

Cinnamic aldehyde

CAS-No.:	104-55-2	Molecular formula:	C ₉ H ₈ O
	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.		Structure:
Synonyms:	Cinnamal Cinnamaldehyde Phenylacrolein 3-Phenyl-2-propena 3-Phenyl-2-propen-1-a Cassia aldehyde		

History:	Publication date:	2020 (Amendment 49)	Previous Publications:	1978 2004 2006 2007 2008 2013
-----------------	--------------------------	---------------------	-------------------------------	--

Implementation dates:	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.		

RECOMMENDATION:
RESTRICTION
RESTRICTION LIMITS IN THE FINISHED PRODUCT (%):

Category 1	0.045 %	Category 7A	0.17 %
Category 2	0.014 %	Category 7B	0.17 %
Category 3	0.021 %	Category 8	0.014 %
Category 4	0.25 %	Category 9	0.49 %

Cinnamic aldehyde

Category 5A	0.064 %	Category 10A	0.49 %
Category 5B	0.042 %	Category 10B	1.8 %
Category 5C	0.064 %	Category 11A	0.014 %
Category 5D	0.014 %	Category 11B	0.014 %
Category 6	0.15 %	Category 12	No Restriction

FLAVOR REQUIREMENTS:	<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 (www.iofi.org). For more details see chapter 1 of the Guidance for the use of IFRA Standards.</p>
-----------------------------	---

CONTRIBUTIONS FROM OTHER SOURCES:	SEE ANNEX I AND ANNEX II
--	---------------------------------

ANNEX I					
Natural Complex Substances (NCS) containing Cinnamic aldehyde					
Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
44	104-55-2	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
80	104-55-2	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
38	104-55-2	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
75	104-55-2	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
95	104-55-2	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
1.5	104-55-2	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
0.3	104-55-2	Hyacinth absolute	Hyacinthus orientalis L.	8023-94-7	F2.1
0.05	104-55-2	Styrax extract	Liquidambar styraciflua L.	8046-19-3	K2.13
0.1	104-55-2	Styrax oil, Honduras	Liquidambar styraciflua L.	8046-19-3	K2.9
0.5	104-55-2	Tolu,	Myroxylon	8024-03-1	K2.13

Cinnamic aldehyde

		balsam, extract	balsamum (L.) Harms.		
0.1	104-55-2	Tolu, balsam, gum	Myroxylon balsamum (L.) Harms.	8024-03-1	K2.16

This is a non-exhaustive indicative list of typical natural presence for Cinnamic aldehyde 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.

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).

ANNEX II				
Cinnamic aldehyde	CAS number (Aldehyde)	Schiff base	CAS number (Schiff base)	Level of restricted aldehyde in the Schiff base (%)
Cinnamic aldehyde	104-55-2	Cinnamic aldehyde methyl anthranilate	94386-48-8	49.8

INTRINSIC PROPERTY DRIVING RISK MANAGEMENT:	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 Cinnamic aldehyde, 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 Cinnamic aldehyde and recommends the limits for the 12 different product categories, which are the acceptable use levels of Cinnamic aldehyde in the various product categories.

Cinnamic aldehyde**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 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., 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).
- 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.