Substance Information Document

delta-Decalactone

1. Substance identity

Name	delta-decalactone
Synonyms	6-Pentyltetrahydro-2H-pyran-2-one 5-Decanolide 2H-Pyran-2-one, tetrahydro-6-pentyl
IUPAC Name	6-pentyloxan-2-one
CAS	705-86-2

2. Toxicological information

Local effects – substance-specific data were not identified for respiratory tract, skin, and eye irritation. Skin irritation effects in humans were not reported when 1% delta-decalactone was applied to the 25 subjects in a 48-h occluded patch test. Nonetheless, in a rabbit study, 24-h application of undiluted delta-decalactone to the intact or abraded skin was "slightly irritating."

Sensitization and intolerance – substance-specific data were not identified for respiratory tract and skin sensitization as well as for oral allergy/intolerance. The Expert Panel from the Research Institute for Fragnance Materials concluded that delta-decalactone "presents no concern for skin sensitization under the current, declared levels of use."

General systemic effects, acute toxicity – Substance-specific data were not identified for inhalation, oral, and dermal acute toxicity. Oral LD50 in rats was found at more than 4300 mg/kg BW, indicating a very low order of acute oral toxicity in this species. Dermal LD50 in rabbits was found at more than 5000 mg/kg BW, indicating a very low order of acute dermal toxicity in this species.

General systemic effects, repeat-dose toxicity – Substance-specific data were not identified for inhalation, oral, and dermal toxicity. An oral subacute NOAEL was reported at 1000 mg/kg BW/day from a rat study conducted according to OECD TG 407. An oral reproductive and developmental toxicity NOEAL was reported up to 1000 mg/kg BW/day from a rat study conducted according to OECD TG 421 and to GLP. No adverse effects were also reported in early studies in rats and dogs up to 150 mg/kg BW/day (in rats) and to 72 or 250 mg/kg BW/day (in dogs).

Genotoxicity – no indications of concerns for genotoxicity according to an EFSA CEF Expert Panel and RIFM Expert Panel.

Carcinogenicity – Substance-specific data were not identified.

Reproductive and Developmental Toxicity – The REACH registrants used the NOAEL of 1000 mg/kg bw/day to calculate an inhalation Derived No Effect Level (DNEL).

JECFA	908. Aliphatic lactones (WHO Food Additives Series 40) (inchem.org)

FEMA	0320 FEMA GRAS 29 (femaflavor.org)
EFSA	Scientific Opinion on the safety and efficacy of primary aliphatic saturated or unsaturated alcohols/aldehydes/acids/acetals/esters with a second primary, secondary or tertiary oxygenated functional group including aliphatic lactones (chemical group 9) when used as flavourings for all animal species (wiley.com)
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	delta-Decalactone | C10H18O2 - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

In an investigation into the most common flavoring ingredients added to e-liquids on the Dutch market, delta-decalactone was identified in 11.21% of e-liquid samples. The investigators noted that such flavorings increase e-cigarette attractiveness and use and thereby exposure to potentially toxic ingredients.

SCENIHR	-
EMA	-
PUBMED	RIFM fragrance ingredient safety assessment, δ-decalactone, CAS Registry Number 705-86-2 - PubMed (nih.gov) Evidence of starch inclusion complexation with lactones - PubMed (nih.gov) Aroma-active components of nonfat dry milk - PubMed (nih.gov)