

## Rose ketones

<b>CAS-No.:</b>	<p>23696-85-7  23726-93-4  59739-63-8  43052-87-5  24720-09-0  23726-94-5  23726-92-3  23726-91-2  35044-68-9  57378-68-4  71048-82-3  35087-49-1  39872-57-6  70266-48-7  33673-71-1  87064-19-5</p> <p>The scope of the Standard covers but is not limited to the list of CAS numbers enumerated above (including all their geometric isomers).</p>
<b>Synonyms:</b>	<p>23696-85-7 (C<sub>13</sub>H<sub>18</sub>O):  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)</p> <p>23726-93-4 (C<sub>13</sub>H<sub>18</sub>O):  (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</p> <p>59739-63-8 (C<sub>13</sub>H<sub>18</sub>O):  (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-yl)-, (Z)-</p> <p>43052-87-5 (C<sub>13</sub>H<sub>20</sub>O):  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)  Dihydrofloriffone α (commercial name)</p> <p>24720-09-0 (C<sub>13</sub>H<sub>20</sub>O):  (E)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one  trans-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)but-2-en-1-one  2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, (2E)-  trans-α-Damascone  Damascone alpha (commercial name)  Dorinone (commercial name)</p>

## Rose ketones

23726-94-5 (C<sub>13</sub>H<sub>20</sub>O):

(Z)-1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-2-buten-1-one  
cis-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)-, (Z)-  
1-(2,6,6-Trimethylcyclohex-2-en-1-yl)but-2-en-1-one  
cis- $\alpha$ -Damascone

23726-92-3 (C<sub>13</sub>H<sub>20</sub>O):

1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one  
(Z)- $\beta$ -1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one  
(Z)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one  
2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-, (2Z)-  
cis- $\beta$ -Damascone (commercial name)  
Damasione (commercial name)

23726-91-2 (C<sub>13</sub>H<sub>20</sub>O):

(2E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one  
(E)-1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one  
1-(2,6,6-Trimethylcyclohex-1-en-1-yl)but-2-en-1-one  
trans- $\beta$ -Damascone,  
Dihydrofloriffone  $\beta$  (commercial name)  
Dorinone beta (commercial name)

35044-68-9 (C<sub>13</sub>H<sub>20</sub>O):

2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-  
2,6,6-Trimethyl-1-(2-butenoyl)-1-cyclohexene  
2,6,6-Trimethyl-1-crotonoyl-1-cyclohexene  
1-(2,6,6-Trimethylcyclohexenyl)-2-buten-1-one  
1-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-2-buten-1-one  
Damascone  $\beta$ -  
 $\beta$ -Damascone

57378-68-4 (C<sub>13</sub>H<sub>20</sub>O):

$\delta$ -1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one  
2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-  
1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one  
 $\delta$ -Damascone (commercial name)  
Dihydrofloriffone TD (commercial name)

71048-82-3 (C<sub>13</sub>H<sub>20</sub>O):

[1 $\alpha$ (E),2 $\beta$ ]-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one  
[1 $\alpha$ (E),2 $\beta$ ]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one  
trans,trans- $\delta$ -Damascone  
trans  $\delta$  Damascone (commercial name)

35087-49-1 (C<sub>13</sub>H<sub>20</sub>O):

1-(2,2-Dimethyl-6-methylenecyclohexyl)but-2-en-1-one  
2-Buten-1-one, 1-(2,2-dimethyl-6-methylenecyclohexyl)-  
Damascone  $\gamma$ -  
 $\gamma$ -Damascone (commercial name)

39872-57-6 (C<sub>13</sub>H<sub>20</sub>O):

**Rose ketones**

	<p>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)-<math>\alpha</math>-Isodamascone            Isodamascone (high <math>\alpha</math>) (commercial name)</p> <p>70266-48-7 (C<sub>13</sub>H<sub>20</sub>O):            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 <math>\beta</math>-Isodamascone            Isodamascone (standard quality) (commercial name)</p> <p>33673-71-1 (C<sub>13</sub>H<sub>20</sub>O):            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 <math>\delta</math>-Isodamascone</p> <p>87064-19-5 (C<sub>13</sub>H<sub>20</sub>O):            2-Buten-1-one, 1-(2,4,4-trimethyl-2-cyclohexen-1-yl)-, (Z)-            cis-Isodamascone</p> <p>(including all geometric isomers).</p>
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<b>History:</b>	Publication date:	2020 (Amendment 49)	Previous Publications:	1991 1995 2007 2008 2009
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<b>Implementation dates:</b>	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.		

<b>RECOMMENDATION:</b>	<b>RESTRICTION</b>
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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**

Category 4	0.043 %	Category 9	0.084 %
Category 5A	0.011 %	Category 10A	0.30 %
Category 5B	0.011 %	Category 10B	0.30 %
Category 5C	0.011 %	Category 11A	0.17 %
Category 5D	0.011 %	Category 11B	0.17 %
Category 6	0.025 %	Category 12	No Restriction

**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](http://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  
**MANAGEMENT:**

**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/>.

## Rose ketones

### 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>
- Api A.M., Belsito D., Bruze M., Cadby P., Calow P., Dagli M. L., Dekant W., Dent M., Ellis G., Fryer A. D., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y., Politano V.T., Renskers K., Ritacco G., Salvito D., Schultz T.W., Sipes I. G., Smith B., Vitale D., Wilcox D.K. (2015). Criteria for the Research Institute for Fragrance Materials, Inc. (RIFM) safety evaluation process for fragrance ingredients. *Food Chem Toxicol.* 2015 Aug;82 Suppl:S1-S19 ([http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria\\_Document\\_Final.pdf](http://fragrancematerialsafetyresource.elsevier.com/sites/default/files/Criteria_Document_Final.pdf)).
- Salvito D.T., Senna R. J., Federle T.W. (2002). A framework for prioritizing fragrance materials for aquatic risk assessment. *Environ Toxicol Chem.* 2002;21:1301-1308 (<https://www.ncbi.nlm.nih.gov/pubmed/12069318>).

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).