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Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)
Classifications according to Regulation (EC) No 1272/2008.
Printdate 08 Nov 2024

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product name:

Propylene oxide

1.1. Catalog No.:

682819

1.2. Relevant identified uses of the substance or mixture

Identified uses: Laboratory chemical
R&D

1.3. Uses advised against:

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1.4. Emergency telephone number

HPC Standards Tel. +49 34291 3372-36
This number is only available during office hours.

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
Regulation (EC) No 1272/2008
Acute toxicity - Oral Category 4 - (H302)
Acute toxicity - Dermal Category 3 - (H311)
Acute toxicity - Inhalation (Dusts/Mists) Category 3 - (H331)
Serious eye damage/eye irritation Category 2 - (H319)
Germ cell mutagenicity Category 1B - (H340)
Carcinogenicity Category 1B - (H350)
Specific target organ toxicity -- single exposure Category 3 - (H335)
Category 3 Respiratory irritation

2.2. Label elements

2.2.1. Pictogram

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2.2.2.

2.2 Label elements
Labelling according Regulation (EC) No 1272/2008
Pictogram
Signal Word Danger
Hazard statement(s)
H224 Extremely flammable liquid and vapor.
H302 Harmful if swallowed.
H311 + H331 Toxic in contact with skin or if inhaled.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H340 May cause genetic defects.
H350 May cause cancer.
Precautionary statement(s)
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
Supplemental Hazard Statements
none
Restricted to professional users.
Reduced Labeling (<= 125 ml)
Pictogram
Signal Word Danger
Hazard statement(s)
H224 Extremely flammable liquid and vapor.
H340 May cause genetic defects.
H350 May cause cancer.
H311 + H331 Toxic in contact with skin or if inhaled.
Precautionary statement(s)
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
Supplemental Hazard Statements
none 2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonyms : (±)-Methyloxirane
1,2-Epoxypropane
Formula : C3H6O
Molecular weight : 58,08 g/mol
CAS-No. : 75-56-9
EC-No. : 200-879-2
Index-No. : 603-055-00-4
Component propylene oxide Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)
CAS-No. : 75-56-9
EC-No. : 200-879-2
Index-No. : 603-055-00-4
Classification Flam. Liq. 1; Acute Tox. 4; Acute Tox. 3; Eye Irrit. 2; Muta. 1B; Carc. 1B; STOT

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SE 3; H224, H302, H331,
H311, H319, H340, H350,
H335
Concentration <= 100 %
For the full text of the H-Statements mentioned in this Section, see Section 16.

3.1.1. Formula

C3H6O

3.1.2. Molecular Weight (g/mol)

58.08

3.1.3. CAS-No.

75-56-9

4. FIRST AID MEASURES

4.1 Description of first-aid measures
General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.
If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.
In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.
If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.
4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Carbon dioxide (CO_2) Foam Dry powder
Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.
5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.
5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.
6.2 Environmental precautions
Do not let product enter drains. Risk of explosion.
6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.
6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
Advice on protection against fire and explosion Keep away from open flames, hot surfaces and sources of ignition.Take precautionary
measures against static discharge.
Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.
7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.
Over time, pressure may increase causing containers to burst Handle and open container with care. Heat sensitive. Cool to 0°C before opening.
Storage class
Storage class (TRGS 510): 3: Flammable liquids
7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Ingredients with workplace control parameters
8.2 Exposure controls
Personal protective equipment
Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: butyl-rubber
Minimum layer thickness: 0,7 mm
Break through time: 30 min
Material tested:Butoject® (KCL 898)
Body Protection
Flame retardant antistatic protective clothing.
Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type AX
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.
These measures have to be properly documented.
Control of environmental exposure
Do not let product enter drains. Risk of explosion.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
a) Physical state clear, liquid
b) Color colorless
c) Odor sweet, ether-like
d) Melting
point/freezing point
Melting point/range: -112 °C - lit.
e) Initial boiling point
and boiling range
34 °C - lit.
f) Flammability (solid,
gas)
No data available
g) Upper/lower
flammability or
explosive limits
Upper explosion limit: 36 - 45 %(V)
Lower explosion limit: 1,9 %(V)
h) Flash point -38 °C - Equilibrium method - closed cup
i) Autoignition
temperature
> 400 °C
at 1.005 - 1.018 hPa - Tested according to Directive 92/69/EEC.
j) Decomposition
temperature
No data available
k) pH No data available
l) Viscosity Viscosity, kinematic: 0,44 mm2/s at 0 °C - OECD Test Guideline 1140,37 mm2/s at 20 °C - OECD Test Guideline 114
Viscosity, dynamic: 0,32 mPa.s at 20 °C
m) Water solubility 425 g/l at 20 °C - OECD Test Guideline 105
n) Partition coefficient:
n-octanol/water
log Pow: 0,03 - Bioaccumulation is not expected.

o) Vapor pressure 2.028,5 hPa at 55 °C
p) Density 0,83 g/mL at 25 °C - lit.
Relative density 0,83 at 20 °C - Regulation (EC) No. 440/2008, Annex, A.3
q) Relative vapor
density
2,01 - (Air = 1.0)
r) Particle
characteristics
No data available
s) Explosive properties No data available
t) Oxidizing properties none
9.2 Other safety information
Surface tension 71,5 mN/m at 1,06g/l at 21 °C
- Surface tension
Relative vapor
density
2,01 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity
Vapors may form explosive mixture with air.
10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .
10.3 Possibility of hazardous reactions
Risk of ignition or formation of inflammable gases or vapours with:
Hydrogen fluoride
Oxidizing agents
Nitric acid
Risk of explosion with:
polymerisation initiators
Oxygen
Exothermic reaction with:
Strong oxidizing agents
Ammonia
halogens
alkali hydroxides
polymerization
alkalines
Amines
metallic oxides
metallic chlorides
chlorosulfonic acid
Hydrogen chloride gas
fuming sulfuric acid
aluminium chloride
acids
10.4 Conditions to avoid
Heat.
Warming.
10.5 Incompatible materials
rubber, various plastics, Copper
10.6 Hazardous decomposition products
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
LD50 Oral - Rat - male and female - 382 - 587 mg/kg

(OECD Test Guideline 401)
LC50 Inhalation - Rat - male and female - 4 h - 9,95 mg/l - vapor
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - 950 mg/kg
Remarks: (ECHA)
Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)
Serious eye damage/eye irritation
Eyes - Rabbit
Result: Severe irritations
(Draize Test)
Remarks: (RTECS)
Respiratory or skin sensitization
Split adjuvant test - Guinea pig
Result: negative
Remarks: (ECHA)
Germ cell mutagenicity
May cause genetic defects.
Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: positive
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Metabolic activation: without metabolic activation
Method: OECD Test Guideline 476
Result: positive
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Metabolic activation: without metabolic activation
Method: OECD Test Guideline 473
Result: positive
Test Type: Mutagenicity (mammal cell test): micronucleus.
Species: Rat
Cell type: Red blood cells (erythrocytes)
Application Route: inhalation (vapor)
Method: OECD Test Guideline 474
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Species: Rat
Application Route: inhalation (vapor)
Method: OECD Test Guideline 475
Result: negative
Carcinogenicity
Presumed to have carcinogenic potential for humans
Reproductive toxicity
No data available
Specific target organ toxicity - single exposure
Inhalation - May cause respiratory irritation. - Respiratory system
Specific target organ toxicity - repeated exposure
No data available
Aspiration hazard
No data available
11.2 Additional Information
Endocrine disrupting properties
Product:
Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
RTECS: TZ2975000
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish static test LC50 - Oncorhynchus mykiss (rainbow trout) - 52 mg/l - 96 h
(US-EPA)
Toxicity to daphnia
and other aquatic
invertebrates
static test EC50 - Daphnia magna (Water flea) - 350 mg/l - 48 h
(US-EPA)
Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 240 mg/l - 96 h
(US-EPA)
Toxicity to bacteria EC10 - Bacteria - 10 mg/l - 17 h
12.2 Persistence and degradability
Biodegradability aerobic - Exposure time 28 d
Result: 96 % - Readily biodegradable.
(OECD Test Guideline 301C)
12.3 Bioaccumulative potential
Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.
12.4 Mobility in soil
No data available
12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
12.6 Endocrine disrupting properties
Product:
Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
12.7 Other adverse effects
Stability in water - 15,7 yr
Remarks: reaction with hydroxyl radicals(calculated)
- ca.11 d
Remarks: Hydrolysis

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

14. TRANSPORT INFORMATION

14.1 UN number
ADR/RID: 1280 IMDG: 1280 IATA: 1280
14.2 UN proper shipping name
ADR/RID: PROPYLENE OXIDE
IMDG: PROPYLENE OXIDE
IATA: Propylene oxide
14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3
14.4 Packaging group
ADR/RID: I IMDG: I IATA: I
14.5 Environmental hazards

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ADR/RID: no IMDG Marine pollutant: no IATA: no
14.6 Special precautions for user
No data available

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.
Authorisations and/or restrictions on use
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).
: propylene oxide
REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)
: propylene oxide
National legislation
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
: ACUTE TOXIC
: FLAMMABLE LIQUIDS
: Propylene oxide
Other regulations
Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.
Take note of Dir 94/33/EC on the protection of young people at work.
15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. For lab use only!