

Substance Information Document

beta-Damascenone**1. Substance identity**

Name	beta-Damascenone
Synonyms	1-(2,6,6-Trimethyl-1,3-cyclohexadien-1-yl)-2-buten-1-one
IUPAC Name	(E)-1-(2,6,6-trimethylcyclohexa-1,3-dien-1-yl)but-2-en-1-one
CAS	23696-85-7

2. Toxicological information

Although EFSA considered *beta*-damascenone a potential skin irritant, human studies found no irritation from topical applications of 0.05-3%. Slight to well-defined skin erythema and very slight to slight oedema were observed when rabbits were exposed to 50% *beta*-damascenone, while 0.5% was not irritating. Very slight eye irritation was induced in rabbits by a 50% solution. No *in vivo* data on respiratory tract irritation are available, but damascenone was cytotoxic at a concentration of 1% (but not 0.1%) in human bronchial epithelial cells.

beta-Damascenone has been listed as an established contact allergen in humans by SCCS (European Commission's Scientific Committee on Consumer Safety), and incidences of sensitisation have been seen in humans (HRIPTs), mice (LLNAs) and guinea pigs (GPMTs). EFSA considered that *beta*-damascenone should be considered a potential respiratory sensitiser.

It has exhibited low acute toxicity in laboratory animals treated orally or by dermal contact (with LD50 values in excess of 2000 mg/kg bw for rats and rabbits, respectively). Acute inhalation and repeated-dose (by any route) toxicity data are not available on *beta*-damascenone itself.

beta-Damascenone was not genotoxic in a bacterial reverse mutation (Ames) assay. Similarly, *trans-beta*-damascenone was not mutagenic in bacteria, or in Chinese hamster ovary cells. Although QSAR predictions were equivocal for chromosomal aberration, EFSA evidently considered the data sufficient to treat *beta*-damascenone as a non-genotoxic threshold toxin. No *in vivo* genotoxicity or cancer data are available. Similarly, no studies were identified on the reproductive or developmental toxicity of *beta*-damascenone.

JECFA	945. Ionones and structurally related substances (WHO Food Additives Series 42) (inchem.org)
FEMA	0320 FEMA GRAS 29 (femaflavor.org)
EFSA	Scientific Opinion on Flavouring Group Evaluation 213, Revision 2 (FGE.213Rev2): Consideration of genotoxic potential for α,β-unsaturated alicyclic ketones and precursors from chemical subgroup 2.7 of FGE.19 (wiley.com)

ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu) (<i>trans-beta</i> -damascenone CAS 23726-93-4)
PUBCHEM	Damascenone C13H18O - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

No relevant substance-specific addictiveness data were identified.

In an investigation into the most common flavouring ingredients added to e-liquids on the Dutch market, *beta*-damascenone was identified in 4.42% of e-liquid samples. The investigators noted that such flavourings increase e-cigarette attractiveness and use and thereby exposure to potentially toxic ingredients.

SCENIHR	-
EMA	-
PUBMED	Comprehensive overview of common e-liquid ingredients and how they can be used to predict an e-liquid's flavour category - PMC (nih.gov)