

Damascenone (beta-)

Botanical Source

Synonyms DAMASCENONE;
TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL]-BUT-2-EN-1-ONE(1-[2,6,6-);
TRIMETHYLCYCLOHEXA-1,3-DIENYL]BUT-2-EN-4-ONE(4-[2,6,6-)

IUPAC Name 1-(2,2,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-2-BUTEN-1-ONE

CAS Reference 23726-93-4
23696-85-7

E Number

Food Legislation

Council of Europe (CoE)	
Number	Comment
-	-

US Food and Drug Administration	
Number	Comment
-	-

Joint FAO/WHO Expert Committee on Food Additives (JECFA)		
Number	ADI	Comment
387	86	No safety concern at current levels of intake when used as a flavouring agent.

FEMA	
FEMA No.	Comment
3420	Generally recognised as safe as a flavour ingredient:GRAS List Number 3

Natural Occurrence and Use in Food
Found in apples, black tea, Riesling wine; used in beverages, frozen dessert, baked goods, candy, gelatin and puddings, preserves, condiments.

Estimated Intake from Food and Drink	
Daily Intake mg/kg/day	FEMA Possible Average Daily Intake mg

0.00007344	0.045
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Tobacco Product Related Chemical and Biological Studies for Ingredients Added in a Mixture

Smoke Chemistry		
Published Source	Level Tested %	Comment
BAT	0.00300	At maximum application level this ingredient is not associated with significant increases in levels of Hoffmann analytes in smoke.

Ames Activity		
Published Source	Level Tested %	Comment
BAT	0.00300	Within the sensitivity and specificity of the system the Ames activity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Micronucleus		
Published Source	Level Tested %	Comment
BAT	0.00300	Within the sensitivity of the in vitro micronucleus assay the activity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Neutral Red		
Published Source	Level Tested %	Comment
BAT	0.00300	Within the sensitivity of the test system the in vitro cytotoxicity of the cigarette smoke condensate was not increased by the addition of the ingredient.

Inhalation		
Published Source	Level Tested %	Comment
BAT	0.00300	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.

Lorillard	0.0404	The results indicate that the addition of the ingredient had no discernible effect on the inhalation toxicity of mainstream smoke.
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References
Baker RR, Pereira da Silva JR, Smith G. The effect of tobacco ingredients on smoke chemistry. Part I: Flavourings and additives. Food Chem Toxicol. 2004; 42 Suppl:S3-37.
Baker RR, Pereira da Silva JR, Smith G. The effect of tobacco ingredients on smoke chemistry. Part II: casing ingredients. Food Chem Toxicol. 2004; 42 Suppl:S39-52.
Baker RR, Massey ED, Smith G. An overview of the effects of tobacco ingredients on smoke chemistry and toxicity. Food Chem Toxicol. 2004; 42 Suppl:S53-83.
Gaworski CL, Dozier MM, Heck JD, Gerhart JM, Rajendran N, David RM, Brennecke LH, Morrissey R. Toxicologic evaluation of flavor ingredients added to cigarette tobacco: 13 week inhalation exposures in rats. Inhal. Toxicol. 1998; 10:357-381

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Tobacco Product Related Chemical and Biological Studies for Ingredients Tested Singly

References
Baker RR, Bishop LJ. The pyrolysis of tobacco ingredients. J. Anal. Appl. Pyrolysis 2004, 71, 223-311.

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Toxicological Data on the Unburnt Ingredient

[+ve, positive; -ve, negative; ?, equivocal; with, with metabolic activation; without, without metabolic activation]

In vivo

Species	Test conditions	Endpoint	Results	Reference
Mouse, NMRI (male and female)	Bone marrow micronucleus study on the structurally related chemical, methyl-alpha-ionone (CAS: 127-42-4). Animals were given 825-2063 mg/kg bw. [No further details were given in the review document.]	Chromosome damage	-ve	Wild et al. 1983
<i>Drosophila melanogaster</i> [Studies using fruit flies are often considered as in vitro.]	A gene mutation (basc) test on the structurally related chemical, methyl-alpha-ionone (CAS no.: 127-42-4). The chemical was tested at 20 mmol/l.	Gene mutation	-ve	Wild et al. 1983

	[No further details were given in the review document.]			
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In vitro

Test system	Test conditions	Endpoint	Activation status	Results	Reference
Chinese hamster ovary cells	Chromosome aberration study on the structurally related chemical, alpha-ionone (CAS: 127-41-3). Cells were treated with 25 nmol/l. [No further details were given in the review document.]	Chromosome damage	With and without S9	+ve	Kasamaki et al. 1982
<i>Salmonella typhimurium</i> strains TA98, TA100, TA1535, TA1537, TA1538	Five studies were identified in which alpha-ionone (CAS no.: 127-41-3) was tested at up to 50 ug/plate, beta-ionone (CAS no.: 14901-07-6) at up to 180 ug/plate or at up to 3 umoles/plate, methyl-alpha-ionone (CAS no.: 127-42-4) at up to 3600 ug/plate, and methyl-delta-ionone (7748-98-	Mutation	with and without	-ve	Florin et al. 1980; Kasamaki et al. 1982; Mortelmans et al. 1986; Wild et al. 1983

	7) at up to 3600 ug/plate, in up to five strains.				
<i>Bacillus subtilis</i> strains H17 & M45	The structurally related chemical, alpha-ionone (CAS no.: 127-41-3) was tested in a rec assay at 19 ug/disc. [Paper in Japanese with English tables.]	DNA damage (Indicative test)	Probably without, but not clear from Japanese paper	-ve	Oda et al. 1978

References

Florin I et al. (1980). Screening of tobacco smoke constituents for mutagenicity using the Ames test. *Toxicology* 15, 219-232.

Kasamaki A et al. (1982). Genotoxicity of flavoring agents. *Mutation Research* 105, 387-392.

Mortelmans K et al. (1986). Salmonella mutagenicity tests: II. Results from the testing of 270 chemicals. *Environmental Mutagenesis* 8, 1-119.

Oda Y et al. (1978). Mutagenicity of food flavors in bacteria. *Shokuhin Eisei Hen* 9, 177-181 [Paper in Japanese with English tables].

Wild D et al. (1983). Study of artificial flavoring substances for mutagenicity in the Salmonella/microsome, base and micronucleus tests. *Food and Chemical Toxicology* 21, 707-719.