

I U C L I D

D a t a s e t

Existing Chemical Substance ID: 120-51-4
CAS No. 120-51-4
EINECS Name benzyl benzoate
EINECS No. 204-402-9
Molecular Formula C14H12O2

Dataset created by: EUROPEAN COMMISSION - European Chemicals Bureau

This dossier is a compilation based on data reported by the European Chemicals Industry following 'Council Regulation (EEC) No. 793/93 on the Evaluation and Control of the Risks of Existing Substances'. All (non-confidential) information from the single datasets, submitted in the IUCLID/HEDSET format by individual companies, was integrated to create this document.

The data have not undergone any evaluation by the European Commission.

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European Chemicals Bureau

1.0.1 OECD and Company Information

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1.0.2 Location of Production Site

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1.0.3 Identity of Recipients

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1.1 General Substance Information

Substance type: organic
Physical status: liquid

1.1.1 Spectra

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1.2 Synonyms

Benzoic acid, phenyl methyl ester
Source: Haarmann & Reimer GmbH Holzminden

Benzoic acid, phenylmethyl ester
Source: ELF ATOCHEM Paris la defense 10

Benzyl alcohol benzoic ester
Source: ELF ATOCHEM Paris la defense 10

Benzyl benzenecarboxylate
Source: ELF ATOCHEM Paris la defense 10
Haarmann & Reimer GmbH Holzminden

Benzyl phenylformate
Source: ELF ATOCHEM Paris la defense 10
Haarmann & Reimer GmbH Holzminden

1.3 Impurities

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1.4 Additives

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1.5 Quantity

Quantity 5 000 - 10 000 tonnes

1.6.1 Labelling

Labelling: as in Directive 67/548/EEC
Symbols: Xn
D
Specific limits: no data
R-Phrases: (22) Harmful if swallowed
S-Phrases: (2) Keep out of reach of children
(25) Avoid contact with eyes

1.6.2 Classification

Classification: as in Directive 67/548/EEC
Class of danger: corrosive
R-Phrases: (22) Harmful if swallowed

1.7 Use Pattern

Type: type
Category: Use in closed system

Type: type
Category: Wide dispersive use

Type: industrial
Category: Chemical industry: used in synthesis

Type: industrial
Category: Personal and domestic use

Type: industrial
Category: Textile processing industry

Type: use
Category: Cosmetics

Type: use
Category: Odour agents

Type: use
Category: Pharmaceuticals

1.7.1 Technology Production/Use

-

1.8 Occupational Exposure Limit Values

-

1.9 Source of Exposure

Remark: Production process :
This substance is made by reaction between benzyl chloride and benzoic acid.

Source: One production plant.
ELF ATOCHEM Paris la defense 10

Remark: Substance is used as a solvent in fragrance compositions. These fragrance compositions are used to perfume a wide variety of consumer products. The level of benzyl benzoate in the consumer product is typically less than 0.1%.

Source: Quest International Ashford, Kent

1.10.1 Recommendations/Precautionary Measures

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1.10.2 Emergency Measures

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1.11 Packaging

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1.12 Possib. of Rendering Subst. Harmless

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1.13 Statements Concerning Waste

-

1.14.1 Water Pollution

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1.14.2 Major Accident Hazards

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1.14.3 Air Pollution

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1.15 Additional Remarks

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1.16 Last Literature Search

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1.17 Reviews

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1.18 Listings e.g. Chemical Inventories

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2.1 Melting Point

Value: < -18 degree C
Remark: Freezing temperature
Source: Haarmann & Reimer GmbH Holzminden (1)

2.2 Boiling Point

Value: 324 degree C at 1013 hPa
Source: Haarmann & Reimer GmbH Holzminden (1)

2.3 Density

Type: density
Value: 1.116 - 1.12 g/cm³ at 25 degree C
Source: Haarmann & Reimer GmbH Holzminden (1)

2.3.1 Granulometry

-

2.4 Vapour Pressure

Value: < .1 hPa at 20 degree C
Source: Haarmann & Reimer GmbH Holzminden (1)

2.5 Partition Coefficient

log Pow: 3.9
Method: other (calculated): according to Howard
Year:
Source: Haarmann & Reimer GmbH Holzminden (2)

2.6.1 Water Solubility

Value: 15.3 mg/l at 20 degree C
pH: 4.5
Year: 1992
GLP: yes
Source: Haarmann & Reimer GmbH Holzminden
Test substance: purity: 99.4 % (3)

2.6.2 Surface Tension

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2.7 Flash Point

Value: 158 degree C
Type:
Method:
Year:
Source: Haarmann & Reimer GmbH Holzminden (1)

2.8 Auto Flammability

Value:
Remark: Ignition temperature: 480 degree C
Source: Haarmann & Reimer GmbH Holzminden (1)

2.9 Flammability

Result: non flammable
Source: Haarmann & Reimer GmbH Holzminden (1)

2.10 Explosive Properties

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2.11 Oxidizing Properties

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2.12 Additional Remarks

Remark: Refractive Index (20 degree C, Natrium D-Linie):
1.567 - 1.570
Source: Haarmann & Reimer GmbH Holzminden (2)

3.1.1 Photodegradation

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3.1.2 Stability in Water

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3.1.3 Stability in Soil

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3.2 Monitoring Data (Environment)

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3.3.1 Transport between Environmental Compartments

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3.3.2 Distribution

-

3.4 Mode of Degradation in Actual Use

-

3.5 Biodegradation

Type: aerobic
Inoculum: activated sludge
Concentration: 100 mg/l related to Test substance
Degradation: 94 % after 28 day
Method: other: Biologische Abbaubarkeit - Manometrischer Respirationstest, Verfahren nach Richtlinie 79/831 EWG, Anhang V, Teil C (aktualisierte Fassung vom Juli 1990), Methode C.4-D: Manometrischer Respirationstest
Year: 1992 **GLP:** yes
Test substance: other TS: purity: 99.4 %
Source: Haarmann & Reimer GmbH Holzminden

(4)

3.6 BOD5, COD or BOD5/COD Ratio

Remark: ThOD: 2412 mg/g
Source: Haarmann & Reimer GmbH Holzminden

(4)

3.7 Bioaccumulation

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3.8 Additional Remarks

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AQUATIC ORGANISMS**4.1 Acute/Prolonged Toxicity to Fish**

Type: semistatic
Species: Brachydanio rerio (Fish, fresh water)
Exposure period: 96 hour(s)
Unit: mg/l **Analytical monitoring:** yes
LC0: 1.9
LC100: 2.84
geom. mean: : 2.32
Method: other: "Akute Toxizitaet fur Fische" (C.1), Richtlinie 67/548/EWG(Entwurf 1992)
Year: 1993 **GLP:** yes
Test substance: other TS: purity: 99.4 %
Remark: arithmetic mean of analytical values
analytical monitoring: HPLC
To produce the test concentrations the test substance was weighed into water and treated with an Ultra-Turrax for 60 seconds at 8000 rpm.
Source: Haarmann & Reimer GmbH Holzminden

(4)

4.2 Acute Toxicity to Aquatic Invertebrates

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4.3 Toxicity to Aquatic Plants e.g. Algae

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4.4 Toxicity to Microorganisms e.g. Bacteria

Type: aquatic
Species: activated sludge
Exposure period: 3 hour(s)
Unit: mg/l **Analytical monitoring:** no
EC50: > 10000
Method: ISO 8192 "Test for inhibition of oxygen consumption by activated sludge"
Year: 1992 **GLP:** yes
Test substance: other TS: purity 99.4 %
Remark: direct weight
Source: Haarmann & Reimer GmbH Holzminden

(3)

4.5 Chronic Toxicity to Aquatic Organisms

4.5.1 Chronic Toxicity to Fish

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4.5.2 Chronic Toxicity to Aquatic Invertebrates

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TERRESTRIAL ORGANISMS

4.6.1 Toxicity to Soil Dwelling Organisms

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4.6.2 Toxicity to Terrestrial Plants

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4.6.3 Toxicity to other Non-Mamm. Terrestrial Species

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4.7 Biological Effects Monitoring

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4.8 Biotransformation and Kinetics

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4.9 Additional Remarks

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5.1 Acute Toxicity**5.1.1 Acute Oral Toxicity**

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: 1891 mg/kg bw
Method: other: 10 animals/dose, post exposure observation time: 6 d
Year: **GLP:** no
Test substance: other TS: undiluted benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden
(5) (6) (7) (8) (9)

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: 2800 mg/kg bw
Method: other: 20 animals used, single dose by gavage, observation period: 14 d
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden
(10) (11) (9)

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: 1891 mg/kg bw
Method: other: no data
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden
(12)

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: 500 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden
(13)

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: > 2000 mg/kg bw
Method: OECD Guide-line 401 "Acute Oral Toxicity"
Year: **GLP:** yes
Test substance: other TS: benzyl benzoate, 100-2000 mg in arachis oil
Source: Haarmann & Reimer GmbH Holzminden (14)

Type: LD50
Species: mouse
Sex:
Number of Animals:
Vehicle:
Value: 1557 mg/kg bw
Method: other: 10 animals/dose, post exposure observation time: 6 d
Year: **GLP:** no
Test substance: other TS: undiluted benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (6) (7)

Type: LD50
Species: mouse
Sex:
Number of Animals:
Vehicle:
Value: 1557 mg/kg bw
Method: other: no data
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (12)

Type: LD50
Species: mouse
Sex:
Number of Animals:
Vehicle:
Value: 1400 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (13)

Type: LD50
Species: rabbit
Sex:
Number of Animals:
Vehicle:
Value: 2002 mg/kg bw
Method: other: 10 animals/dose, post exposure observation time: 6 d
Year: **GLP:** no
Test substance: other TS: undiluted benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (6) (7)

Type: LD50
Species: rabbit
Sex:
Number of Animals:
Vehicle:
Value: 1680 mg/kg bw
Method: other: 9 animals used, single dose by gavage, observation period: 14 d
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (10) (11)

Type: LD50
Species: rabbit
Sex:
Number of Animals:
Vehicle:
Value: 2002 mg/kg bw
Method: other: no data
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (12)

Type: LD50
Species: rabbit
Sex:
Number of Animals:
Vehicle:
Value: 1680 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (13)

Type: LD50
Species: cat
Sex:
Number of Animals:
Vehicle:
Value: 2240 mg/kg bw
Method: other: 11 animals used, single dose by gavage, observation period: 14 d
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (10) (11)

Type: LD50
Species: cat
Sex:
Number of Animals:
Vehicle:
Value: 2240 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (13)

Type: LD50
Species: dog
Sex:
Number of Animals:
Vehicle:
Value: > 22440 mg/kg bw
Method: other: 4 animals used, single dose by gavage, observation period: 14 d
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: no toxic manifestations
Source: Haarmann & Reimer GmbH Holzminden (10) (11)

Type: LD50
Species: guinea pig
Sex:
Number of Animals:
Vehicle:
Value: 1112 mg/kg bw
Method: other: 10 animals/dose, post exposure observation time: 6 d
Year: **GLP:** no
Test substance: other TS: undiluted benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (6) (7)

Type: LD50
Species: guinea pig
Sex:
Number of Animals:
Vehicle:
Value: 1112 mg/kg bw
Method: other: no data
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (12)

Type: LD50
Species: guinea pig
Sex:
Number of Animals:
Vehicle:
Value: 1000 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (13)

5.1.2 Acute Inhalation Toxicity

-

5.1.3 Acute Dermal Toxicity

Type: LD50
Species: rat
Sex:
Number of Animals:
Vehicle:
Value: 4000 mg/kg bw
Method: other: no data
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (13)

Type: LD50
Species: rabbit
Sex:
Number of
Animals:
Vehicle:
Value: 4448 mg/kg bw
Method: other: as described by Draize, H.J. et al., J. Pharmacol. exp.
Ther. 82,377 (1944)
Year: 1944 GLP: no
Test substance: other TS: undiluted benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(6)

Type: LD50
Species: rabbit
Sex:
Number of
Animals:
Vehicle:
Value: 4448 mg/kg bw
Method: other: no data
Year: GLP: no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(12)

Type: LD50
Species: rabbit
Sex:
Number of
Animals:
Vehicle:
Value: 4000 mg/kg bw
Method: other: no data
Year: GLP: no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(13)

5.1.4 Acute Toxicity, other Routes

Type: LD50
Species: mouse
Sex:
Number of
Animals:
Vehicle:
Route of admin.: i.p.
Value: > 500 mg/kg bw
Method: other: no data
Year: GLP: no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(15)

5.2 Corrosiveness and Irritation

5.2.1 Skin Irritation

Species: rabbit
Concentration:

Exposure:
Exposure Time:
Number of
Animals:
PDII:
Result: not irritating
EC classificat.:
Method: other: Directive 79/831/EEC
Year: GLP: yes
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(16)

Species: rabbit
Concentration:

Exposure:
Exposure Time:
Number of
Animals:
PDII:
Result: slightly irritating
EC classificat.:
Method: other: EEC Directive 79/831
Year: GLP: yes
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(17)

5.2.2 Eye Irritation

Species: human
Concentration:
Dose:
Exposure Time:
Comment:
Number of
Animals:
Result:
EC classificat.:
Method:
Year: GLP:
Test substance: other TS: benzyl benzoate, no more data
Remark: a standard test states that undiluted liquid is irritating
but gives no basis for the statement
Source: Haarmann & Reimer GmbH Holzminden

(18)

5.3 Sensitization

Type: Guinea pig maximization test
Species: guinea pig
Number of Animals:
Vehicle:
Result: not sensitizing
Classification:
Method: other: guinea pig maximization test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (19)

Type: Guinea pig maximization test
Species: guinea pig
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: modified FCA method
Year: **GLP:** no
Test substance: other TS: pure benzyl benzoate, no more data
Remark: result: weak sensitizing capacity
Source: Haarmann & Reimer GmbH Holzminden (20)

Type: Open epicutaneous test
Species: guinea pig
Number of Animals:
Vehicle:
Result: not sensitizing
Classification:
Method: other: 6-8 animals/group, substance applied epicutaneously, clipped areas on the flank, reading time 24 h after application
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden (21)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: closed patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 0.1, 2, 20 % in vaseline, ointment or cremebase, no more data
Remark: result: no positive reaction in 175 patients with and without dermatoses

Source: Haarmann & Reimer GmbH Holzminden (22)

Type: Patch-Test

Species: human

**Number of
Animals:**

Vehicle:

Result:

Classification:

Method: other: closed patch test

Year: **GLP:** no

Test substance: other TS: benzyl benzoate, purity 99.4 %, test concentration 2 or 5 % invaseline

Remark: result: positive in subjects with
melanosis cosmet. non.cosmet. control
dermat. dermatitis

0/23	0/64	0/43	0/14	2 % test conc.
0/23	1/64	0/43	0/14	5 % test conc.

Source: Haarmann & Reimer GmbH Holzminden (23)

Type: Patch-Test

Species: human

**Number of
Animals:**

Vehicle:

Result:

Classification:

Method: other: patch test

Year: **GLP:** no

Test substance: other TS: benzyl benzoate, 2 % in yellow soft paraffine, no more data

Remark: result: positive in 1/32 patients with polymorphic light eruption, negative in 50 patients with photosensitivity dermatitis with actinic reticuloid syndrome and in 457 patients with contact dermatitis

Source: Haarmann & Reimer GmbH Holzminden (24)

Type: Patch-Test

Species: human

**Number of
Animals:**

Vehicle:

Result:

Classification:

Method: other: patch test

Year: **GLP:** no

Test substance: other TS: benzyl benzoate, no more data

Remark: result: 1 positive cutaneous reaction, total number of tested patients not given, all suffering from cosmetic dermatitis

Source: Haarmann & Reimer GmbH Holzminden (25) (26)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in petrolatum, no more data
Remark: result: positive in 1/73 patients with eczematous dermatitis
Source: Haarmann & Reimer GmbH Holzminden

(27)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 10 % in water, no more data
Remark: result: no positive reaction in 73 patients suffering from dermatoses
Source: Haarmann & Reimer GmbH Holzminden

(28)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in petrolatum, no more data
Remark: result: no positive reaction in patients with endogenous eczema, which were positive to oil of cinnamon containing oinment
Source: Haarmann & Reimer GmbH Holzminden

(29)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in yellow soft paraffine, no more data
Remark: result: no positive reaction in 241 patients
Source: Haarmann & Reimer GmbH Holzminden

(30)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: pure benzyl benzoate, 5 % in petrolatum, no more data
Remark: result: positive in 1/8 patients with allergic contact dermatitis
Source: Haarmann & Reimer GmbH Holzminden

(20)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in vaseline, no more data
Remark: result: positive in 12/103 cases
Source: Haarmann & Reimer GmbH Holzminden

(31)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in vaseline, no more data
Remark: result: positive in 14/115 cases
Source: Haarmann & Reimer GmbH Holzminden

(32)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: delayed reaction in 1/15 patients sensitized to Peru balsam
Source: Haarmann & Reimer GmbH Holzminden

(33) (11)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, purity 99.8 %, test concentration 5 %
Remark: result: positive in subjects with
 melanosis cosmet. non.cosmet. control
 dermat. dermatitis
 0/13 1/169 1/201 0/60 5 % test conc.
Source: Haarmann & Reimer GmbH Holzminden

(34)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, test concentration 2 %, no more data
Remark: result: negative in patient with allergic contact dermatitis
Source: Haarmann & Reimer GmbH Holzminden (35)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in petrolatum, no more data
Remark: result: positive in 1/73 patients with eczematous dermatitis
Source: Haarmann & Reimer GmbH Holzminden (36)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 2 % in petrolatum, no more data
Remark: result: no positive reaction in 335 patients
Source: Haarmann & Reimer GmbH Holzminden (37)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: positive in 10/142 patients sensitive to balsam of Peru
Source: Haarmann & Reimer GmbH Holzminden (38)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in petrolatum, no more data
Remark: result: negative in 19 patients with eyelid dermatitis
Source: Haarmann & Reimer GmbH Holzminden

(39)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, purity: 99.8 %, test concentration: 5 %, no more data
Remark: result: positive in patients with
melanosis cosmet. non-cosmet. control
dermat. dermatitis
0/12 1/93 1/120 0/46
Source: Haarmann & Reimer GmbH Holzminden

(40)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: positive in 3/460 patients sensitive to cosmetics
Source: Haarmann & Reimer GmbH Holzminden

(41)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, test concentration 2 %, no more data
Remark: result: no positive reaction in 198 patients
Source: Haarmann & Reimer GmbH Holzminden (42) (43)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, purity 99 %, no more data
Remark: result: no positive reaction in 111 patients
Source: Haarmann & Reimer GmbH Holzminden (44)

Type: Patch-Test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: patch test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 5 % in vaseline, no more data
Remark: result: positive in 7/465 patients suffering from dermatitis
Source: Haarmann & Reimer GmbH Holzminden (45)

Type: other: Phototoxicity Testing
Species: mouse
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: irradiation of treated hairless mice
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: no findings after irradiation of 3times 24 h, slight positive reaction after irradiation of 4times 24 h
Source: Haarmann & Reimer GmbH Holzminden (46)

Type: other: maximization test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: maximization test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: no positive reaction in 25 cases
Source: Haarmann & Reimer GmbH Holzminden

(19)

Type: other: maximization test
Species: human
Number of Animals:
Vehicle:
Result:
Classification:
Method: other: maximization test
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, 30 % in petrolatum
Remark: result: not sensitizing
Source: Haarmann & Reimer GmbH Holzminden

(47)

5.4 Repeated Dose Toxicity

Species: mouse **Sex:** no data
Strain: C57BL
Route of admin.: s.c.
Exposure period: 4 weeks
Frequency of treatment: daily
Post. obs. period: no data specified
Doses: 0.1 ml (ca.=111 mg)
Control Group: other: concurrent no treatment and sham injected
Method: other: 5 animals/group, perfusion fixation, preparation of adrenalglands, light and electron microscopic evaluation
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Remark: result: animals died within 3 hours of initial injection
Source: Haarmann & Reimer GmbH Holzminden

(48)

Species: rabbit **Sex:** no data
Strain: other: no data
Route of admin.: dermal
Exposure period: 90 d
Frequency of treatment: daily
Post. obs. period: no data
Doses: no data
Control Group: no data specified
Method: other: as described by Draize, H.J. et al., J. Pharmacol. exp. Ther. 82,377 (1944)
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: very mild skin irritation, atrophy of testis at high exposure levels, possibly increased incidence of focal nephritis and encophalitis, deaths about 2.2 g/kg bw/day and above
Source: Haarmann & Reimer GmbH Holzminden

(6)

Species: rabbit **Sex:** no data
Strain: other: no data
Route of admin.: dermal
Exposure period: 90 d
Frequency of treatment: daily
Post. obs. period: no data
Doses: 0.5 ml/kg (ca.= 556 mg/kg)
Control Group: no data specified
Method: other: topically application of 0.5 ml/kg bw, no more data
Year: **GLP:** no
Test substance: other TS: benzyl benzoate, no more data
Remark: result: slight dermatitis, inanition, slight to moderate atrophy of testes at higher dosage levels, some suggestion of kidney damage, increased leucocyte count, deaths observed, but doses not given
Source: Haarmann & Reimer GmbH Holzminden

(12)

5.5 Genetic Toxicity 'in Vitro'

Type: Ames test
System of testing: Salmonella typhimurium TA 98, TA 100, TA 1535, TA 1537
Concentration: 3 umol/plate (ca.=637 um/plate)
Metabolic activation: with and without
Result: negative
Method: other: as described by Ames, B.N. et al., Mutat. Res. 31, 347 (1975)
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(49)

Type: Ames test
System of testing: Salmonella typhimurium TA 98, TA 100
Concentration: up to 5000ug/plate
Metabolic activation: with and without
Result: negative
Method: other: plate incorporation assay
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(50)

Type: Ames test
System of testing: Salmonella typhimurium TA 98, TA 100
Concentration: up to 5000mg/plate
Metabolic activation: with and without
Result: negative
Method: other: pre-incubation assay
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Source: Haarmann & Reimer GmbH Holzminden

(50)

Type: Bacillus subtilis recombination assay
System of testing: Bacillus subtilis strain H17, M45
Concentration: 10 mg/disk
Metabolic activation: no data
Result: negative
Method: other
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Remark: from English tables and abstract in a Japanese paper
Source: Haarmann & Reimer GmbH Holzminden

(51)

5.6 Genetic Toxicity 'in Vivo'

-

5.7 Carcinogenicity

-

5.8 Toxicity to Reproduction

-

5.9 Developmental Toxicity/Teratogenicity

Species: rat **Sex:** female
Strain: Wistar
Route of admin.: oral feed
Exposure period: day 0 of gestation to day 21 postparturition
Frequency of treatment: daily in diet
Duration of test: no data
Doses: 0.04 or 1.0 % (ca.=24 or 595 mg/kg bw/day)
Control Group: yes
Method: other: 21 rats/Dose, examination of number of corpora lutea, implants or dead fetuses in dams, external, skeletal and visceral observations of fetuses
Year: **GLP:** no data
Test substance: other TS: benzyl benzoate, no more data
Remark: result: no harmful effect to fetuses with respect to external, skeletal or visceral anomalies (from English tables and abstract in a Japanese paper)
Source: Haarmann & Reimer GmbH Holzminden (52)

5.10 Other Relevant Information

Type: Metabolism
Remark: result: after unspecified oral doses of benzyl benzoate in cat and dog small amounts of hippuric acid was found in the 24 h urine
Source: Haarmann & Reimer GmbH Holzminden (10)

Type: Metabolism
Remark: result: benzyl benzoate is converted in benzoic acid in vivo, no more data
Source: Haarmann & Reimer GmbH Holzminden (53) (54)

Type: other: acaricidal cleaning products
Remark: the use of solidified benzyl benzoate as acaricidal product is described in several papers
Source: Haarmann & Reimer GmbH Holzminden (55) (56) (57) (58) (59) (60) (61) (62) (63)

Type: other: action on smooth muscle
Remark: i.p. and i.v. injections of benzyl benzoate into jejunum of rabbits produced inhibition of peristaltic and pendular movement
Source: Haarmann & Reimer GmbH Holzminden (64)

Type: other: activation of blood clotting factors
Remark: result: benzyl benzoate activated factor I, VIII, IX or XII after i.p. injection in dogs, dose not given
Source: Haarmann & Reimer GmbH Holzminden (65)

- Type:** other: antibacterial/antifungal properties in vitro
Remark: result: antibacterial, antimicrobial and antifungal properties of benzyl benzoate is described in several papers
Source: Haarmann & Reimer GmbH Holzminden (66) (67) (68) (69)
- Type:** other: antipyretic properties
Remark: result: administration of benzyl benzoate by stomach tube was followed by more or less falling temperature depending on cause of fever
Source: Haarmann & Reimer GmbH Holzminden (70)
- Type:** other: cell multiplication in vitro
Remark: result: benzyl benzoate was toxic to ascites sarcome BP8 cells in culture
Source: Haarmann & Reimer GmbH Holzminden (71) (72)
- Type:** other: chemotherapeutic activity
Remark: result: oral treatment with 166 to 800 mg/kg/d did not significantly reduce tumor growth or increase survival time following grafting or injection of Guerin tumors into mice.
Source: Haarmann & Reimer GmbH Holzminden (73)
- Type:** other: ciliotoxicity
Remark: result: benzyl benzoate was non-toxic to chickens tracheal organ cultures
Source: Haarmann & Reimer GmbH Holzminden (71) (74)
- Type:** other: dermal application
Remark: result: repeated dermal application of benzyl benzoate to dogs, horse, heifer, sheep or pig did not cause toxic symptoms
Source: Haarmann & Reimer GmbH Holzminden (10)
- Type:** other: dermal application to cats
Remark: result: single dermal application of 20 ml 25 % benzyl benzoate in isopropanol/water to clipped areas of the back from cats caused death
Source: Haarmann & Reimer GmbH Holzminden (10)
- Type:** other: diuretic effects
Remark: result: increased urine flow in dogs and rabbits after i.v., i.m. or i.p. application of benzyl benzoate
Source: Haarmann & Reimer GmbH Holzminden (75)

- Type:** other: effect on egg-hatching
Remark: result: small quantities of benzyl benzoate in the food decrease the egg-hatching in *Drosophila melanogaster*
Source: Haarmann & Reimer GmbH Holzminden (76)
- Type:** other: effect on plasma membran
Remark: result: benzyl benzoate showed moderate activity on cell membrane of cultured human lung fibroblasts
Source: Haarmann & Reimer GmbH Holzminden (71) (77)
- Type:** other: effects on human leucocyte functions in vitro
Remark: result: 10 uM benzyl benzoate inhibited lymphocyte response to phytohemagglutinin stimulation by 18 % in whole blood culture or 1.5 % in isolated mononuclear cells, blood samples from healthy volunteers
Source: Haarmann & Reimer GmbH Holzminden (78)
- Type:** other: effects on noradrenaline induced respiration in cells
Remark: result: benzyl benzoate inhibites norardrenaline induced respiration in isolated brown fat cells
Source: Haarmann & Reimer GmbH Holzminden (71) (79)
- Type:** other: effects upon respiratory and circulatory systems
Remark: result: injection of 1 ml 20 % benzyl benzoate in alcohol in dog increased the respiratory rate of 28 to 48 per minute, increase in venous and decrease in arterial blood pressure
Source: Haarmann & Reimer GmbH Holzminden (80)
- Type:** other: insect repellent
Remark: result: M-1960, containing 30 % benzyl benzoate, is used as insect repellent by the U.S. military
Source: Haarmann & Reimer GmbH Holzminden (81)
- Type:** other: penetration through human epidermis in vitro
Remark: result: 0.018 % of applied dose was penetrated through human epidermis within 72 h
Source: Haarmann & Reimer GmbH Holzminden (82)
- Type:** other: percutaneous absorption in vivo
Remark: result: percutaneous absorption through skin in rhesus monkeys was about 57 % (unoccluded) or 70 % (occluded) of applied dose in 24 h
Source: Haarmann & Reimer GmbH Holzminden (83)

- Type:** other: phototoxicity in vitro
Remark: result: no phototoxic effect in *Candida utilis* (UV-A radiation), no photohaemolysis in human red blood cells (UV-A and UV-B radiation)
Source: Haarmann & Reimer GmbH Holzminden (24)
- Type:** other: specificity of arylesterase
Remark: result: benzyl benzoate was not hydrolysed by a purified arylesterase preparation from human plasma
Source: Haarmann & Reimer GmbH Holzminden (84)
- Type:** other: symptoms of poisoning
Remark: result: after unspecified oral doses in rats, cats and rabbits benzyl benzoate initially caused CNS stimulation followed by muscular incoordination, paralysis of hind limbs, convulsions, respiratory difficulties and death
Source: Haarmann & Reimer GmbH Holzminden (85)
- Type:** other: tissue irritation
Remark: result: benzyl benzoate was found to cause minimal tissue irritation in chicken pectoral muscle
Source: Haarmann & Reimer GmbH Holzminden (86)
- Type:** other: toxicity in cats
Remark: result: cats are sensitive to benzyl benzoate, signs of toxicity: nausea, gastroenteritis, hyperexcitability, convulsions
Source: Haarmann & Reimer GmbH Holzminden (87) (88)
- Type:** other: toxicity in cats
Remark: result: note about a fatal and a near fatal case of poisoning of cats, no details
Source: Haarmann & Reimer GmbH Holzminden (89)
- Type:** other: toxicity in dogs
Remark: result: 1 ml/kg pure benzyl benzoate to dogs provoked no vomiting, mild cathartic and some narcotic action, no effect upon blood pressure
Source: Haarmann & Reimer GmbH Holzminden (90)

5.11 Experience with Human Exposure

- Remark:** treatment of patients suffering from scabies with a solution of benzyl benzoate did not elicit dermatitis
Source: Haarmann & Reimer GmbH Holzminden (91)

- Remark:** a 4-year-old child, body weight about 15 kg, ingested approximately 50 ml of U.S. Army Insectent Repellant clothing Treatment Solution M-1960, containing 30 % benzyl benzoate. Symptoms: thick secretion in mouse and nose, excitation, CNS depression, emesis, recovering 16 h after ingestion, 6 months after accident the child was quite well
- Source:** Haarmann & Reimer GmbH Holzminden (92)
- Remark:** 4 patients suffering from scabies react with dermatitis to medication with a solution of benzyl benzoate
- Source:** Haarmann & Reimer GmbH Holzminden (93)
- Remark:** treatment of scabies with 20 % benzyl benzoate emulsion elicited dermatitis in a number of patients which were previously treated with sulfur or other medicaments, but not in previously untreated cases
- Source:** Haarmann & Reimer GmbH Holzminden (94) (11)
- Remark:** in case of a 26-year-old woman scabies manifested atypical like contact dermatitis; treatment with 25 % benzyl benzoate lotion led to resolution of lesions
- Source:** Haarmann & Reimer GmbH Holzminden (95)
- Remark:** 142/145 patients suffering from scabies were cured after single treatment with an ointment containing 10, 20 or 50 % benzyl benzoate (from English abstract in a Russian Paper)
- Source:** Haarmann & Reimer GmbH Holzminden (96)
- Remark:** a baby suffering from scabies had two convulsions 2 h after whole body-treatment with an ointment containing benzyl benzoate in alcohol
- Source:** Haarmann & Reimer GmbH Holzminden (97)
- Remark:** treatment of scabies with benzyl benzoate elicited dermatitis in 17/155 cases
- Source:** Haarmann & Reimer GmbH Holzminden (98)
- Remark:** local application of 10 % benzyl benzoate to 21 patients suffering from scabies resulted in a cumulative recovery rate from 48 % (10/21) at day 30 after treatment
- Source:** Haarmann & Reimer GmbH Holzminden (99)
- Remark:** treatment of 34 children in East Africa infested with scabies resulted in a cure rate of 44 % (15/34)
- Source:** Haarmann & Reimer GmbH Holzminden (100)

Remark: a 24-year-old man died shortly after being painted with benzyl benzoate as a scabicide with a brush contaminated with 80 % phenol. Death were attributed to accidental absorption of phenol through skin.

Source: Haarmann & Reimer GmbH Holzminden

(101)

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7.1 Risk Assessment

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