Substance Information Document

beta-Caryophyllene

1. Substance identity

Name	beta-Caryophyllene
Synonyms	(-)-E-Caryophyllene; (-)-beta-Caryophyllene; (-)-trans-Caryophyllene; (E)-Caryophyllene; 2-Methylene-6,10,10-trimethylbicyclo(7.2.0)undec-5-ene
IUPAC Name	(1R,4E,9S)-4,11,11-trimethyl-8-methylidenebicyclo[7.2.0]undec-4-ene
CAS	84-44-5

2. Toxicological information

beta-Caryophyllene it is not considered as skin irritant based on the OECD 439 assay using EpiDerm™ reconstructed human epidermis model. Based on a rabbit study (according to OECD 405), it caused weak signs of irritation, which was reversible after 7 days. Thus, it was not classified as eye irritant according to the directive of the EEC commission 93/21/EEC and GSH/EU CLP criteria. Based on a modified Freund's Complete Adjuvant Test, beta-caryophyllene is not considered to be a contact allergen. Oxidized beta-caryophyllene is considered skin sensitizer.

No mortality was observed up to 5000 mg/kg bw (mice study).

No substance-specific data were identified for acute inhalation and dermal toxicity.

A study evaluated acute (14-day) and repeated-dose (28 days) oral beta-caryophyllene toxicity in female Swiss mice according to OECD 423 and 407; toxicity was expected at more than the highest dose tested (200 mg/kg bw). NOAEL was determined from 90-day GLP-compliant studies in Sprague Dawely rats based on hepatocyte hypertrophy; the results showed that NOEAL was at the two highest dietary concentrations and were determined to be 222 mg/kg bw/day for beta-caryophyllene and 109 mg/kg bw/day for beta-caryophyllene epoxide.

beta-Caryophyllene is not suspected to be genotoxic and mutagenic. No substance-specific data were identified regarding carcinogenicity.

JECFA	JECFA Evaluations-beta-CARYOPHYLLENE- (inchem.org)
FEMA	GRAS Substances(2001-3124)_0.pdf (femaflavor.org) The FEMA GRAS assessment of aliphatic and aromatic terpene hydrocarbons used as flavor ingredients (femaflavor.org)
EFSA	Scientific Opinion on Flavouring Group Evaluation 78, Revision 2 (FGE.78Rev2): Consideration of aliphatic and alicyclic and aromatic hydrocarbons evaluated by JECFA (63rd meeting) structurally related

	to aliphatic hydrocarbons evaluated by EFSA in FGE.25Rev3 | EFSA (europa.eu)
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	beta-Caryophyllene | C15H24 - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

beta-Caryophyllene, a natural sesquiterpene found in some food condiments and considered an agonist to cannabinoid receptor type 2, could have potential therapeutic effects to treat conditions such as neurophatic pain and emotional disorders.

SCENIHR	-
EMA	Refusal of orphan designation for the treatment of eumycetoma | European Medicines Agency (europa.eu)
PUBMED	RIFM fragrance ingredient safety assessment, β-caryophyllene, CAS Registry Number 87-44-5 - ScienceDirect Beta-caryophyllene is a dietary cannabinoid - PubMed (nih.gov) β-Caryophyllene, a Natural Sesquiterpene, Attenuates Neuropathic Pain and Depressive-Like Behavior in Experimental Diabetic Mice - PubMed (nih.gov)