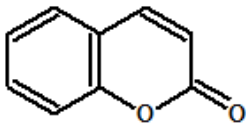


Coumarin

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.	Molecular formula:	C ₉ H ₆ O ₂
Structure:			
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:	Publication date:	2020 (Amendment 49)	Previous Publications:	2008
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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	0.089 %	Category 7A	0.18 %
Category 2	0.080 %	Category 7B	0.18 %
Category 3	0.089 %	Category 8	0.035 %
Category 4	1.5 %	Category 9	0.52 %
Category 5A	0.38 %	Category 10A	0.52 %

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Category 5B	0.11 %	Category 10B	1.6 %
Category 5C	0.16 %	Category 11A	0.035 %
Category 5D	0.035 %	Category 11B	0.035 %
Category 6	0.0024 %	Category 12	33 %

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 I

ANNEX I					
Natural Complex Substances (NCS) containing Coumarin					
Concentration in NCS (%)	CAS number of ingredient	Name of NCS	Botanical name	CAS number of NCS	Essential oil category
0.03	91-64-5	Balsam oil, Peru	Myroxylon balsamum (L.) Harms var. pereirae (Royle) Harms	8007-00-9	K2.9
0.15	91-64-5	Cassia bark extract	Cinnamomum cassia Blume	8007-80-5	C2.13
2	91-64-5	Cassia oil	Cinnamomum aromaticum Nees	8007-80-5	E2.12
0.3	91-64-5	Cinnamon bark extract	Cinnamomum zeylanicum Blume	8015-91-6	C2.13
0.6	91-64-5	Cinnamon bark oil	Cinnamomum zeylanicum Blume	8015-91-6	C2.12
3	91-64-5	Cinnamon bark oil, Laos	Cinnamomum loureiroi Nees	97659-68-2	C2.12
0.3	91-64-5	Cinnamon leaf oil	Cinnamomum zeylanicum Blume	8015-91-6	E2.12
25	91-64-5	Deertongue leaf absolute	Liatris odoratissima (Walt.) Willd.	68606-82-6	E2.1
2	91-64-5	Flouve absolute	Anthoxanthum odoratum L.	68916-09-6	E2.1

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8	91-64-5	Flouve oil	Anthoxanthum odorantum L.	68916-09-6	E2.12
8	91-64-5	Hay absolute	Lolium perenne. L	8031-00-3	E2.1
0.2	91-64-5	Lavandin abrialis oil	Lavandula x intermedia abrialis	8022-15-9	F2.12
0.1	91-64-5	Lavendin super oil	Lavendula super	93685-88-2	F2.12
5	91-64-5	Melilotus officinalis extract	Melilotus officinalis (L.) Pall.	8023-73-2	F2.13
1.2	91-64-5	Narcissus poeticus absolute	Narcissus poeticus L.	68917-12-4	F2.1
0.02	91-64-5	Osmanthus absolute	Osmanthus fragrans Lour.	68917-05-5	F2.1
0.02	91-64-5	Osmanthus concrete	Osmanthus fragrans Lour.	68917-05-5	F2.7
46.7	91-64-5	Tonka Bean absolute	Dipteryx odorata	8024-04-2	H2.1

This is a non-exhaustive indicative list of typical natural presence for Coumarin 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).

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 Coumarin, 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 Coumarin and recommends the limits for the 12 different product categories, which are the acceptable use levels of Coumarin in the various product categories.

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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 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.