INEOS Oxide

SAFETY DATA SHEET

Based upon Regulation (EC) No. 1907/2006, as amended by Regulation (EC) No. 453/2010

monopropylene glycol

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

1.1 Product identifier:

Product name : monopropylene glycol
Synonyms : propane-1,2-diol; 1,2-propanediol; alpha-propylene glycol; MPG
Registration number REACH : 01-2119456809-23-0006
Product type REACH : Substance/mono-constituent (Organic)
CAS number : 57-55-6
EC number : 200-338-0
RTECS number : TY2000000
Molecular mass : 76.10 g/mol
Formula : C3H8O2

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

1.2.1 Relevant identified uses

Exposure scenario title	Exposure scenario group	Sector of use	Use descriptors (PROC or PC)	Use descriptors (ERC)
01: Use as a monomer for polymer manufacture	Industrial	SU 3	PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 15	ERC 6c
02: Use in/as de-icing/anti-icing applications/agents	Industrial	SU 3	PROC 1, PROC 2, PROC 3, PROC 8a, PROC 8b	ERC 7

1.2.2 Uses advised against

Group	Uses advised against	Use descriptors	Use descriptors (ERC)
Consumer	No uses advised against		
Industrial	No uses advised against		
Professional	No uses advised against		

Group	Uses advised against	Use descriptors	Article (AC)
Consumer	No uses advised against		
Industrial	No uses advised against		
Professional	No uses advised against		

1.3 Details of the supplier of the safety data sheet:

Supplier of the SDS

INEOS N.V.
Haven 1053 - Nieuwe Weg 1
B-2070 Zwijndrecht
Tel: +32 3 250 91 11
Fax: +32 3 252 84 33
reach.oxide.be@ineos.com

Producer of the product

Ineos Manufactering Deutschland Gmbh
Alte Strasse 201
D-50769 Köln
Tel: +49 221 35 55 22 22
Fax: +49 21 33 55 57 89

1.4 Emergency telephone number:

24h/24h: +32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation EC No 1272/2008

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

Not classified as dangerous according to the criteria of directive(s) 67/548/EEC and/or 1999/45/EC

2.2 Label elements:

Labelling according to Regulation EC No 1272/2008 (CLP)

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Not classified as dangerous in compliance with Directive 67/548/EEC and/or Directive 1999/45/EC

2.3 Other hazards:

SECTION 3: Composition/information on ingredients

3.1 Substances:

Name (REACH Registration No)	CAS No EC No	Conc.	Classification according to DSD/ DPD	Classification according to CLP	Note	Remark
propane-1,2-diol (01-2119456809-23)	57-55-6 200-338-0	>99 %			(2)	Mono-constituent

(2) Substance with a Community workplace exposure limit

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. Alcohol consumption increases the toxicity.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Rinse with water. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

After eye contact:

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

After ingestion:

Rinse mouth with water. 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

Cramps/uncontrolled muscular contractions

AFTER ABSORPTION OF HIGH QUANTITIES:

After inhalation:

EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat.

After skin contact:

Slight irritation. ON CONTINUOUS EXPOSURE/CONTACT: Red skin. Dry skin.

After eye contact:

Redness of the eye tissue. Slight irritation.

After ingestion:

AFTER ABSORPTION OF HIGH QUANTITIES: Nausea. Abdominal pain.

4.2.2 Delayed symptoms

If applicable and available it will be listed below.

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:

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

5.1.2 Unsuitable extinguishing media:

Container may slop over if solid jet (water/foam) is applied.

5.2 Special hazards arising from the substance or mixture:

Upon combustion CO and CO2 are formed.

5.3 Advice for firefighters:

5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Protective clothing. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

No naked flames.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Protective clothing.

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.

6.3 Methods and material for containment and cleaning up:

Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite. Scoop absorbed substance into closing containers. Clean contaminated surfaces with an excess of water. 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.

7.1 Precautions for safe handling:

Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Gas/vapour heavier than air at 20°C. Observe normal hygiene standards. Keep container tightly closed. Remove contaminated clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities:

7.2.1 Safe storage requirements:

Store at ambient temperature. Keep out of direct sunlight. Store in a dry area. Ventilation at floor level. Meet the legal requirements.

7.2.2 Keep away from:

Oxidizing agents, reducing agents, (strong) acids, water/moisture.

7.2.3 Suitable packaging material:

Stainless steel, carbon steel, aluminium, copper, bronze, nickel, steel with plastic inner lining.

7.2.4 Non suitable packaging material:

No data available

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.

Limit Value (UK)

Propane-1,2-diol (total(vapour and part.) and particulates	Short time value	- ppm - mg/m³	
	Time-weighted average exposure limit 8 h	- P/150 T ppm 10 P/474 T mg/m³	

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 Glycol	NIOSH	5523

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

Workers

monopropylene glycol

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	168 mg/m³	
	Long-term local effects inhalation	10 mg/m³	

General population

monopropylene glycol

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	50 mg/m³	
	Long-term local effects inhalation	10 mg/m³	

PNEC

monopropylene glycol

Compartments	Value	Remark
Fresh water	206 mg/l	
Marine water	26 mg/l	
Fresh water sediment	572 mg/kg sediment dw	
Marine water sediment	57.2 mg/kg sediment dw	
Soil	50 mg/kg soil dw	
STP	20000 mg/l	

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

Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/ under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

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

a) Respiratory protection:

Respiratory protection not required in normal conditions.

b) Hand protection:

Gloves.

- materials for protective clothing (good resistance)

Butyl rubber, natural rubber, polyethylene, PVC, polyethylene/ethylenevinylalcohol.

c) Eye protection:

Safety glasses.

d) Skin 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	Almost odourless
Odour threshold	No data available
Colour	Colourless
Particle size	Not applicable
Explosion limits	No data available
Flammability	Non-flammable
Log Kow	-1.07 ; Test data ; Equivalent or similar to OECD 107 ; 20.5 °C
Dynamic viscosity	0.0434 Pa.s ; 25 °C
Kinematic viscosity	
Melting point	<-20 °C ; Test data
Boiling point	184 °C ; 1003.2 hPa ; Test data
Flash point	104 °C ; Test data ; 1000.1 hPa
Evaporation rate	No data available ; ether
	< 0.1 ; butyl acetate
Vapour pressure	0.2 hPa ; 20 °C ; Test data
Relative vapour density	2.6
Solubility	water ; Complete
	ethanol ; Complete
	acetone ; Complete
	ether ; 12 g/100 ml
Relative density	1.03 ; 20 °C ; Test data
Decomposition temperature	No data available
Auto-ignition temperature	>400 °C ; Test data ; 1000.1 - 1014 hPa
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	6.5 - 7.5 ; 50 %

Physical hazards

No physical hazard class

9.2 Other information:

Specific conductivity	4.400 µS/m
Surface tension	0.0716 N/m ; 21.5 °C
Relative density saturated vapour/air mixture	1.0

SECTION 10: Stability and reactivity

10.1 Reactivity:

Temperature above flashpoint: higher fire/explosion hazard.

10.2 Chemical stability:

Hygroscopic.

10.3 Possibility of hazardous reactions:

Reacts violently with (strong) oxidizers: (increased) risk of fire. Violent to explosive reaction with (strong) acids.

10.4 Conditions to avoid:

Keep away from naked flames/heat. At temp > flashpoint: use spark-/explosionproof appliances. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks.

10.5 Incompatible materials:

Oxidizing agents, reducing agents, (strong) acids, water/moisture.

10.6 Hazardous decomposition products:

Upon combustion CO and CO2 are formed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

11.1.1 Test results

- Toxicokinetics: summary

Oral absorption: Toxicokinetic behavior of monopropylene glycol and its structural homologue tripropylene glycol upon oral administration to rats was investigated in a well-conducted and well-reported study (The Dow Chemical Company, 1995). In this study, two groups of 5 male rats were administered a single oral dose of either radiolabeled (14C) tripropylene glycol or non-radiolabeled monopropylene glycol by gavage in water at target concentrations 40 mg/kg bw and 50 mg/kg bw, respectively. The excreta were collected for ca. 24 hours postdosing. After sacrifice 24 hours post-dosing the remaining radioactivity in tissues was determined for the first group and urine was analyzed for free and acid-abile conjugates of mono-, di- and tripropylene glycol for both groups. While the absorption of monopropylene glycol has not been specifically investigated in the study, the data on tripropylene glycol indicate that it is rapidly adsorbed if administered by gavage, based on the average recovery of ca. 91% of the 14C label administered from excreta, CO2, skin, tissues and carcass after ca. 24 hours postdosing sacrifice. The absorption of tripropylene glycol via oral route was calculated to amount to at least 86%, based on 5% of the administered dose recovered in faeces. As monopropylene glycol has a significantly lower molecular weight, its absorption from the gut is expected to occur even faster. Toxicokinetic behavior of monopropylene glycol in humans and experimental animals was also evaluated by the NTP CERHR expert panel (National Toxicology Program, 2004a), which concluded that available data indicate rapid and extensive absorption. Therefore a value of 100% for oral absorption shall be used for risk assessment for monopropylene glycol

Distribution: No data on the distribution of monopropylene glycol were reported in the study; however, in case of tripropylene glycol, approximately 10% of the radiolabeled dose was recovered in tissues and carcass, with the liver and kidney having the greatest amount of radiolabel per gram of tissue 24 hours after dosing (ca. 0.2 and 0.1%, respectively). The 14C concentration in blood was approximately 6.4 and 2.8 -fold lower than in liver and kidney, respectively. The expert panel of NTP CERHR (National Toxicology Program, 2004a) concluded that monopropylene glycol is rapidly distributed into total body water

Metabolism and excretion: In the study with rats administered monopropylene glycol and radiolabeled monopropylene glycol, the data on the animals indicate that approximately 11% of the monopropylene glycol administered was recovered in the urine as free monopropylene glycol (with < 1% of the dose recovered as acid-labile conjugates). In the study with radiolabeld tripropylene glycol, twenty-four hours after administration of a single oral dose of 40 mg/kg bw to male rats, only 5.8% of the dose was recovered as unmetabolized parent compound in the urine, while 7.2% was recovered as acid-labile conjugates of tripropylene glycol, 5.1% and 3.3% as free and acid-labile conjugates of dipropylene glycol and 3.3% and 0.6% as free and acid-labile conjugates of monopropylene glycol, respectively. A large fraction (21%) of the 14C-tripropylene glycol dose was catabolized all the way to 14CO2, indicating considerable breakdown of tripropylene glycol. According to the NTP CERHR expert panel report (National Toxicology Program, 2004a), the rate-determining step in the metabolism is alcohol dehydrogenase which, when saturated, switches from a first order process into a zero order process. Saturation of metabolism appears to occur in rats and rabbits at a dose of about 1600 to 2000 mg/kg bw, whereas in humans this seems to happen at a dose of about 200 mg/kg bw. In accordance with a zero order process, the half-life of monopropylene glycol in humans and rats increases from about 1.5 hours to more than 5 hours with increasing doses above metabolic saturation. By a NAD-dependent reaction, alcohol dehydrogenase converts monopropylene glycol to lactaldehyde, which is further metabolized to lactate

Since monopropylene glycol has a chiral center, technical grade monopropylene glycol results in the formation of 50/50 D, L-lactate. L-lactate is indistinguishable from endogenous lactate, which is a good substrate for gluconeogenesis. D-lactate is less readily converted to glucose than L-lactate, which prolongs its half-life leading, under conditions of prolonged exposure, to D-lactic acidosis. It is difficult to cause L-lactic acidosis even with very high doses of monopropylene glycol because of its efficient detoxification via gluconeogenesis. The second reason for lack of development of L-lactic acidosis is the saturation of alcohol dehydrogenase, which results in a constant rate of lactate production. Due to removal of L-lactate by gluconeogenesis, a further increase in lactate levels is not possible after saturation of metabolism. The excretion of monopropylene glycol is species-dependent. Humans clear about 45% of monopropylene glycol via kidney, and in dogs, up to 88%. In rats and rabbits, very little of the parent compound is excreted by the kidney until saturation of metabolism occurs. Inhibition of alcohol dehydrogenase by pyrazole increases urinary excretion of monopropylene glycol to 75% in rats, as expected. Since monopropylene glycol has very low intrinsic toxicity, saturation of metabolism plays a protective role in its toxicity since the conversion of monopropylene glycol to the more toxic lactate (particularly D-lactate) is slowed

Inhalation route of exposure: Only limited data addressing the absorption of monopropylene glycol by inhalation are available. Bau et al. (1971) reported that less than 5% of a technetium-labeled aerosol containing 10% monopropylene glycol in deionized water was taken up by human volunteers after inhalation for 1 hour in a mist tent. The authors measured the aerosol mass median diameter to be 4.8 -5.4 microns, a size small enough to have enabled penetration to the deep lung. Ninety percent of the dose was found in the nasopharynx and it rapidly entered the stomach with very little entering the lungs. Monopropylene glycol was not directly measured, not allowing the determination of absorption through the nasal mucosa. However, the low dose rate from inhalation exposure and the small surface area would not lead to significant absorption of monopropylene glycol

Dermal route of exposure: An in vitro skin penetration study (El du Pont de Nemours and Company, 2007) with the monopropylene glycol using human cadaver skin and performed under infinite dose conditions, was available for assessment. A nominal dose of 1200 µL/cm2 (ca. 1.2 g/cm2) of the neat substance was applied for 24 hours under occlusive conditions to 6 skin replicates representing 5 human subjects. By the conclusion of the 24-hour exposure interval, only a negligible portion of the applied dose of neat monopropylene glycol (0.14%) had penetrated through the skin into the receptor fluid. The integrity of human skin, as determined by electrical impendance (EI), was affected by continuous exposure to monopropylene glycol under occlusive conditions. The ratio of the post-EI values was 0.33, confirming that the barrier properties of the stratum corneum were altered by monopropylene glycol

In general, monopropylene glycol was detected in receptor fluid within about an hour of application (lag time ~ 6 hours); steady-state penetration, which was represented by no less than 4 data points, was determined to be 95.4 µg/cm2/h (r2]0.999). This represents the maximum flux for neat monopropylene glycol. Based on the slope at steady-state (95.4 µg/cm2/h) and the concentration of monopropylene glycol in the applied solution, taken as its density (1,036,000 µg/cm3), the permeability coefficient for neat monopropylene glycol calculated to be 9.21×10-5cm/h. Based on the results of the study, a value of 40% for dermal absorption has been chosen by expert judgment to be used in the risk assessment. This value has been chosen as an average value between the percentage of dermal absorption obtained in the study and the maximal oral absorption (corresponding to 100%), and is considered to represent a worst-case approach

Acute toxicity

monopropylene glycol

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination
Oral	LD50	Equivalent or similar to OECD 401	22000 mg/kg bw	-	Rat	Male/female	Experimental value
Dermal	LD50	Equivalent or similar to OECD 402	>2000 mg/kg bw	24 h	Rabbit		Experimental value
Inhalation	LC50	Equivalent or similar to OECD 403	317042 mg/l	2 h	Rabbit		Experimental value

Conclusion

Low acute toxicity by the oral route

Low acute toxicity by the dermal route

Low acute toxicity by the inhalation route

Corrosion/irritation

monopropylene glycol

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination
Eye	Not irritating	OECD 405	-	24; 48; 72 hours	Rabbit	Experimental value
Dermal	Not irritating	OECD 404	-	24; 48; 72 hours	Rabbit	Experimental value
Dermal	Slightly irritating	Patch test	24 h	24 hours	Human	Experimental value
Inhalation	No data available					

Conclusion

Not classified as irritating to the skin

Not classified as irritating to the eyes

Respiratory or skin sensitisation

monopropylene glycol

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Gender	Value determination
Dermal	Not sensitizing	OECD 429	-		Mouse		Experimental value
Dermal	Not sensitizing	Patch test	24 h	24 hours	Human	Male/female	Experimental value
Inhalation	Not relevant, expert judgement						

Conclusion

Not sensitizing for skin

No respiratory sensitization data available

Specific target organ toxicity

monopropylene glycol

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Gender	Value determination
Oral	NOAEL	Other	1700 mg/kg bw/day		No effect	102 weeks (daily, 5 days/week)	Rat	Male/ female	Experimental value
Dermal	NOAEL	Other	0.02 ml (twice a week)		No effect	10 weeks (daily, 5 days/week)	Mouse	Female	Experimental value
Inhalation	LOAEC	Other	160 mg/m³	Nose	No effect	90 day(s)	Rat	Male/ female	Experimental value

Conclusion

Low sub-chronic toxicity by the oral route

Low sub-chronic toxicity by the dermal route

Low sub-chronic toxicity by inhalation route

Mutagenicity (in vitro)

monopropylene glycol

Result	Method	Test substrate	Effect	Value determination

Negative	Other	Bacteria (S.typhimurium)		Experimental value
Negative	OECD 473	Human lymphocytes		Experimental value

Mutagenicity (in vivo)

monopropylene glycol

Result	Method	Exposure time	Test substrate	Gender	Organ	Value determination
Negative	Other		Rat	Male		Experimental value

Carcinogenicity

monopropylene glycol

Route of exposure	Parameter	Method	Value	Exposure time	Species	Gender	Value determination	Organ	Effect
Inhalation	NOAEC	Other	>350 mg/m³ air	18 month(s)	Rat	Male/female	Experimental value		No effect
Dermal	NOAEL	Other	0.02 ml (twice a week)		Mouse	Female	Experimental value		No effect
Oral	NOAEL	Other	1700 mg/kg bw/day	2 year(s)	Rat	Male/female	Experimental value		No effect
Oral	NOAEL	Other	3040 mg/kg bw/day	105 week(s)	Rat	Male/female			No effect
Oral	NOAEL	Other	2390 mg/kg bw/day	105 week(s)	Mouse	Male/female			No effect

Reproductive toxicity

monopropylene glycol

	Parameter	Method	Value	Exposure time	Species	Gender	Effect	Organ	Value determination
Effects on fertility	NOAEL	OECD 416	10100 mg/kg bw/day		Mouse	Male/female	No effect		Experimental value
Developmental toxicity	NOAEL	Equivalent or similar to OECD 414	10400 mg/kg bw/day	9 day(s)	Mouse	Male/female	No effect		Experimental value

Conclusion CMR

Not classified for carcinogenicity

Not classified for mutagenic or genotoxic toxicity

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

monopropylene glycol

No data available

Conclusion

No data available

11.1.2 Other information

monopropylene glycol

No data available

SECTION 12: Ecological information

12.1 Toxicity:

monopropylene glycol

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50	Other	40613 mg/l	96 h	Oncorhynchus mykiss	STATIC SYSTEM	Fresh water	Experimental value
Acute toxicity invertebrates	LC50	EPA 600/4-90/027	18340 mg/l	48 h	Ceriodaphnia dubia	STATIC SYSTEM	Fresh water	Experimental value
Acute toxicity invertebrates	LC50	FIFRA 72-3	18800 mg/l	96 h	Americamysis bahia	STATIC SYSTEM	Salt water	Experimental value

Toxicity algae and other aquatic plants	EC50	OECD 201	19000 mg/l	96 h	Pseudokirchneriella subcapitata	STATIC SYSTEM	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50	OECD 201	19100 mg/l	96 h	Skeletonema costatum	STATIC SYSTEM	Salt water	Experimental value
Long-term toxicity fish	ChV	ECOSAR	2500 mg/l	30 day(s)			Fresh water	QSAR
Long-term toxicity aquatic invertebrates	NOEC	EPA 600/4-89/001	13020 mg/l	7 day(s)	Ceriodaphnia sp.	Semi-static	Fresh water	Experimental value
Toxicity aquatic micro-organisms	NOEC	Other	20000 mg/l	18 day(s)	Pseudomonas putida		Fresh water	Experimental value
Toxicity sediment organisms	LC50	Other	6983 mg/kg sediment dw	10 day(s)	Corophium volutator	STATIC SYSTEM	Salt water	Experimental value

Conclusion

Not harmful to fishes (LC50(96h) >1000 mg/l)

Not harmful to invertebrates (EC50 (48h) > 1000 mg/l)

Not harmful to algae (EC50 (72h) >1000 mg/l)

Not harmful to bacteria (EC50 >1000 mg/l)

12.2 Persistence and degradability:

monopropylene glycol

Biodegradation water

Method	Value	Duration	Value determination
OECD 301F: Manometric Respirometry Test	81.7 %	28 day(s)	Experimental value

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
AOPWIN v1.92	0.83 day(s)	1.5x10^6 /cm³	QSAR

Phototransformation water (DT50 water)

Method	Value	Conc. OH-radicals	Value determination
Other	2.3 year(s)		Calculated value

Biodegradation soil

Method	Value	Duration	Value determination
Other	98 %	105 day(s)	Experimental value

Conclusion

Readily biodegradable in water

Photodegradation in water occurs slowly

Biodegradable in the soil under anaerobic conditions

12.3 Bioaccumulative potential:

monopropylene glycol

BCF fishes

Parameter	Method	Value	Duration	Species	Value determination
BCF		0.09			Calculated value

Log Kow

Method	Value	Temperature	Value determination
Equivalent or similar to OECD 107	-1.07	20.5 °C	Test data

Conclusion

Bioaccumulation: not applicable

12.4 Mobility in soil:

monopropylene glycol

Volatility (Henry's Law constant H)

Value	Method	Temperature	Remark	Value determination
0.00566 atm m³/mol	EUSES calculation	12 °C		Estimated value

Percent distribution

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Value determination
Mackay Level III	2.98 %		0.07 %	48.1 %	48.8 %	Calculated value

Volatile organic compounds (VOC)	100 %

12.5 Results of PBT and vPvB assessment:

Substance does not meet the screening criteria for persistency nor bioaccumulation so is neither PBT nor vPvB.

12.6 Other adverse effects:

monopropylene glycol

Global warming potential (GWP)

No data available

Ozone-depleting potential (ODP)

Ozone layer	Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)
Ground water	Ground water pollutant
Air contamination	Low potential for volatization from water surface

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 2001/118/EC).
07 01 04* (other organic solvents, washing liquids and mother liquors).
16 01 14* (antifreeze fluids containing dangerous substances). Depending on branch of industry and production process, also other EURAL codes may be applicable. Hazardous waste according to Directive 2008/98/EC.

13.1.2 Disposal methods

Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Remove waste in accordance with local and/or national regulations. Obtain the consent of pollution control authorities before discharging to wastewater treatment plants. In appropriate low concentrations inhibition of the degradation of activated sludge is not anticipated. Do not discharge into surface water.

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:

Transport	Not subject
UN number	-

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Hazard identification number	
Class	
Classification code	

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Limited quantities	N.A.

Rail (RID)

14.1 UN number:

Transport	Not subject
UN number	-

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Hazard identification number	
Class	
Classification code	

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	

Limited quantities	

Inland waterways (ADN)

14.1 UN number:

Transport	Not subject
UN number	-

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	
Classification code	

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Limited quantities	

Sea (IMDG)

14.1 UN number:

Transport	Not subject
UN number	-

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	-

14.4 Packing group:

Labels	

14.5 Environmental hazards:

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Limited quantities	

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:

Annex II of MARPOL 73/78	

Air (ICAO-TI/IATA-DGR)

14.1 UN number:

Transport	Not subject
UN number	-

14.2 UN proper shipping name:

14.3 Transport hazard class(es):

Class	

14.4 Packing group:

Packing group	
Labels	

14.5 Environmental hazards:

Environmentally hazardous substance mark	no

14.6 Special precautions for user:

Special provisions	
Cargo transport: maximum net quantity per packaging	Not applicable
Passenger and cargo transport: limited quantities: maximum net quantity per packaging	Not applicable

SECTION 15: Regulatory information

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

European legislation:

REACH registration

Substance is not classified as dangerous, so no exposure scenario's are available.

National legislation

- The Netherlands

Waterbezwaarlijkheid (for NL)	11
Waste identification other lists of waste materials	LWCA (the Netherlands): KGA category 03

- Germany

WGK	1	Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

15.2 Chemical safety assessment:

A chemical safety assessment has been performed.

SECTION 16: Other information

Labelling according to Regulation EC No 1272/2008 (CLP)

Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Not classified as dangerous in compliance with Directive 67/548/EEC and/or Directive 1999/45/EC

(*) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive
DPD Dangerous Preparation Directive
CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

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. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.