Substance Information Document

Isovaleric acid

1. Substance identity

Name	Isovaleric acid
Synonyms	3-Methylbutanoic acid 3-Methylbutyrate Isopentanoic acid β-Methylbutyric acid
IUPAC Name	3-methylbutanoic acid
CAS	503-74-2

2. Toxicological information

In a group of twelve rats exposed to isovaleric acid at 2060 mg/m3 for 7 hours a slight respiratory tract irritation was noted. Female rats gavaged with isovaleric acid at 600 mg/kg bw/day for 2 weeks during pregnancy exhibited irritation of the upper and lower respiratory tract.

Isovaleric acid (presumably neat) was corrosive to the skin of rabbits following 3-minute or 1-hour exposures, with effects persisting until the end of the 8-day observation period. This study was the basis of the REACH registrants' classification of isovaleric acid as causing severe skin burns and eye damage (Skin Corr. 1B). Rabbits (two males and four females) were exposed, under occlusive conditions, to 0.5 mL of neat isovaleric acid for 4 hours. Skin necrosis was seen in all animals at the end of the 8-day observation period. Necrosis was observed in rabbits (three/sex) exposed, under semi-occlusive conditions, to isovaleric acid at a concentration of 40% (in olive oil) for 24 hours.

By inhalation route no deaths were reported in a group of twelve rats following exposure to isovaleric acid at 2060 mg/m^3 for 7 hours. A 2-hour LC50 value of 5600 mg/m^3 was reported for isovaleric acid in mice. Further, TCLo values of 584 and 1000 mg/m^3 have been listed for rats (4-hour exposure) and mammals [species and duration unspecified], respectively; "alteration of classical conditioning" was the noted toxic effect for both species.

In rats, oral LD50 values for isovaleric acid range from 1037-2500 mg/kg bw. A LD50 value of 1375 mg/kg bw was reported in mice. These values indicate a low-to-moderate order of acute oral toxicity in rodents.

A 24-hour dermal LD50 value of >2000 mg/kg bw was reported in rabbits exposed to isovaleric acid under semi-occlusive conditions. Dermal LD50 values of 1750 and 3560 mg/kg bw were reported in rabbits exposed, under occlusion, for 24 hours. Overall, these values indicate isovaleric acid has a low-to-moderate order of acute dermal toxicity.

According to a RIFM Expert Panel, isovaleric acid is unlikely to be genotoxic.

JECFA	907. Saturated aliphatic acyclic branched-chain primary alcohols, aldehydes/acids (WHO Food Additives Series 40) (inchem.org)

FEMA	ISOVALERIC ACID | FEMA (femaflavor.org)
EFSA	Reasoned opinion of EFSA: Review of the existing maximum residue levels (MRLs) for esfenvalerate according to Article 12 of Regulation (EC) No 396/2005 | EFSA (europa.eu)
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu)
PUBCHEM	Isovaleric acid | C5H10O2 - PubChem (nih.gov)
CIR	-
OSHA	-

3. Addictiveness and attractiveness

No substance-specific data were identified.

SCENIHR	-
EMA	-
PUBMED	-