (Z)-3-Nonenyl acetate 3-Nonen-1-ol, acetate, (3Z)-(Z)-3-Nonen-1-yl acetate Acetic acid 3-nonenyl ester Pear acetate (commercial name)</th>
</tr>
</thead>
</table>

**Synonyms:**
- cis-3-Nonenyl acetate
- (Z)-3-Nonenyl acetate
- 3-Nonen-1-ol, acetate, (3Z)-(Z)-3-Nonen-1-yl acetate
- Acetic acid 3-nonenyl ester
- Pear acetate (commercial name)

**History:**
- Publication date: 2023 (Amendment 51)
- Previous Publications: Not applicable

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**
- RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>% Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.077 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.037 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

2023 (Amendment 51)
**cis-3-Nonenyl acetate**

### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the Use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY MANAGEMENT:

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>DRIVING RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</td>
<td></td>
</tr>
</tbody>
</table>

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for cis-3-Nonenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for cis-3-Nonenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of cis-3-Nonenyl acetate in the various product categories.

### REFERENCES:

The IFRA Standard on cis-3-Nonenyl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on cis-3-Nonenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Amendment 51

cis-3-Nonenyl acetate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## Citronellyl acetate

**CAS-No.:**

<table>
<thead>
<tr>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>150-84-5</td>
</tr>
<tr>
<td>67601-05-2</td>
</tr>
<tr>
<td>141-11-7</td>
</tr>
</tbody>
</table>

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:

- Citronelly acetate
- 3,7-Dimethyl-6-octen-1-ol acetate
- 3,7-Dimethyl-6-octen-1-yl acetate
- 3,7-Dimethyloct-6-en-1-yl acetate
- 6-Octen-1-ol, 3,7-dimethyl-, acetate
- Acetic acid, citronellyl ester
- l-aero-Citronellyl acetate
- 3,7-Dimethyloct-6-enyl acetate
- 6-Octen-1-ol, 3,7-dimethyl-, 1-acetate (3S)-
- 6-Octen-1-ol, 3,7-dimethyl-, acetate (S)-
- (S)-3,7-Dimethyloct-6-en-1-yl acetate
- (S)-3,7-Dimethyloct-6-enyl acetate
- alpha-Citronelly acetate
- 3,7-Dimethyl-(6-or 7-)octen-1-yl acetate
- 3,7-Dimethyl-(6-or 7-)octen-1-yl ethanoate
- 3,7-Dimethyloct-7-en-1-yl acetate
- 7-Octen-1-ol, 3,7-dimethyl-, acetate
- 3,7-Dimethyl-7-octen-1-yl acetate
- 3,7-Dimethyl-7-octen-1-yl ethanoate
- (S)-3,7-Dimethyloct-7-enyl acetate
- Rhodinyl acetate
- Rhodinyl ethanoate
- L-Citronellyl acetate (commercial name)

### History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Implementation dates:

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### Recommendation:

**RESTRICTION**

### Maximum Acceptable Concentrations in the Finished Product (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.49 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>2.4 %</td>
</tr>
</tbody>
</table>
# Citronellyl acetate

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 2</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>2.0 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>2.7 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.70 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.70 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.70 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.82 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>5.4 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.41 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>16 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.23 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

## FLAVOR REQUIREMENTS:
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

## CONTRIBUTIONS FROM OTHER SOURCES:
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

## INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

## RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Citronellyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: [http://fragrancematerialsafetyresource.elsevier.com/](http://fragrancematerialsafetyresource.elsevier.com/).

## EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for Citronellyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Citronellyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on Citronellyl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on Citronellyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Cyclohexadecanone**

**CAS-No.:** 2550-52-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** Cyclohexadecanone  
Homoexaltone  
Isomuscone (commercial name)

**History:**  
- **Publication date:** 2023 (Amendment 51)  
- **Previous Publications:** Not applicable

**Implementation dates:**  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025  
  
  *These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.25 %</td>
</tr>
<tr>
<td>2</td>
<td>0.23 %</td>
</tr>
<tr>
<td>3</td>
<td>4.4 %</td>
</tr>
<tr>
<td>4</td>
<td>4.3 %</td>
</tr>
<tr>
<td>5A</td>
<td>1.1 %</td>
</tr>
<tr>
<td>5B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>5C</td>
<td>1.1 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.37 %</td>
</tr>
<tr>
<td>6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>7A</td>
<td>7.4 %</td>
</tr>
<tr>
<td>7B</td>
<td>7.4 %</td>
</tr>
<tr>
<td>8</td>
<td>0.37 %</td>
</tr>
<tr>
<td>9</td>
<td>8.4 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.98 %</td>
</tr>
<tr>
<td>10B</td>
<td>13 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.37 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.37 %</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in
Cyclohexadecanone

Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES: NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT: DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexadecanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexadecanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexadecanone in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexadecanone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexadecanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2023 (Amendment 51) 2/3
Cyclohexadecanone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Cyclohexadecenone

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>3100-36-5</th>
<th>88642-03-9</th>
<th>5365-06-0</th>
<th>2550-59-6</th>
<th>5120-20-7</th>
<th>854373-71-0</th>
<th>854373-70-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>Cyclohexadecenone</td>
<td>Cyclohexadec-2-en-1-one</td>
<td>Cyclohexadec-8(7)-en-1-one</td>
<td>8-Cyclohexadecen-1-one, (8E)</td>
<td>(Z)-Cyclohexadec-8-enone</td>
<td>7-Cyclohexadecen-1-one</td>
<td>8-Cyclohexadecen-1-one</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>History:</td>
<td>Publication date:</td>
<td>2023 (Amendment 51)</td>
<td>Previous Publications:</td>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation dates:</td>
<td>For new creation*: March 30, 2024</td>
<td>For existing creation*: October 30, 2025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):
Cyclohexadecenone

<table>
<thead>
<tr>
<th>Category</th>
<th>Restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.43 %</td>
</tr>
<tr>
<td>2</td>
<td>0.23 %</td>
</tr>
<tr>
<td>3</td>
<td>2.2 %</td>
</tr>
<tr>
<td>4</td>
<td>4.3 %</td>
</tr>
<tr>
<td>5A</td>
<td>1.1 %</td>
</tr>
<tr>
<td>5B</td>
<td>1.1 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.43 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.14 %</td>
</tr>
<tr>
<td>6</td>
<td>0.43 %</td>
</tr>
<tr>
<td>7A</td>
<td>3.5 %</td>
</tr>
<tr>
<td>7B</td>
<td>3.5 %</td>
</tr>
<tr>
<td>8</td>
<td>0.14 %</td>
</tr>
<tr>
<td>9</td>
<td>8.4 %</td>
</tr>
<tr>
<td>10A</td>
<td>7.3 %</td>
</tr>
<tr>
<td>10B</td>
<td>30 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.14 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.14 %</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Cyclohexadecenone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center:
EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Cyclohexadecenone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Cyclohexadecenone in the various product categories.

REFERENCES:

The IFRA Standard on Cyclohexadecenone is based on at least one of the following publications:

• The RIFM Safety Assessment on Cyclohexadecenone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
## 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol

**CAS-No.:** 60241-53-4  
60241-52-3  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**

1-(2,2,6-Trimethylcyclohexyl)-3-pentanol  
Cyclohexanepropanol, α-ethyl-2,2,6-trimethyl-  
Cyclohexanepropanol, alpha-ethyl-2,2,6-trimethyl-  
alpha-Ethyl-2,2,6-trimethylcyclohexanepropanol  
α-Ethyl-2,2,6-trimethylcyclohexanepropanol  
α.,β.,2,2,6-Pentamethylcyclohexanepropanol  
3-Methyl-4-(2,2,6-trimethylcyclohexyl)butan-2-ol  
4-(2,6,6-Trimethylcyclohexyl)-3-methylbutan-2-ol  
Cyclohexanepropanol, α.,β.,2,2,6-pentamethyl-  
Cyclohexanepropanol, alpha.,beta.,2,2,6-pentamethyl-  
Methyltetrahydroionol  
Iso-methyl tetrahydroionol  
Madranol (commercial name)

### History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Implementation dates:

- **For new creation***: March 30, 2024
- **For existing creation***: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 7A</th>
<th>Category 2</th>
<th>Category 7B</th>
<th>Category 3</th>
<th>Category 8</th>
<th>Category 4</th>
<th>Category 9</th>
<th>Category 5A</th>
<th>Category 10A</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.096 %</td>
<td></td>
<td>0.071 %</td>
<td></td>
<td>1.4 %</td>
<td>1.3 %</td>
<td>0.34 %</td>
<td></td>
<td>2.7 %</td>
<td>2.7 %</td>
</tr>
<tr>
<td></td>
<td>Category 7A</td>
<td></td>
<td>Category 7B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category 8</td>
<td>0.032 %</td>
<td>2.6 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.4 %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1-(2,2,6-Trimethylcyclohexyl)-3-pentanol

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5B</td>
<td>0.34 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.096 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>9.3 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.032 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol in the various product categories.

**REFERENCES:**
The IFRA Standard on 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol is based on at least one of the following publications:

- The RIFM Safety Assessment on 1-(2,2,6-Trimethylcyclohexyl)-3-pentanol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
(Ethoxymethoxy)-cyclododecane

CAS-No.: 58567-11-6
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
(Ethoxymethoxy)-cyclododecane
Cyclododecane, (ethoxymethoxy)-
Formaldehyde cyclododecyl ethyl acetal
Amber decane
Amberwood
2-Cyclododecyl propanol
Amberwood F (commercial name)
Boisambrane forte (commercial name)

History:
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

| Category 1 | 0.27 % | Category 7A | 3.1 % |
| Category 2 | 0.080 % | Category 7B | 3.1 % |
| Category 3 | 1.6 % | Category 8 | 0.13 % |
| Category 4 | 1.5 % | Category 9 | 2.9 % |
| Category 5A | 0.38 % | Category 10A | 11 % |
| Category 5B | 0.38 % | Category 10B | 11 % |
| Category 5C | 0.38 % | Category 11A | 0.13 % |
| Category 5D | 0.13 % | Category 11B | 0.13 % |
**Amendment 51**

### (Ethoxymethoxy)-cyclododecane

<table>
<thead>
<tr>
<th>Category 6</th>
<th>0.49 %</th>
<th>Category 12</th>
<th>No restriction</th>
</tr>
</thead>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for (Ethoxymethoxy)-cyclododecane, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for (Ethoxymethoxy)-cyclododecane and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of (Ethoxymethoxy)-cyclododecane in the various product categories.

**REFERENCES:**

The IFRA Standard on (Ethoxymethoxy)-cyclododecane is based on at least one of the following publications:

- The RIFM Safety Assessment on (Ethoxymethoxy)-cyclododecane if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

(Ethoxymethoxy)-cyclododecane


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
6-Hydroxy-2,6-dimethylheptanal

**CAS-No.:** 62439-42-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 6-Hydroxy-2,6-dimethylheptanal
Heptanal, 6-hydroxy-2,6-dimethyl-

**History:**
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

**Implementation dates:**
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%)</th>
<th>RESTRICTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.22 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.066 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.3 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.2 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.73 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
6-Hydroxy-2,6-dimethylheptanal

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

RIFM SUMMARIES:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 6-Hydroxy-2,6-dimethylheptanal, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:
The Expert Panel for Fragrance Safety reviewed all the available data for 6-Hydroxy-2,6-dimethylheptanal and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 6-Hydroxy-2,6-dimethylheptanal in the various product categories.

REFERENCES:
The IFRA Standard on 6-Hydroxy-2,6-dimethylheptanal is based on at least one of the following publications:

• The RIFM Safety Assessment on 6-Hydroxy-2,6-dimethylheptanal if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2023 (Amendment 51)
6-Hydroxy-2,6-dimethylheptanal

Additiona information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Isobutyl cinnamate**

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>122-67-8</th>
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<tbody>
<tr>
<td>The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Synonyms:</th>
<th>Isobutyl cinnamate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methylpropyl 3-phenylpropenoate</td>
<td></td>
</tr>
<tr>
<td>2-Methylpropyl beta-phenylacrylate</td>
<td></td>
</tr>
<tr>
<td>2-Methylpropyl beta-phenylacrylate</td>
<td></td>
</tr>
<tr>
<td>2-Methylpropyl cinnamate</td>
<td></td>
</tr>
<tr>
<td>2-Propenoic acid, 3-phenyl-, 2-methylpropyl ester</td>
<td></td>
</tr>
<tr>
<td>Isobutyl 3-phenylacrylate</td>
<td></td>
</tr>
<tr>
<td>Isobutyl 3-phenylpropenoate</td>
<td></td>
</tr>
<tr>
<td>Isobutyl beta-phenylacrylate</td>
<td></td>
</tr>
<tr>
<td>Labdanol</td>
<td></td>
</tr>
<tr>
<td>3-Phenylpropenoic acid isobutyl ester</td>
<td></td>
</tr>
<tr>
<td>2-methylpropyl (E)-3-phenylprop-2-enoate</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History:</th>
<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Publications:</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Implementation dates:</th>
<th>For new creation*:</th>
<th>March 30, 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>For existing creation*:</td>
<td>October 30, 2025</td>
<td></td>
</tr>
</tbody>
</table>

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.22%</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.066%</td>
</tr>
<tr>
<td>Category 3</td>
<td>1.3%</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.2%</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.32%</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.32%</td>
</tr>
<tr>
<td>Category 7A</td>
<td>2.5%</td>
</tr>
<tr>
<td>Category 7B</td>
<td>2.5%</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.11%</td>
</tr>
<tr>
<td>Category 9</td>
<td>2.4%</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.55%</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.55%</td>
</tr>
</tbody>
</table>
Amendment 51

IFRA STANDARD

Isobutyl cinnamate

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 5C</td>
<td>0.32 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.73 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isobutyl cinnamate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Isobutyl cinnamate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isobutyl cinnamate in the various product categories.

**REFERENCES:**

The IFRA Standard on Isobutyl cinnamate is based on at least one of the following publications:

- The RIFM Safety Assessment on Isobutyl cinnamate if available at the RIFM Fragrance Material Safety Center.

2023 (Amendment 51)
Isobutyl cinnamate

Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Isoeugenyl acetate

## CAS-No.: 93-29-8

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

### Synonyms:
- Isoeugenyl acetate
- 2-Methoxy-4-prop-1-en-1-ylphenyl acetate
- 2-Methoxy-4-propenylphenyl acetate
- 4-Acetoxy-3-methoxy-1-(1-propen-1-yl)benzene
- Acetisoegenol
- Acetyl isoeugenol
- Isoeugenol acetate
- Phenol, 2-methoxy-4-(1-propenyl)-, acetate
- 1-Acetoxy-2-methoxy-4-(1-propenyl)benzene
- Acetic acid isoeugenyl ester

## History:

<table>
<thead>
<tr>
<th>Publication date:</th>
<th>Previous Publications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 (Amendment 51)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Implementation dates:

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.18 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.053 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.99 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.082 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.020 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.20 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.061 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.45 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.020 %</td>
</tr>
</tbody>
</table>
Isoeugenyl acetate

<table>
<thead>
<tr>
<th>Category 5D</th>
<th>0.020 %</th>
<th>Category 11B</th>
<th>0.020 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 6</td>
<td>0.020 %</td>
<td>Category 12</td>
<td>16 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Isoeugenyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Isoeugenyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Isoeugenyl acetate in the various product categories.

**REFERENCES:**
The IFRA Standard on Isoeugenyl acetate is based on at least one of the following publications:

- The RIFM Safety Assessment on Isoeugenyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

## Isoeugenyl acetate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate

**CAS-No.:** 68966-86-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate  
Bicyclo[2.2.2]oct-5-ene-2-carboxylic acid, 1(or 4)-methyl-4(or 1)-(1-methylethyl)-, methyl ester  
Methyl 4(or 1)-isopropyl-1(or 4)-methylbicyclo[2.2.2]oct-5-ene-2-carboxylate  
Mahagonat (commercial name)  
Poivrol (commercial name)

**History:**  
Publication date: 2023 (Amendment 51)  
Previous Publications: Not applicable

**Implementation dates:**  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

<table>
<thead>
<tr>
<th>MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%)</th>
<th>Category 1</th>
<th>Category 7A</th>
<th>Category 2</th>
<th>Category 7B</th>
<th>Category 3</th>
<th>Category 8</th>
<th>Category 4</th>
<th>Category 9</th>
<th>Category 5A</th>
<th>Category 10A</th>
<th>Category 5B</th>
<th>Category 10B</th>
<th>Category 5C</th>
<th>Category 11A</th>
<th>Category 5D</th>
<th>Category 11B</th>
<th>Category 5D</th>
<th>Category 11B</th>
<th>Category 6</th>
<th>Category 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.17 %</td>
<td>0.85 %</td>
<td>0.050 %</td>
<td>0.85 %</td>
<td>0.080 %</td>
<td>0.85 %</td>
<td>0.94 %</td>
<td>1.8 %</td>
<td>2.0 %</td>
<td>6.6 %</td>
<td>No restriction</td>
<td>0.080 %</td>
<td>0.080 %</td>
<td>0.080 %</td>
<td>0.080 %</td>
<td>0.17 %</td>
<td>No restriction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### FLAVOR REQUIREMENTS:

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

### CONTRIBUTIONS FROM OTHER SOURCES:

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

### INTRINSIC PROPERTY DRIVING RISK

| PROPERTY | DERMAL SENSITIZATION AND SYSTEMIC TOXICITY |

### RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

### EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate in the various product categories.

### REFERENCES:

The IFRA Standard on 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate is based on at least one of the following publications:

- The RIFM Safety Assessment on 4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

4-Methyl-1-propan-2-ylbicyclo[2.2.2]oct-2-ene-8-carboxylate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
**Methyl vanillyl ether**

**CAS-No.:** 5533-03-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Methyl vanillyl ether  
2-Methoxy-4-(methoxymethyl)phenol  
Phenol, 2-methoxy-4-(methoxymethyl)-  
4-Hydroxy-3-methoxybenzyl methyl ether  
Mevanyl (commercial name)  
Vani-White (commercial name)

**History:**  
<table>
<thead>
<tr>
<th>Publication date:</th>
<th>2023 (Amendment 51)</th>
<th>Previous Publications:</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

**Implementation dates:**  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.065 %</td>
<td>Category 7A</td>
<td>0.065 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.080 %</td>
<td>Category 7B</td>
<td>0.065 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.065 %</td>
<td>Category 8</td>
<td>0.022 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>1.5 %</td>
<td>Category 9</td>
<td>2.9 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.38 %</td>
<td>Category 10A</td>
<td>5.8 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.065 %</td>
<td>Category 10B</td>
<td>11 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.065 %</td>
<td>Category 11A</td>
<td>0.022 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.022 %</td>
<td>Category 11B</td>
<td>0.022 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.065 %</td>
<td>Category 12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

2023 (Amendment 51)
Methyl vanillyl ether

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methyl vanillyl ether, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Methyl vanillyl ether and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methyl vanillyl ether in the various product categories.

**REFERENCES:**
The IFRA Standard on Methyl vanillyl ether is based on at least one of the following publications:

- The RIFM Safety Assessment on Methyl vanillyl ether if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Methyl vanillyl ether


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### Myraldyl acetate

**CAS-No.:** 72403-67-9  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**  
Myraldyl acetate  
3(or 4)-(4-Methylpenten-3-yl)cyclohex-3-ene-1-methyl acetate  
3-Cyclohexene-1-methanol, 3(or 4)-(4-methyl-3-pentenyl)-, acetate  
4(or 3)-(4-Methyl-3-pentenyl)-3-cyclohexenylmethyl acetate & isomers

**History:**  
- **Publication date:** 2023 (Amendment 51)  
- **Previous Publications:** Not applicable

**Implementation dates:**  
- For new creation*: March 30, 2024  
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**  
RESTRICTION

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.077 %</td>
</tr>
<tr>
<td>2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>3</td>
<td>0.46 %</td>
</tr>
<tr>
<td>4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.11 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.11 %</td>
</tr>
<tr>
<td>6</td>
<td>0.25 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.88 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.88 %</td>
</tr>
<tr>
<td>8</td>
<td>0.045 %</td>
</tr>
<tr>
<td>9</td>
<td>0.84 %</td>
</tr>
<tr>
<td>10A</td>
<td>3.0 %</td>
</tr>
<tr>
<td>10B</td>
<td>3.0 %</td>
</tr>
<tr>
<td>11A</td>
<td>1.7 %</td>
</tr>
<tr>
<td>11B</td>
<td>1.7 %</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**  
Due to the possible ingestion of small amounts of...
Myraldyl acetate

fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
DERMAL SENSITIZATION

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Myraldyl acetate, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Myraldyl acetate and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Myraldyl acetate in the various product categories.

REFERENCES:

The IFRA Standard on Myraldyl acetate is based on at least one of the following publications:

• The RIFM Safety Assessment on Myraldyl acetate if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


• Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for...
Myraldyl acetate


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Amendment 51

Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers)

CAS-No.: 68991-96-8
          68991-97-9
          68738-96-5
          68738-94-3

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
2-Naphthalenecarboxaldehyde, octahydro-8,8-dimethyl-
Dimethyloctahydro-2-naphthaldehyde
Octahydro-8,8-dimethyl-2-naphthalenecarboxaldehyde
Octahydro-8,8-dimethylnaphthalene-2-carbaldehyde
2-Naphthalenecarboxaldehyde, octahydro-5,5-dimethyl-
Octahydro-5,5-dimethylnaphthalene-2-carbaldehyde
1,2,3,4,5,6,7,8-Octahydro-5,5-dimethylnaphthalene-2-carbaldehyde
2-Naphthalenecarboxaldehyde, 1,2,3,4,5,6,7,8-octahydro-5,5-dimethyl-
5,5-Dimethyl-1,2,3,4,5,6,7,8-Octahydro-2-naphthalenecarboxaldehyde
1,2,3,4,5,6,7,8-Octahydro-8,8-dimethyl-2-naphthaldehyde
2-Naphthalenecarboxaldehyde, 1,2,3,4,5,6,7,8-octahydro-8,8-dimethyl-
8,8-Dimethyl-1,2,3,4,5,6,7,8-octahydro-2-naphthalenecarboxaldehyde
Melafleur (commercial name)
Cyclomone A (commercial name)
Cyclomeral (commercial name)
Cyclomyral (commercial name)

History:
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.38 %</td>
<td>7A</td>
<td>4.4 %</td>
</tr>
<tr>
<td>2</td>
<td>0.11 %</td>
<td>7B</td>
<td>4.4 %</td>
</tr>
<tr>
<td>3</td>
<td>2.3 %</td>
<td>8</td>
<td>0.23 %</td>
</tr>
</tbody>
</table>
Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers)

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (Weight %)</th>
<th>Category</th>
<th>Concentration (Weight %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2.1%</td>
<td>9</td>
<td>4.2%</td>
</tr>
<tr>
<td>5A</td>
<td>0.54%</td>
<td>10A</td>
<td>15%</td>
</tr>
<tr>
<td>5B</td>
<td>0.54%</td>
<td>10B</td>
<td>15%</td>
</tr>
<tr>
<td>5C</td>
<td>0.54%</td>
<td>11A</td>
<td>8.3%</td>
</tr>
<tr>
<td>5D</td>
<td>0.54%</td>
<td>11B</td>
<td>8.3%</td>
</tr>
<tr>
<td>6</td>
<td>1.3%</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK:**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers), which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) and recommends the concentrations for the 12 different product
categories, which are the maximum acceptable concentrations of Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) in the various product categories.

REFERENCES:

The IFRA Standard on Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) is based on at least one of the following publications:

- The RIFM Safety Assessment on Octahydro-dimethylnaphthalene-2-carbaldehyde (mixed isomers) if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
p-Cresol

CAS-No.: 106-44-5
1319-77-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
106-44-5:
p-Cresol
1-Hydroxy-4-methylbenzene
1-Methyl-4-hydroxybenzene
4-Cresol
4-Methylphenol
para-Cresol
p-Cresyl acid
Phenol, 4-methyl-
p-Hydroxytoluene
p-Methylphenol
1319-77-3:
Cresols
Cresol (mixed isomers)
Cresol, pure
Methylphenol
Mixed cresols
Phenol, methyl-

History:
Publication date: 2023 (Amendment 51)
Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:
RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Acceptable Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0017 %</td>
</tr>
</tbody>
</table>
**p-Cresol**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.0050 %</td>
<td>9</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.0050 %</td>
<td>10A</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.0050 %</td>
<td>10B</td>
<td>0.0050 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.0050 %</td>
<td>11A</td>
<td>0.0017 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.0017 %</td>
<td>11B</td>
<td>0.0017 %</td>
</tr>
<tr>
<td>6</td>
<td>0.0050 %</td>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
SEE ANNEX ON CONTRIBUTIONS FROM OTHER SOURCES

**INTRINSIC PROPERTY DRIVING RISK**
DEPIGMENTATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for p-Cresol, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for p-Cresol and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of p-Cresol in the various product categories.

**REFERENCES:**
The IFRA Standard on p-Cresol is based on at least one of the following publications:

- The RIFM Safety Assessment on p-Cresol if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
Phenoxyacetaldehyde

CAS-No.: 2120-70-9
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: Phenoxyacetaldehyde
Acetaldehyde, phenoxy-
Cortex aldehyde 50
2-Phenoxyacetaldehyde
Acetaldehyde, 2-phenoxy-

History: Publication date: 2023 (Amendment 51) Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: RESTRICTION

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.045 %</td>
</tr>
<tr>
<td>2</td>
<td>0.014 %</td>
</tr>
<tr>
<td>3</td>
<td>0.27 %</td>
</tr>
<tr>
<td>4</td>
<td>0.25 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.064 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.021 %</td>
</tr>
<tr>
<td>6</td>
<td>0.15 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.24 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.24 %</td>
</tr>
<tr>
<td>8</td>
<td>0.021 %</td>
</tr>
<tr>
<td>9</td>
<td>0.49 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.48 %</td>
</tr>
<tr>
<td>10B</td>
<td>1.8 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.021 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.021 %</td>
</tr>
<tr>
<td>12</td>
<td>No restriction</td>
</tr>
</tbody>
</table>
Phenoxyacetaldehyde

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:**
DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Phenoxyacetaldehyde, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for Phenoxyacetaldehyde and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Phenoxyacetaldehyde in the various product categories.

**REFERENCES:**
The IFRA Standard on Phenoxyacetaldehyde is based on at least one of the following publications:

- The RIFM Safety Assessment on Phenoxyacetaldehyde if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafraction.org.
**Carvomenthone**

**CAS-No.:**

| 499-70-7 |
| 59471-80-6 |

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**

- Carvomenthone
- trans-p-Menthan-2-one
- p-Menthan-2-one
- trans-5-Isopropyl-2-methylcyclohexan-1-one
- 5-Isopropyl-2-methylcyclohexanone
- Cyclohexanone, 2-methyl-5-(1-methylethyl)-, trans-
- Tetrahydrocarvone
- Cyclohexanone, 2-methyl-5-(1-methylethyl)-

**History:**

- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

**Implementation dates:**

- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>2</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>3</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>4</td>
<td>1.9 %</td>
</tr>
<tr>
<td>5A</td>
<td>0.079 %</td>
</tr>
<tr>
<td>5B</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>5C</td>
<td>0.019 %</td>
</tr>
<tr>
<td>5D</td>
<td>0.00064 %</td>
</tr>
<tr>
<td>7A</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>7B</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>8</td>
<td>0.00064 %</td>
</tr>
<tr>
<td>9</td>
<td>0.054 %</td>
</tr>
<tr>
<td>10A</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>10B</td>
<td>0.0019 %</td>
</tr>
<tr>
<td>11A</td>
<td>0.00064 %</td>
</tr>
<tr>
<td>11B</td>
<td>0.00064 %</td>
</tr>
</tbody>
</table>
Carvomenthone

| Category 6 | 0.027 % | Category 12 | 0.0019 % |

**FLAVOR REQUIREMENTS:**

Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**

NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**

DERMAL SENSITIZATION AND SYSTEMIC TOXICITY

**RIFM SUMMARIES:**

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Carvomenthone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**

The Expert Panel for Fragrance Safety reviewed all the available data for Carvomenthone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Carvomenthone in the various product categories.

**REFERENCES:**

The IFRA Standard on Carvomenthone is based on at least one of the following publications:

- The RIFM Safety Assessment on Carvomenthone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com

Carvomenthone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
4-tert-Butylcyclohexanone

CAS-No.: 98-53-3
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms: 4-tert-Butylcyclohexanone
para-tert-Butylcyclohexanone
p-tert-Butylcyclohexanone
Cyclohexanone, 4-(1,1-dimethylethyl)-

History: Publication date: 2023 (Amendment 51) Previous Publications: Not applicable

Implementation dates:
For new creation*: March 30, 2024
For existing creation*: October 30, 2025
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION:

MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0080 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.16 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.15 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.038 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.088 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.26 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.29 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.13 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.52 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.013 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>58 %</td>
</tr>
</tbody>
</table>

FLAVOR REQUIREMENTS: Due to the possible ingestion of small amounts of
4-tert-Butylcyclohexanone

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

Contributions from Other Sources:
None to consider beyond traces (see also the section on contributions from other sources in chapter 1 of the guidance for the use of IFRA Standards)

Intrinsic Property Driving Risk
Dermal Sensitization and Systemic Toxicity

RIFM Summaries:
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 4-tert-Butylcyclohexanone, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

Expert Panel for Fragrance Safety Rationale / Conclusion:
The Expert Panel for Fragrance Safety reviewed all the available data for 4-tert-Butylcyclohexanone and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 4-tert-Butylcyclohexanone in the various product categories.

References:
The IFRA Standard on 4-tert-Butylcyclohexanone is based on at least one of the following publications:

• The RIFM Safety Assessment on 4-tert-Butylcyclohexanone if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


2023 (Amendment 51) 2/3
4-tert-Butylcyclohexanone


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
### 7-Methoxy-3,7-dimethyloct-1-ene

**CAS-No.:** 53767-86-5  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:** 7-Methoxy-3,7-dimethyloct-1-ene  
1-Octene, 7-methoxy-3,7-dimethyl-

**History:**  
**Publication date:** 2023 (Amendment 51)  
**Previous Publications:** Not applicable

**Implementation dates:**  
**For new creation*:** March 30, 2024  
**For existing creation*:** October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

### RECOMMENDATION:

**RESTRICTION**

### MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.042 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0000033 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.0000033 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.0042 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.61 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.0000033 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.0000033 %</td>
</tr>
<tr>
<td>Category 12</td>
<td>0.1 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS:** Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply...
7-Methoxy-3,7-dimethyloct-1-ene

with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 7-Methoxy-3,7-dimethyloct-1-ene, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for 7-Methoxy-3,7-dimethyloct-1-ene and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 7-Methoxy-3,7-dimethyloct-1-ene in the various product categories.

REFERENCES:
The IFRA Standard on 7-Methoxy-3,7-dimethyloct-1-ene is based on at least one of the following publications:

• The RIFM Safety Assessment on 7-Methoxy-3,7-dimethyloct-1-ene if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


7-Methoxy-3,7-dimethyloct-1-ene


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
# Methoxycyclododecane

**CAS-No.**: 2986-54-1  
The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms**: Methoxycyclododecane  
Cyclododecane, methoxy-  
Cyclododecyl methyl ether  
Palisandin

**History**:  
Publication date: 2023 (Amendment 51)  
Previous Publications: Not applicable

**Implementation dates**:  
For new creation*: March 30, 2024  
For existing creation*: October 30, 2025  
*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

## RECOMMENDATION:

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.023 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.0015 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.43 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.018 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.0046 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.000010 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.0000033 %</td>
</tr>
<tr>
<td>Category 6</td>
<td>0.000010 %</td>
</tr>
</tbody>
</table>

**FLAVOR REQUIREMENTS**: Due to the possible ingestion of small amounts of
Methoxycyclododecane

Fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

CONTRIBUTIONS FROM OTHER SOURCES:
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK
INTRA SYSTEMIC TOXICITY

RIFM SUMMARIES:

Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for Methoxycyclododecane, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The Expert Panel for Fragrance Safety reviewed all the available data for Methoxycyclododecane and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of Methoxycyclododecane in the various product categories.

REFERENCES:

The IFRA Standard on Methoxycyclododecane is based on at least one of the following publications:

- The RIFM Safety Assessment on Methoxycyclododecane if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


Methoxycyclododecane


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.
3-Acetyl-2,5-dimethylfuran

<table>
<thead>
<tr>
<th>CAS-No.:</th>
<th>10599-70-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>3-Acetyl-2,5-dimethylfuran</td>
</tr>
<tr>
<td></td>
<td>1-(2,5-Dimethyl-3-furyl)ethanone</td>
</tr>
<tr>
<td></td>
<td>2,5-Dimethyl-3-acetylfuran</td>
</tr>
<tr>
<td></td>
<td>Ethanone, 1-(2,5-dimethyl-3-furanyl)-</td>
</tr>
</tbody>
</table>

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

Synonyms:
- 3-Acetyl-2,5-dimethylfuran
- 1-(2,5-Dimethyl-3-furyl)ethanone
- 2,5-Dimethyl-3-acetylfuran
- Ethanone, 1-(2,5-dimethyl-3-furanyl)-

History:
- Publication date: 2023 (Amendment 51)
- Previous Publications: Not applicable

Implementation dates:
- For new creation*: August 30, 2023
- For existing creation*: July 30, 2024

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

RECOMMENDATION: PROHIBITION

FRAGRANCE INGREDIENT PROHIBITION:
- 3-Acetyl-2,5-dimethylfuran should not be used as a fragrance ingredient.

CONTRIBUTIONS FROM OTHER SOURCES:
- NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:
- GENOTOXICITY

EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:

The material 3-Acetyl-2,5-dimethylfuran has been reviewed by the Expert Panel for Fragrance Safety with the conclusion that it cannot be safely used as a fragrance ingredient. If the material is found as an impurity in other fragrance ingredients, leading to trace level presence in finished products, please check the latest version of the Guidance to the IFRA Standards for the respective IFRA procedure.

REFERENCES:

The IFRA Standard on 3-Acetyl-2,5-dimethylfuran is based on at least one of the following publications:
3-Acetyl-2,5-dimethylfuran

- The RIFM Safety Assessment on 3-Acetyl-2,5-dimethylfuran if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com


- Takasu, S. et al. 2022, Comprehensive evaluation of general toxicity, genotoxicity, and carcinogenicity of 3 acetyl 2,5 dimethylfuran using gpt delta rats (P-70)


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org
2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-

**CAS-No.:**
- 358331-95-0
- 357650-26-1
- 847144-75-6

The scope of this Standard includes, but is not limited to the CAS number(s) indicated above; any other CAS number(s) used to identify this fragrance ingredient should be considered in scope as well.

**Synonyms:**
- 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-
- (2E,5Z)-5,6,7-Trimethylocta-2,5-dien-4-one
- 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E,5Z)-
- 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E,5E)-
- (2E,5E)-5,6,7-Trimethylocta-2,5-dien-4-one
- Pomarose (commercial name)

**History:**
- **Publication date:** 2023 (Amendment 51)
- **Previous Publications:** Not applicable

**Implementation dates:**
- For new creation*: March 30, 2024
- For existing creation*: October 30, 2025

*These dates apply to the supply of fragrance mixtures (formulas) only, not to the finished consumer products in the marketplace.

**RECOMMENDATION:**

**RESTRICTION**

**MAXIMUM ACCEPTABLE CONCENTRATIONS IN THE FINISHED PRODUCT (%):**

<table>
<thead>
<tr>
<th>Category</th>
<th>Acceptable Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>0.019 %</td>
</tr>
<tr>
<td>Category 2</td>
<td>0.0057 %</td>
</tr>
<tr>
<td>Category 3</td>
<td>0.12 %</td>
</tr>
<tr>
<td>Category 4</td>
<td>0.11 %</td>
</tr>
<tr>
<td>Category 5A</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 5B</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 5C</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 5D</td>
<td>0.027 %</td>
</tr>
<tr>
<td>Category 7A</td>
<td>0.22 %</td>
</tr>
<tr>
<td>Category 7B</td>
<td>0.22 %</td>
</tr>
<tr>
<td>Category 8</td>
<td>0.011 %</td>
</tr>
<tr>
<td>Category 9</td>
<td>0.21 %</td>
</tr>
<tr>
<td>Category 10A</td>
<td>0.75 %</td>
</tr>
<tr>
<td>Category 10B</td>
<td>0.75 %</td>
</tr>
<tr>
<td>Category 11A</td>
<td>0.42 %</td>
</tr>
<tr>
<td>Category 11B</td>
<td>0.42 %</td>
</tr>
</tbody>
</table>
2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-

| Category 6 | 0.063 % | Category 12 | No restriction |

**FLAVOR REQUIREMENTS:**
Due to the possible ingestion of small amounts of fragrance ingredients from their use in products in Categories 1 and 6, materials must not only comply with IFRA Standards but must also be recognized as safe as a flavoring ingredient as defined by the IOFI Code of Practice (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.

**CONTRIBUTIONS FROM OTHER SOURCES:**
NONE TO CONSIDER BEYOND TRACES (SEE ALSO THE SECTION ON CONTRIBUTIONS FROM OTHER SOURCES IN CHAPTER 1 OF THE GUIDANCE FOR THE USE OF IFRA STANDARDS)

**INTRINSIC PROPERTY DRIVING RISK**
DERMAL SENSITIZATION

**RIFM SUMMARIES:**
Maximum acceptable concentrations are based on a comprehensive safety assessment, considering various endpoints. Depending on the outcome of the safety assessment, it might be one or more endpoint(s) that will drive the derivation of the concentration levels. If more than one endpoint is of relevance, the maximum acceptable concentrations for each product category are derived from comparing maximum permitted level per endpoint consideration (e.g. dermal sensitization and/or systemic toxicity). Such maximum acceptable concentrations correspond to the lowest level obtained per category.

Additional information is available in the RIFM safety assessment for 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-, which can be downloaded from the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/.

**EXPERT PANEL FOR FRAGRANCE SAFETY RATIONALE / CONCLUSION:**
The Expert Panel for Fragrance Safety reviewed all the available data for 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- and recommends the concentrations for the 12 different product categories, which are the maximum acceptable concentrations of 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- in the various product categories.

**REFERENCES:**
The IFRA Standard on 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- is based on at least one of the following publications:

- The RIFM Safety Assessment on 2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)- if available at the RIFM Fragrance Material Safety Assessment Center: http://fragrancematerialsafetyresource.elsevier.com/

- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D.,
2,5-Octadien-4-one, 5,6,7-trimethyl-, (2E)-


Additional information on the application of IFRA Standards is available in the Guidance for the use of IFRA Standards, publicly available at www.ifrafragrance.org.