

## propylene oxide

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## 1.1. Product identifier

|                           |   |
|---------------------------|---|
| Product name              | : propylene oxide   |
| Synonyms                  | : 1,2-epoxypropane; 1,2-propylene oxide; 2,3-epoxypropane; AD 6; AD 6, suspending agent; AI3-07541; Caswell no 713A; EPA pesticide chemical code 042501; epoxypropane; ethylene oxide, methyl-; methyl ethylene oxide; methyloxacyclopropane; methyloxirane; (+/-)-methyl oxirane; oxirane, methyl-; PO; propane, 1,2-epoxy-; propene oxide; propylene epoxide; (+/-)-propylene oxide; PST19910; STCC 4906620 |
| Registration number REACH | : 01-2119480483-35  |
| Product type REACH        | : Substance/mono-constituent  |
| CAS number                | : 75-56-9   |
| EC index number           | : 603-055-00-4  |
| EC number                 | : 200-879-2   |
| RTECS number              | : TZ2975000   |
| Molecular mass            | : 58.09 g/mol   |
| Formula                   | : C3H6O   |

## 1.2. Relevant identified uses of the substance or mixture and uses advised against

## 1.2.1 Relevant identified uses

Chemical intermediate  
Chemical raw material  
Disinfectant

## 1.2.2 Uses advised against

No uses advised against

## 1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

CHEMOGAS NV  
Westvaartdijk 85  
B-1850 Grimbergen Belgium  
☎ +32 2 251 60 87  
✉ +32 2 252 17 51  
info@chemogas.com

Distributor of the product

CHEMOGAS NV  
Westvaartdijk 85  
B-1850 Grimbergen Belgium  
☎ +32 2 251 60 87  
✉ +32 2 252 17 51  
info@chemogas.com

## 1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch):  
+32 14 58 45 45 (BIG)

## SECTION 2: Hazards identification

## 2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

| Class       | Category    | Hazard statements                            |
|-------------|-------------|--|
| Flam. Liq.  | category 1  | H224: Extremely flammable liquid and vapour. |
| Carc.       | category 1B | H350: May cause cancer.                      |
| Muta.       | category 1B | H340: May cause genetic defects.             |
| Acute Tox.  | category 3  | H331: Toxic if inhaled.                      |
| Acute Tox.  | category 3  | H311: Toxic in contact with skin.            |
| Acute Tox.  | category 4  | H302: Harmful if swallowed.                  |
| Eye Irrit.  | category 2  | H319: Causes serious eye irritation.         |
| STOT SE     | category 3  | H335: May cause respiratory irritation.      |
| Skin Irrit. | category 2  | H315: Causes skin irritation.                |

## 2.2. Label elements

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<http://www.big.be>  
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**Signal word**

Danger

**H-statements**

|             |   |
|-------------|---|
| H224        | Extremely flammable liquid and vapour.    |
| H350        | May cause cancer.                         |
| H340        | May cause genetic defects.                |
| H311 + H331 | Toxic in contact with skin or if inhaled. |
| H302        | Harmful if swallowed.                     |
| H319        | Causes serious eye irritation.            |
| H335        | May cause respiratory irritation.         |
| H315        | Causes skin irritation.                   |

**P-statements**

|                    |   |
|--------------------|---|
| P210               | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.      |
| P280               | Wear protective gloves, protective clothing and eye protection/face protection.                     |
| P261               | Avoid breathing vapours.  |
| P304 + P340        | IF INHALED: Remove person to fresh air and keep comfortable for breathing.                          |
| P303 + P361 + P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P361 + P364        | Take off immediately all contaminated clothing and wash it before reuse.                            |

**Supplemental information**

Restricted to professional users.

**2.3. Other hazards**

May build up electrostatic charges: risk of ignition  
Gas/vapour spreads at floor level: ignition hazard  
Odour threshold is well above the exposure limit  
Caution! Substance is absorbed through the skin

## SECTION 3: Composition/information on ingredients

**3.1. Substances**

| Name<br>REACH Registration No       | CAS No<br>EC No      | Conc. (C) | Classification according to CLP  | Note          | Remark           |
|-------------------------------------|----------------------|-----------|--|---------------|------------------|
| propylene oxide<br>01-2119480483-35 | 75-56-9<br>200-879-2 | C>99.9 %  | Flam. Liq. 1; H224<br>Carc. 1B; H350<br>Muta. 1B; H340<br>Acute Tox. 3; H331<br>Acute Tox. 3; H311<br>Acute Tox. 4; H302<br>Eye Irrit. 2; H319<br>STOT SE 3; H335<br>Skin Irrit. 2; H315 | (1)(10)(2)(4) | Mono-constituent |

(1) For H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

(4) Enumerated in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No. 1907/2006)

(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

**3.2. Mixtures**

Not applicable

## SECTION 4: First aid measures

**4.1. Description of first aid measures****General:**

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

**After inhalation:**

Remove the victim into fresh air. Immediately consult a doctor/medical service.

**After skin contact:**

Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Consult a doctor/medical service.

**After eye contact:**

Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

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## After ingestion:

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Give activated charcoal. Consult a doctor/medical service if you feel unwell.

## 4.2. Most important symptoms and effects, both acute and delayed

### 4.2.1 Acute symptoms

#### After inhalation:

Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. EXPOSURE TO HIGH CONCENTRATIONS: Central nervous system depression. Dizziness. Mental confusion. Headache. Coordination disorders. Drunkenness. Feeling of weakness. FOLLOWING SYMPTOMS MAY APPEAR LATER: Blue/grey discolouration of the skin. Disturbances of consciousness. Risk of lung oedema. Respiratory difficulties.

#### After skin contact:

Tingling/irritation of the skin. ON CONTINUOUS EXPOSURE/CONTACT: Caustic burns/corrosion of the skin.

#### After eye contact:

Irritation of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Corrosion of the eye tissue.

#### After ingestion:

Nausea. Vomiting.

### 4.2.2 Delayed symptoms

No effects known.

## 4.3. Indication of any immediate medical attention and special treatment needed

If applicable and available it will be listed below.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### 5.1.1 Suitable extinguishing media:

Preferably: alcohol resistant foam. Water spray. BC powder. Carbon dioxide.

#### 5.1.2 Unsuitable extinguishing media:

Solid water jet ineffective as extinguishing medium.

### 5.2. Special hazards arising from the substance or mixture

Upon combustion: CO and CO<sub>2</sub> are formed. Polymerizes on exposure to temperature rise: release of heat.

### 5.3. Advice for firefighters

#### 5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: extinguish/cool from behind cover. Do not move the load if exposed to heat. After cooling: persistent risk of physical explosion. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

#### 5.3.2 Special protective equipment for fire-fighters:

Gloves. Protective goggles. Head/neck protection. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit. Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Keep upwind. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Keep containers closed.

#### 6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

#### 6.1.2 Protective equipment for emergency responders

Gloves. Protective goggles. Head/neck protection. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit.

#### Suitable protective clothing

See heading 8.2

### 6.2. Environmental precautions

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Prevent soil and water pollution. Prevent spreading in sewers.

### 6.3. Methods and material for containment and cleaning up

Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite kieselguhr, powdered limestone. Do not take up in combustible material such as: saw dust. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

See heading 13.

## SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

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## 7.1. Precautions for safe handling

Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Gas/vapour heavier than air at 20°C. Observe strict hygiene. Keep container tightly closed. Remove contaminated clothing immediately. Cool before opening. Do not discharge the waste into the drain.

## 7.2. Conditions for safe storage, including any incompatibilities

### 7.2.1 Safe storage requirements:

Storage temperature: <50 °C. Ventilation at floor level. Fireproof storeroom. Keep locked up. Provide for an automatic sprinkler system. Provide for a tub to collect spills. Provide the tank with earthing. Unauthorized persons are not admitted. May be stored under nitrogen. Meet the legal requirements.

### 7.2.2 Keep away from:

Heat sources, ignition sources, combustible materials, oxidizing agents, (strong) acids, (strong) bases, amines, peroxides.

### 7.2.3 Suitable packaging material:

Steel, stainless steel, aluminium, iron, glass.

### 7.2.4 Non suitable packaging material:

Copper, plastics.

## 7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 Occupational exposure

##### a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

##### The Netherlands

|                 |   |                     |
|-----------------|---|---------------------|
| 1,2-Epoxypropan | Time-weighted average exposure limit 8 h (Public occupational exposure limit value) | 2.5 ppm             |
|                 | Time-weighted average exposure limit 8 h (Public occupational exposure limit value) | 6 mg/m <sup>3</sup> |

##### Belgium

|                    |  |                     |
|--------------------|--|---------------------|
| Oxyde de propylène | Time-weighted average exposure limit 8 h | 2 ppm               |
|                    | Time-weighted average exposure limit 8 h | 5 mg/m <sup>3</sup> |

##### USA (TLV-ACGIH)

|                 |  |       |
|-----------------|--|-------|
| Propylene oxide | Time-weighted average exposure limit 8 h (TLV - Adopted Value) | 2 ppm |
|-----------------|--|-------|

##### Germany

|              |   |                       |
|--------------|---|-----------------------|
| Propylenoxid | Time-weighted average exposure limit 8 h (TRGS 900) | 2 ppm                 |
|              | Time-weighted average exposure limit 8 h (TRGS 900) | 4.8 mg/m <sup>3</sup> |

##### France

|                    |  |                      |
|--------------------|--|----------------------|
| Oxyde de propylène | Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative) | 20 ppm               |
|                    | Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative) | 50 mg/m <sup>3</sup> |

##### UK

|                 |   |                      |
|-----------------|---|----------------------|
| Propylene oxide | Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005)) | 5 ppm                |
|                 | Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005)) | 12 mg/m <sup>3</sup> |

##### b) National biological limit values

If limit values are applicable and available these will be listed below.

#### 8.1.2 Sampling methods

| Product name    | Test  | Number |
|-----------------|-------|--------|
| Propylene Oxide | NIOSH | 1612   |
| Propylene Oxide | OSHA  | 88     |

#### 8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

#### 8.1.4 DNEL/PNEC values

##### DNEL/DMEL - Workers

###### propylene oxide

| Effect level (DNEL/DMEL) | Type                               | Value                 | Remark |
|--------------------------|------------------------------------|-----------------------|--------|
| DNEL                     | Long-term local effects inhalation | 5 mg/m <sup>3</sup>   |        |
|                          | Acute local effects inhalation     | 170 mg/m <sup>3</sup> |        |

##### DNEL/DMEL - General population

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| Effect level (DNEL/DMEL) | Type                               | Value                 | Remark |
|--------------------------|------------------------------------|-----------------------|--------|
| DNEL                     | Long-term local effects inhalation | 1.7 mg/m <sup>3</sup> |        |
|                          | Acute local effects inhalation     | 170 mg/m <sup>3</sup> |        |

## PNEC

propylene oxide

| Compartments                 | Value                    | Remark |
|------------------------------|--------------------------|--------|
| Fresh water                  | 0.052 mg/l               |        |
| Marine water                 | 0.0052 mg/l              |        |
| Aqua (intermittent releases) | 0.52 mg/l                |        |
| STP                          | 10 mg/l                  |        |
| Fresh water sediment         | 0.245 mg/kg sediment dw  |        |
| Marine water sediment        | 0.0245 mg/kg sediment dw |        |
| Soil                         | 0.0186 mg/kg soil dw     |        |

### 8.1.5 Control banding

If applicable and available it will be listed below.

## 8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 8.2.1 Appropriate engineering controls

Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Before use: check for peroxides and eliminate them. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

### 8.2.2 Individual protection measures, such as personal protective equipment

Observe strict hygiene. Keep container tightly closed. Do not eat, drink or smoke during work.

#### a) Respiratory protection:

Gas mask with filter type AX. Self-contained breathing apparatus if conc. in air > 1 vol %.

#### b) Hand protection:

- materials (good resistance)

Polyethylene/ethylenevinylalcohol, nitrile rubber.

- materials (poor resistance)

Butyl rubber, leather, natural rubber, neoprene, nitrile rubber, polyethylene, PVA, PVC, viton, nitrile rubber/PVC.

#### c) Eye protection:

Protective goggles.

#### d) Skin protection:

Head/neck protection. Protective clothing.

### 8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|                           |   |
|---------------------------|---|
| Physical form             | Liquid  |
| Odour                     | Sweet odour   |
|                           | Ether-like odour                                      |
| Odour threshold           | 35 - 200 ppm  |
|                           | 8.4 - 480 mg/m <sup>3</sup>                           |
| Colour                    | Colourless to light yellow                            |
| Particle size             | Not applicable (liquid)                               |
| Explosion limits          | 2 - 37 vol %  |
| Flammability              | Extremely flammable liquid and vapour.                |
| Log Kow                   | 0.055 ; Calculated                                    |
| Dynamic viscosity         | 0.58 mPa.s ; 20 °C                                    |
| Kinematic viscosity       | 0.374 mm <sup>2</sup> /s ; 20 °C ; OECD 114           |
| Melting point             | -112 °C ; 1013 hPa                                    |
| Boiling point             | 35 °C ; 1033 hPa - 1041 hPa                           |
| Flash point               | -38 °C ; 1007.5 hPa ; EU Method A.9                   |
| Evaporation rate          | No data available ; ether                             |
|                           | 34 ; butyl acetate                                    |
| Relative vapour density   | 3.6   |
| Vapour pressure           | 740 hPa ; 25 °C ; EU Method A.4                       |
|                           | 251 hPa ; 0 °C  |
|                           | 577 hPa ; 20 °C                                       |
| Solubility                | EU Method A.6 ; water ; 42.5 g/100 ml - 45.0 g/100 ml |
|                           | ethanol ; Complete                                    |
|                           | ether ; Complete                                      |
| Relative density          | 0.83 ; 20 °C ; EU Method A.3                          |
| Decomposition temperature | No data available                                     |
| Auto-ignition temperature | > 400 °C ; 1004.9 hPa - 1018.3 hPa ; EU Method A.15   |

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|                      |  |
|----------------------|--|
| Explosive properties | No chemical group associated with explosive properties |
| Oxidising properties | No chemical group associated with oxidising properties |
| pH                   | Not applicable   |

## 9.2. Other information

|   |   |
|---|---|
| Minimum ignition energy                       | 0.13 mJ                                       |
| Critical temperature                          | 209 °C  |
| Critical pressure                             | 49000 hPa                                     |
| Surface tension                               | 0.0715 N/m ; 21 °C ; 1.06 g/l ; EU Method A.5 |
| Relative density saturated vapour/air mixture | 1.6   |
| Saturation concentration                      | 1405 g/m <sup>3</sup>                         |
| Absolute density                              | 831 kg/m <sup>3</sup>                         |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Substance has neutral reaction.

### 10.2. Chemical stability

Unstable on exposure to heat.

### 10.3. Possibility of hazardous reactions

May form peroxides. Polymerizes on exposure to some compounds e.g. (some) acids/bases. Reacts violently with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion. Reacts violently with many compounds e.g.: with (strong) oxidizers: (increased) risk of fire/explosion.

### 10.4. Conditions to avoid

Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks.

### 10.5. Incompatible materials

Combustible materials, oxidizing agents, (strong) acids, (strong) bases, amines, peroxides.

### 10.6. Hazardous decomposition products

Upon combustion: CO and CO<sub>2</sub> are formed.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### 11.1.1 Test results

#### Acute toxicity

##### propylene oxide

| Route of exposure    | Parameter | Method                               | Value                       | Exposure time | Species           | Value determination | Remark |
|----------------------|-----------|--------------------------------------|-----------------------------|---------------|-------------------|---------------------|--------|
| Oral                 | LD50      | Equivalent to OECD 401               | 382 mg/kg bw - 587 mg/kg bw |               | Rat (male/female) | Experimental value  |        |
| Dermal               | LD50      | Single skin penetration LD50 rabbits | 950 mg/kg bw                | 4 h           | Rabbit            | Experimental value  |        |
| Inhalation (vapours) | LC50      | Equivalent to OECD 403               | 9.95 mg/l                   | 4 h           | Rat (male/female) | Experimental value  |        |

#### Conclusion

Harmful if swallowed.  
Toxic in contact with skin.  
Toxic if inhaled.

#### Corrosion/irritation

##### propylene oxide

| Route of exposure | Result     | Method   | Exposure time | Time point       | Species | Value determination | Remark |
|-------------------|------------|----------|---------------|------------------|---------|---------------------|--------|
| Eye               | Irritating | Human    |               |                  |         |                     |        |
| Skin              | Irritating | OECD 404 | 4 h           | 24; 48; 72 hours | Rabbit  | Experimental value  |        |
| Inhalation        | Irritating | Human    |               |                  |         |                     |        |

#### Conclusion

Causes skin irritation.  
Causes serious eye irritation.  
May cause respiratory irritation.  
Specific target organ toxicity, single exposure: classified as irritant to respiratory organs

#### Respiratory or skin sensitisation

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| Route of exposure | Result          | Method                                 | Exposure time | Observation time point | Species           | Value determination | Remark |
|-------------------|-----------------|--|---------------|------------------------|-------------------|---------------------|--------|
| Skin              | Not sensitizing | Equivalent to method of Maguire (1973) |               |                        | Guinea pig (male) | Experimental value  |        |

### Conclusion

Not classified as sensitizing for skin  
No respiratory sensitization data available

### Specific target organ toxicity

## propylene oxide

| Route of exposure    | Parameter | Method                 | Value   | Organ | Effect           | Exposure time                        | Species           | Value determination |
|----------------------|-----------|------------------------|---------|-------|------------------|--------------------------------------|-------------------|---------------------|
| Oral                 |           |                        |         |       |                  |                                      |                   | Data waiving        |
| Dermal               |           |                        |         |       |                  |                                      |                   | Data waiving        |
| Inhalation (vapours) | NOAEC     | Equivalent to OECD 453 | 30 ppm  |       | No effect        | 123 -124 weeks (6h/day, 5 days/week) | Rat (male/female) | Experimental value  |
| Inhalation (vapours) | LOAEC     | Equivalent to OECD 451 | 200 ppm | Nose  | Nasal irritation | 103 weeks (6h/day, 5 days/week)      | Rat (male/female) | Experimental value  |

### Conclusion

Not classified for subchronic toxicity

### Mutagenicity (in vitro)

## propylene oxide

| Result  | Method                 | Test substrate                | Effect | Value determination |
|---|------------------------|-------------------------------|--------|---------------------|
| Positive with metabolic activation, positive without metabolic activation | Equivalent to OECD 471 | Escherichia coli              |        | Experimental value  |
| Negative with metabolic activation, negative without metabolic activation | Equivalent to OECD 471 | Bacteria (S.typhimurium)      |        | Experimental value  |
| Positive without metabolic activation                                     | Equivalent to OECD 476 | Mouse (lymphoma L5178Y cells) |        | Experimental value  |

### Mutagenicity (in vivo)

## propylene oxide

| Result   | Method                               | Exposure time                 | Test substrate                        | Organ | Value determination |
|----------|--------------------------------------|-------------------------------|---------------------------------------|-------|---------------------|
| Negative | Equivalent to OECD 475               | 4 weeks (6h/day, 5 days/week) | Rat (male)                            | Blood | Experimental value  |
| Positive | Drosophila SLRL test (gene mutation) |                               | Drosophila melanogaster (male/female) |       | Experimental value  |

### Carcinogenicity

## propylene oxide

| Route of exposure    | Parameter | Method                 | Value       | Exposure time                       | Species             | Value determination | Organ | Effect             |
|----------------------|-----------|------------------------|-------------|-------------------------------------|---------------------|---------------------|-------|--------------------|
| Inhalation (vapours) | NOAEC     | Equivalent to OECD 451 | 200 ppm     | 103 weeks (6h/day, 5 days/week)     | Rat (male/female)   | Experimental value  |       | Neoplastic effects |
| Inhalation (vapours) | NOAEC     | Equivalent to OECD 453 | 100 ppm     | 123-124 weeks (6h/day, 5 days/week) | Rat (female)        | Experimental value  |       | Neoplastic effects |
| Inhalation (vapours) | NOAEC     | Equivalent to OECD 451 | 200 ppm     | 103 weeks (6h/day, 5 days/week)     | Mouse (male/female) | Experimental value  |       | Neoplastic effects |
| Oral                 | LOAEL     | Not further determined | 15 mg/kg bw | 150 week(s)                         | Rat (female)        | Experimental value  |       | Neoplastic effects |

### Reproductive toxicity

## propylene oxide

|                        | Parameter | Method | Value   | Exposure time                | Species      | Effect    | Organ | Value determination |
|------------------------|-----------|--------|---------|------------------------------|--------------|-----------|-------|---------------------|
| Developmental toxicity | NOEC      | US EPA | 300 ppm | 6-15 days (gestation, daily) | Rat          | No effect |       | Experimental value  |
| Maternal toxicity      | NOAEC     | Other  | 300 ppm | 6-15 days (gestation, daily) | Rat (female) | No effect |       | Experimental value  |

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|                      |            |                        |           |  |                   |           |  |                    |
|----------------------|------------|------------------------|-----------|--|-------------------|-----------|--|--------------------|
| Effects on fertility | NOAEC (F1) | Equivalent to OECD 416 | > 300 ppm |  | Rat (male/female) | No effect |  | Experimental value |
|----------------------|------------|------------------------|-----------|--|-------------------|-----------|--|--------------------|

## Conclusion CMR

May cause genetic defects.  
May cause cancer.  
Not classified for reprotoxic or developmental toxicity

## Toxicity other effects

### propylene oxide

No (test) data available

## Chronic effects from short and long-term exposure

### propylene oxide

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Change in the haemogramme/blood composition.

## SECTION 12: Ecological information

### 12.1. Toxicity

#### propylene oxide

|   | Parameter | Method             | Value    | Duration  | Species                         | Test design   | Fresh/salt water | Value determination     |
|---|-----------|--------------------|----------|-----------|---------------------------------|---------------|------------------|-------------------------|
| Acute toxicity fishes                   | LC50      | EPA 660/3 - 75/009 | 52 mg/l  | 96 h      | Salmo gairdneri                 | Static system | Fresh water      | Experimental value; GLP |
|   | TLm       | APHA               | 89 mg/l  | 96 h      | Mugil cephalus                  | Static system | Salt water       | Experimental value      |
| Acute toxicity invertebrates            | EC50      | EPA 660/3 - 75/009 | 350 mg/l | 48 h      | Daphnia magna                   | Static system | Fresh water      | Experimental value      |
| Toxicity algae and other aquatic plants | EC50      | EPA 660/3 - 75/009 | 240 mg/l | 96 h      | Pseudokirchneriella subcapitata | Static system | Fresh water      | Experimental value      |
| Toxicity aquatic micro-organisms        | NOEC      | OECD 301C          | 100 mg/l | 28 day(s) |                                 |               |                  | Experimental value      |

## Conclusion

Harmful to fishes  
Not harmful to algae  
Not harmful to bacteria  
Not harmful to invertebrates  
In appropriate low concentrations inhibition of the degradation of activated sludge is not anticipated  
Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

### 12.2. Persistence and degradability

#### propylene oxide

##### Biodegradation water

| Method                            | Value | Duration  | Value determination |
|-----------------------------------|-------|-----------|---------------------|
| OECD 301C: Modified MITI Test (I) | 89 %  | 28 day(s) | Experimental value  |

##### Phototransformation air (DT50 air)

| Method | Value     | Conc. OH-radicals | Value determination |
|--------|-----------|-------------------|---------------------|
| Other  | 32 day(s) |                   | Literature          |

## Conclusion

Readily biodegradable in water

### 12.3. Bioaccumulative potential

#### propylene oxide

##### Log Kow

| Method | Remark | Value | Temperature | Value determination |
|--------|--------|-------|-------------|---------------------|
|        |        | 0.055 |             | Calculated          |

## Conclusion

Low potential for bioaccumulation (Log Kow < 4)

### 12.4. Mobility in soil

#### propylene oxide

##### (log) Koc

| Parameter | Method | Value | Value determination                          |
|-----------|--------|-------|--|
|           |        |       | Not determined, exemption according to REACH |

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## Conclusion

Low potential for adsorption in soil

## 12.5. Results of PBT and vPvB assessment

Substance does not meet the criteria of PBT, nor the criteria of vPvB according to Annex XIII of Regulation (EC) No 1907/2006, so is neither PBT nor vPvB.

## 12.6. Other adverse effects

### propylene oxide

#### Global warming potential (GWP)

Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 517/2014)

#### Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

#### Ground water

Ground water pollutant

## SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

### 13.1. Waste treatment methods

#### 13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

07 01 01\* (wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals: aqueous washing liquids and mother liquors). Depending on branch of industry and production process, also other waste codes may be applicable. Hazardous waste according to Regulation (EU) No 1357/2014.

#### 13.1.2 Disposal methods

Recycle/reuse. Incinerate under surveillance with energy recovery. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment.

#### 13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC).

15 01 10\* (packaging containing residues of or contaminated by dangerous substances).

## SECTION 14: Transport information

### Road (ADR)

#### 14.1. UN number

|           |      |
|-----------|------|
| UN number | 1280 |
|-----------|------|

#### 14.2. UN proper shipping name

|                      |                 |
|----------------------|-----------------|
| Proper shipping name | Propylene oxide |
|----------------------|-----------------|

#### 14.3. Transport hazard class(es)

|                              |    |
|------------------------------|----|
| Hazard identification number | 33 |
| Class                        | 3  |
| Classification code          | F1 |

#### 14.4. Packing group

|               |   |
|---------------|---|
| Packing group | I |
| Labels        | 3 |

#### 14.5. Environmental hazards

|  |    |
|--|----|
| Environmentally hazardous substance mark | no |
|--|----|

#### 14.6. Special precautions for user

|                    |       |
|--------------------|-------|
| Special provisions |       |
| Limited quantities | none. |

### Rail (RID)

#### 14.1. UN number

|           |      |
|-----------|------|
| UN number | 1280 |
|-----------|------|

#### 14.2. UN proper shipping name

|                      |                 |
|----------------------|-----------------|
| Proper shipping name | Propylene oxide |
|----------------------|-----------------|

#### 14.3. Transport hazard class(es)

|                              |    |
|------------------------------|----|
| Hazard identification number | 33 |
| Class                        | 3  |
| Classification code          | F1 |

#### 14.4. Packing group

|               |   |
|---------------|---|
| Packing group | I |
| Labels        | 3 |

#### 14.5. Environmental hazards

|  |    |
|--|----|
| Environmentally hazardous substance mark | no |
|--|----|

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## 14.6. Special precautions for user

|                    |       |
|--------------------|-------|
| Special provisions |       |
| Limited quantities | none. |

## Inland waterways (ADN)

### 14.1. UN number

|           |      |
|-----------|------|
| UN number | 1280 |
|-----------|------|

### 14.2. UN proper shipping name

|                      |                 |
|----------------------|-----------------|
| Proper shipping name | Propylene oxide |
|----------------------|-----------------|

### 14.3. Transport hazard class(es)

|                     |    |
|---------------------|----|
| Class               | 3  |
| Classification code | F1 |

### 14.4. Packing group

|               |   |
|---------------|---|
| Packing group | I |
| Labels        | 3 |

### 14.5. Environmental hazards

|  |    |
|--|----|
| Environmentally hazardous substance mark | no |
|--|----|

## 14.6. Special precautions for user

|                    |       |
|--------------------|-------|
| Special provisions |       |
| Limited quantities | none. |

## Sea (IMDG/IMSBC)

### 14.1. UN number

|           |      |
|-----------|------|
| UN number | 1280 |
|-----------|------|

### 14.2. UN proper shipping name

|                      |                 |
|----------------------|-----------------|
| Proper shipping name | Propylene oxide |
|----------------------|-----------------|

### 14.3. Transport hazard class(es)

|       |   |
|-------|---|
| Class | 3 |
|-------|---|

### 14.4. Packing group

|               |   |
|---------------|---|
| Packing group | I |
| Labels        | 3 |

### 14.5. Environmental hazards

|  |    |
|--|----|
| Marine pollutant                         | -  |
| Environmentally hazardous substance mark | no |

## 14.6. Special precautions for user

|                    |       |
|--------------------|-------|
| Special provisions |       |
| Limited quantities | none. |

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

|                          |   |
|--------------------------|---|
| Annex II of MARPOL 73/78 | Not applicable, based on available data |
|--------------------------|---|

## Air (ICAO-TI/IATA-DGR)

### 14.1. UN number

|           |      |
|-----------|------|
| UN number | 1280 |
|-----------|------|

### 14.2. UN proper shipping name

|                      |                 |
|----------------------|-----------------|
| Proper shipping name | Propylene oxide |
|----------------------|-----------------|

### 14.3. Transport hazard class(es)

|       |   |
|-------|---|
| Class | 3 |
|-------|---|

### 14.4. Packing group

|               |   |
|---------------|---|
| Packing group | I |
| Labels        | 3 |

### 14.5. Environmental hazards

|  |    |
|--|----|
| Environmentally hazardous substance mark | no |
|--|----|

## 14.6. Special precautions for user

|   |           |
|---|-----------|
| Special provisions  |           |
| Passenger and cargo transport: limited quantities: maximum net quantity per packaging | Forbidden |

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### European legislation:

VOC content Directive 2010/75/EU

| VOC content | Remark |
|-------------|--------|
| 100 %       |        |

REACH Candidate list

Enumerated in candidate list of substances of very high concern (SVHC) for authorisation (Article 59 of Regulation (EC) No 1907/2006)

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## REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

|                   | Designation of the substance, of the group of substances or of the mixture  | Conditions of restriction   |
|-------------------|---|---|
| · propylene oxide | Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008:<br>(a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F;<br>(b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10;<br>(c) hazard class 4.1;<br>(d) hazard class 5.1. | 1. Shall not be used in:<br>— ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,<br>— tricks and jokes,<br>— games for one or more participants, or any article intended to be used as such, even with ornamental aspects,2. Articles not complying with paragraph 1 shall not be placed on the market.3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:<br>— can be used as fuel in decorative oil lamps for supply to the general public, and,<br>— present an aspiration hazard and are labelled with R65 or H304,4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:<br>a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: "Keep lamps filled with this liquid out of the reach of children"; and, by 1 December 2010, "Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life- threatening lung damage";<br>b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: "Just a sip of grill lighter may lead to life threatening lung damage";<br>c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.' |
| · propylene oxide | Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as carcinogen category 1A or 1B (Table 3.1) or carcinogen category 1 or 2 (Table 3.2) and listed as follows: - Carcinogen category 1A (Table 3.1)/carcinogen category 1 (Table 3.2) listed in Appendix 1 - Carcinogen category 1B (Table 3.1)/carcinogen category 2 (Table 3.2) listed in Appendix 2   | Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30:1. Shall not be placed on the market, or used,<br>— as substances,<br>— as constituents of other substances, or,<br>— in mixtures,<br>for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:<br>— either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or,<br>— the relevant concentration specified in Directive 1999/45/EC where no specific concentration limit is set out in Part 3 of Annex VI to Regulation (EC) No 1272/2008. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows: "Restricted to professional users".2. By way of derogation, paragraph 1 shall not apply to:<br>(a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC;<br>(b) cosmetic products as defined by Directive 76/768/EEC;<br>(c) the following fuels and oil products:<br>— motor fuels which are covered by Directive 98/70/EC,<br>— mineral oil products intended for use as fuel in mobile or fixed combustion plants,<br>— fuels sold in closed systems (e.g. liquid gas bottles);<br>(d) artists' paints covered by Directive 1999/45/EC;<br>(e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date.   |
| · propylene oxide | Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as germ cell mutagen category 1A or 1B (Table 3.1) or mutagen category 1 or 2 (Table 3.2) and listed as follows: - Mutagen category 1A (Table 3.1)/mutagen category 1 (Table 3.2) listed in Appendix 3 - Mutagen category 1B (Table 3.1) /mutagen category 2 (Table 3.2) listed in Appendix 4  | Without prejudice to the other parts of this Annex the following shall apply to entries 28 to 30:1. Shall not be placed on the market, or used,<br>— as substances,<br>— as constituents of other substances, or,<br>— in mixtures,<br>for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:<br>— either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or,<br>— the relevant concentration specified in Directive 1999/45/EC where no specific concentration limit is set out in Part 3 of Annex VI to Regulation (EC) No 1272/2008. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows: "Restricted to professional users".2. By way of derogation, paragraph 1 shall not apply to:   |

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|                 |   |  |
|-----------------|---|--|
|                 |   | (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC;<br>(b) cosmetic products as defined by Directive 76/768/EEC;<br>(c) the following fuels and oil products:<br>— motor fuels which are covered by Directive 98/70/EC,<br>— mineral oil products intended for use as fuel in mobile or fixed combustion plants,<br>— fuels sold in closed systems (e.g. liquid gas bottles);<br>(d) artists' paints covered by Directive 1999/45/EC;<br>(e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date.   |
| propylene oxide | Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to that Regulation or not. | 1. Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following:<br>— metallic glitter intended mainly for decoration,<br>— artificial snow and frost,<br>— “whoopee” cushions,<br>— silly string aerosols,<br>— imitation excrement,<br>— horns for parties,<br>— decorative flakes and foams,<br>— artificial cobwebs,<br>— stink bombs.2. Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances, suppliers shall ensure before the placing on the market that the packaging of aerosol dispensers referred to above is marked visibly, legibly and indelibly with:<br>“For professional users only”.3. By way of derogation, paragraphs 1 and 2 shall not apply to the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/ 324/EEC.4. The aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless they conform to the requirements indicated. |

## National legislation The Netherlands

|  |   |
|--|---|
| Waste identification (the Netherlands) | LWCA (the Netherlands): KGA category 06       |
| SZW - List of carcinogenic substances  | Listed in SZW-list of carcinogenic substances |
| SZW - List of mutagenic substances     | Listed in SZW-list of mutagenic substances    |
| Waterbezwaarlijkheid                   | 2   |

## National legislation Germany

|                                |  |
|--------------------------------|--|
| MAK - Krebserzeugend Kategorie | 2  |
| WGK                            | 3; Classification water polluting based on the R-phrases in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 3) |
| TA-Luft                        | 5.2.7.1.1; III   |
| TRGS900 - Kanzerogener Stoff   | Kanzerogener Stoff der Kat. 1A/1B  |

## National legislation France

|                       |     |
|-----------------------|-----|
| Catégorie cancérigène | C1B |
|-----------------------|-----|

## National legislation Belgium

|                           |   |
|---------------------------|---|
| Additional classification | C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes au travail. |
|---------------------------|---|

## Other relevant data

|                       |                     |
|-----------------------|---------------------|
| TLV - Carcinogen      | Propylene oxide; A3 |
| IARC - classification | 2B; Propylene oxide |

## 15.2. Chemical safety assessment

A chemical safety assessment has been performed.

## SECTION 16: Other information

### Full text of any H-statements referred to under headings 2 and 3:

- H224 Extremely flammable liquid and vapour.
- H302 Harmful if swallowed.
- H311 Toxic in contact with skin.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H331 Toxic if inhaled.
- H335 May cause respiratory irritation.
- H340 May cause genetic defects.
- H350 May cause cancer.

(\* ) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

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The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.

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