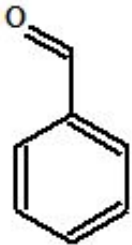


## Benzaldehyde

<b>CAS-No.:</b>	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.	<b>Molecular formula:</b>	C <sub>7</sub> H <sub>6</sub> O
		<b>Structure:</b>	
<b>Synonyms:</b>	Benzenecarbonyl Benzene carboxaldehyde Benzenecarboxaldehyde Benzenemethylal Benzoic aldehyde Bitter almond oil, synthetic Phenylformaldehyde Phenylmethanol aldehyde		

<b>History:</b>	Publication date:	2020 (Amendment 49)	Previous Publications:	2009 2013
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<b>Implementation dates:</b>	For new submissions*:	February 10, 2021
	For existing fragrance compounds*:	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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RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):			
Category 1	0.045 %	Category 7A	0.52 %
Category 2	0.014 %	Category 7B	0.52 %
Category 3	0.27 %	Category 8	0.021 %
Category 4	0.25 %	Category 9	0.49 %

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Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.064 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.021 %
Category 5D	0.021 %	Category 11B	0.021 %
Category 6	0.15 %	Category 12	No Restriction

<b>FLAVOR REQUIREMENTS:</b>	<p>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.</p>
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<b>CONTRIBUTIONS FROM OTHER SOURCES:</b>	<b>SEE ANNEX I AND ANNEX II</b>
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ANNEX I					
Natural Complex Substances (NCS) containing Benzaldehyde					
Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
99	100-52-7	Almond oil, bitter	Prunus amygdalus amara (Bitter Almond) kernel oil	8013-76-1	H2.12
0.03	100-52-7	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.1	100-52-7	Cajuput oil	Melaleuca leucadendron L.	8008-98-8	E2.12
1	100-52-7	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
1	100-52-7	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.3	100-52-7	Cassie absolute	Vachellia farnesiana (L.) Willd.	8023-82-3	F2.1
0.3	100-52-7	Cassie extract	Vachellia farnesiana (L.)	8023-82-3	F2.13

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			Willd.		
99	100-52-7	Cherry Bark, wild, extract	<i>Prunus serotina</i> Ehrh.	84604-07-9	C2.13
0.1	100-52-7	Cinnamon bark extract	<i>Cinnamomum zeylanicum</i> Blume	8015-91-6	C2.13
0.2	100-52-7	Cinnamon bark oil	<i>Cinnamomum zeylanicum</i> Blume	8015-91-6	C2.12
0.5	100-52-7	Cinnamon bark oil, Laos	<i>Cinnamomum loureiroi</i> Nees	97659-68-2	C2.12
0.16	100-52-7	Cinnamon leaf oil	<i>Cinnamomum zeylanicum</i> Blume	8015-91-6	E2.12
0.6	100-52-7	Cistus absolute	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.1
0.4	100-52-7	Cistus concrete	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.7
0.9	100-52-7	Cistus oil	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.12
0.2	100-52-7	Davana oil	<i>Artemisia pallens</i> Wall.	8016-03-3	E2.12
0.1	100-52-7	Hyacinth absolute	<i>Hyacinthus orientalis</i> L.	8023-94-7	F2.1
0.6	100-52-7	Labdanum absolute	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.1
0.4	100-52-7	Labdanum concrete	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.7
0.8	100-52-7	Labdanum extract ambreine	<i>Cistus ladaniferus</i> L.	68917-77-1	E2.1.1
0.2	100-52-7	Labdanum gum	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.16
0.9	100-52-7	Labdanum oil	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.12
0.2	100-52-7	Labdanum oleoresin	<i>Cistus ladaniferus</i> L.	8016-26-0	E2.21
0.2	100-52-7	Niaouli oil	<i>Melaleuca viridiflora</i> Sol. ex Gaertn.	8014-68-4	E2.12
1	100-52-7	Rose absolute	<i>Rosa x damascena</i> Mill.	90106-38-0	F2.1
0.5	100-52-7	Rose concrete	<i>Rosa x damascena</i> Mill.	90106-38-0	F2.7
0.05	100-52-7	Styrax extract	<i>Liquidambar styraciflua</i> L.	8046-19-3	K2.13
0.1	100-52-7	Styrax oil, Honduras	<i>Liquidambar styraciflua</i> L.	8046-19-3	K2.9
0.05	100-52-7	Tolu, balsam, extract	<i>Myroxylon balsamum</i> (L.) Harms.	8024-03-1	K2.13
0.01	100-52-7	Tolu, balsam, gum	<i>Myroxylon balsamum</i> (L.) Harms.	8024-03-1	K2.16

This is a non-exhaustive indicative list of typical natural presence for Benzaldehyde and is intended to be used in the absence of own analytical data. If analysis has shown that the level of the restricted ingredient in a natural complex substance is different from what is provided in this Annex I, then the analytically determined level should be used in place of the indicative level.

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It should further be noted that natural complex substances themselves can be restricted by an IFRA Standard. For a detailed list of natural contributions, please refer to the Annex I of IFRA Standards, publicly available on the IFRA website ([www.ifrafragrance.org](http://www.ifrafragrance.org)).

ANNEX II				
Benzaldehyde	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
Benzaldehyde	100-52-7	Benzaldehyde methyl anthranilate (or Amandolene)	39129-16-3	44.4

<b>INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:</b>	<b>DERMAL SENSITIZATION AND SYSTEMIC TOXICITY</b>
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**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 Benzaldehyde, 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 Benzaldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels 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 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., Fukayama M., Griem P., Hickey C., Kromidas L., Lalko J., Liebler D.C., Miyachi Y.,

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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)).

- IDEA project (International Dialogue for the Evaluation of Allergens) Final Report on the QRA2: Skin Sensitisation Quantitative Risk Assessment for Fragrance Ingredients, September 30, 2016 (<http://www.ideaproject.info/uploads/Modules/Documents/qra2-dossier-final--september-2016.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).