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PRODUCT SPECIFICATION

Product Name	Mono Propylene Glycol
Alternative Name	Propane-1-2,-diol, 1,2-propanediol
Specification Reference	MPG/2 (09/07)

SALES SPECIFICATION

NOTES

Exclusion of Liability

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Health and Safety

A Material Safety Data Sheet has been issued describing the health, safety and environmental properties of this product, identifying the potential hazards and giving advice on the handling precautions and emergency procedures. This must be consulted fully before handling, storage and use.

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

1.1 Product Identifier

Chemical Name (EINECS)	Monopropylene Glycol
Chemical Formula	C3H8O2
Synonyms	Propane-1,2-diol 1,2-propanediol MPG
CAS Number	57-55-6
EINECS Number	200-338-0
REACH Registration Number	01-2119456809-23-XXXX

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

Identified use(s)

Exposure Scenario title	**Exposure Scenario Group**	**Sector of Use**	**Applicable Use Descriptors (PROC or PC)**	**Applicable Use Descriptors**
: Agrochemical uses	Consumer		PC 12, PC 27	ERC 8d
	Professional		PROC **4,** PROC 8a, PROC 8b, PROC 11, PROC 13	ERC 8a
	Professional		PROC **4,** PROC 8a, PROC 8b, PROC 11, PROC 13	ERC 8d
: Distribution of substance	Industrial	SU 9	PROC 1, PROC 2, PROC 3, PROC **4,** PROC 8a, PROC 8b, PROC 9, PROC 15	ERC 1
	Industrial	SU 9	PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 15	ERC 2
: Formulation & (re)packing of substances and mixtures	Industrial	SU 10	PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 14, PROC 15	ERC 2
: Functional Fluids	Consumer		PC 16, PC 17	ERC 9a
	Consumer		PC 16, PC 17	ERC 9b
	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 5	ERC 7
	Professional		PROC 1, PROC 2, PROC 3, PROC 8a, PROC 9, PROC 20	ERC 9a
	Professional		PROC 1, PROC 2, PROC 3, PROC 8a, PROC 9, PROC 20	ERC 9b
: Laboratory agents	Industrial		PROC 10, PROC 15	ERC 4
	Professional		PROC 10, PROC 15	ERC 8a
: Manufacture of substance	Industrial	SU 9	PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15	ERC 1
: Mining chemicals	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 9, PROC 23	ERC 8d
: Other Consumer Uses	Consumer		PC 28, PC 29, PC 39	ERC 8a
	Consumer		PC 28, PC 29, PC 39	ERC 8d
: Polymer processing	Industrial	SU 10	PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 6, PROC 8a, PROC 8b, PROC 14, PROC 21	ERC 3
	Industrial	SU 10	PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 14, PROC 21	ERC 6c
: Use as binders and release agents	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 6, PROC 7, PROC 8b, PROC 9, PROC 12, PROC 13, PROC 14, PROC 15, PROC 10	ERC 4

	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 6, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 14, PROC 9, PROC 13, PROC 19	ERC 8c
: Use in Cleaning Agents	Consumer		PC 3, PC 4, PC 9c, PC 9b, PC 9a, PC 24, PC 35	ERC 8a
	Consumer		PC 3, PC 4, PC 9c, PC 9b, PC 9a, PC 24, PC 35	ERC 8d
	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 13	ERC 4
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13, PROC 9	ERC 8a
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 10, PROC 11, PROC 13, PROC 9	ERC 8d
: Use in/as de-icing/anti-icing applications/agents (consumer use)	Consumer		PC 4	ERC 8d
: Use in/as de-icing/anti-icing applications/agents (professional)	Professional		PROC 2, PROC 8b, PROC 2	ERC 8d
: Uses in Coatings	Consumer		PC 1, PC 4, PC 9a, PC 9b, PC 9c, PC 18, PC 23, PC 24, PC 31	ERC 8a
	Consumer		PC 1, PC 4, PC 9a, PC 9b, PC 9c, PC 18, PC 23, PC 24, PC 31	ERC 8d
	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 10, PROC 13, PROC 9, PROC 15	ERC 4
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19	ERC 4
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19	ERC 8a
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 13, PROC 15, PROC 19	ERC 8b
: Water treatment chemicals	Industrial		PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8a, PROC 8b	ERC 4
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8b	ERC 8a
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8b	ERC 8b
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8b	ERC 8d
	Professional		PROC 1, PROC 2, PROC 3, PROC 4, PROC 8b	ERC 8e

Uses advised against

Group	Use advised against	Use descriptors	Environmental release category (ERC)
Consumer	No uses advised against		
Industrial	No uses advised against		
Professional	No uses advised against		

Group	Use advice 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

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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation 1272/2008 (CLP)

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

2.1.2 EEC Directive 67/548/EEC & Directive 1999/45/EC

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Propane-1,2-diol

CAS Number	EINECS Number	REACH registration number	Classification according to Directive 67/548/EEC	Classification according to Regulation 1272/2008	Content	Note
57-55-6	200-338-0	01-2119456809-23-XXXX			>99%	Substance with a community workplace exposure limit.

See section 16 for the full text of the R, H- and EUH-phrases declared above
Occupational exposure limits, if available, are listed in section 8

4. FIRST AID MEASURES

4.1 Description of first aid measures

General Advice

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen: Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. 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.

Inhalation

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

Skin contact

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

Eye contact

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

Ingestion

Rinse mouth with water. Consult a doctor/medical service if you feel unwell.

4.2 Most import symptoms and effects, both acute and delayed

4.2.1 Acute symptoms

If applicable and available it will be listed below.

After inhalation:

Dry /sore throat. EXPOSURE TO HIGH CONCENTRATIONS.

After skin contact:

Slight irritation. Red skin. Dry skin. ON CONTINOUSEXPOSURE/CONTACT.

After eye contact:

Slight irritation. Redness of the eye tissue.

After ingestion:

Nausea. Abdominal pain. AFTER ABSORPTION OF HIGH QUANTITIES:

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.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media
Suitable extinguishing media: Carbon dioxide. Water spray, Polyvalent foam. BC powder: Preferably: alcohol-resistant foam.
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 C02 are formed.

5.3 Advice for fire-fighters
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.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
6.1.1 For non-emergency personnel
See heading 8.2
6.1.2 For emergency responders
General
Gloves
Protective clothing
Suitable protective clothing
butyl rubber, natural rubber, polyethylene, PVC,
polyethylene/ethylenevinylalcohol Unsuitable protective clothing

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

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Keep away from naked flames/heat. At temp>flashpoint: use spark-/explosion proof appliances. Finely divided: spark- and explosion proof appliances. Finely divided: keep away from ignition sources/sparks. Observe normal hygiene standards. Keep container tightly closed.

7.2 Conditions for safe storage, including any incompatibilities
7.2.1 Safe storage requirements:
Store in a dry area. Ventilation at floor level. Store at ambient temperature. Keep out of direct sunlight. 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, nickel, bronze, steel with plastic inner lining.

7.3 Specific end use(s)
For relevant identified uses, see exposure scenarios attached in annex. See information supplied by the manufacturer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational exposure

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

a) Occupational exposure limit values

Limit Value (UK)

Propane-1,2-diol (total(vapour and part.) and particulates	Short time value	-ppm - mg/m^3
	Time-weighted average exposure limit	10 P/474 T mg/m^3 - P/150 T ppm

b) National biographical limit values

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

8.1.2 Sampling Methods

Product Name	Test	Number	Remarks	Sampling method
Propylene Glycol	OSHA	CSI		
Propylene Glycol	NIOSH	5523		adsorption tubes

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

Acute: systemic/local effects workers

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Acute systemic effects dermal		Not quantifiable
	Acute systemic effects inhalation		Not quantifiable
	Acute local effects dermal		Not quantifiable
	Acute local effects inhalation		Not quantifiable
	Long-term systemic effects dermal		Not quantifiable
	Long-term systemic effects inhalation	186mg/m^3	
	Long-term local effects dermal		Not quantifiable
	Long-term local effects inhalation	10 mg/m^3	

Acute: systemic/local effect general population

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Acute systemic effects dermal		Not quantifiable
	Acute systemic effects inhalation		Not quantifiable
	Acute -systemic effects oral		Not quantifiable
	Acute local effects dermal		Not quantifiable
	Acute local effects inhalation		Not quantifiable
	Long-term systemic effects dermal		Not quantifiable
	Long-term systemic effects inhalation	50 mg/m^3	
	Long term -systemic effects oral		Not quantifiable
	Long-term local effects dermal		Not quantifiable
	Long-term local effects inhalation	10mg/m^3	

PNEC

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	2000 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. Always use the relevant exposure scenarios that correspond to your identified use. For relevant identified uses, see exposure scenarios attached in annex

Appropriate engineering controls

Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke during work. Keep away from naked flames/heat.
At temp>flashpoint: use spark-/explosion proof appliances.
Finely divided: spark- and explosion proof appliances.
Finely divided: keep away from ignition sources/sparks.

Respiratory protection

Respiratory protection not required in normal conditions.

Hand protection

Wear suitable gloves

Gloves material

Materials for protective clothing (excellent resistance)
Materials for protective clothing (good resistance)
Butyl rubber, natural rubber, polyethylene, PVC, polyethylene/ethylenevinylalcohol.

Eye protection

safety glasses

Skin protection

Protective clothing

Environmental exposure controls

See 6.2,6.3 and 13

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Liquid	
Colour	Colourless	
Odour	Almost odourless	
pH	6.5-7.5	
Melting point/freezing point	<-20^{o}C	Test data
Boiling point/boiling range	184 ^{o}C 1003.2 hPa	Test data
Flash point	104 ^{o}C	Test data
Vapour pressure	0.2 hPa @ 20 ^{o}C	Test data
Relative vapour density	2.6	
Relative density	1.03 @20 ^{o}C	
Solubility – Water - Ethanol - Acetone - Ether	Complete Complete Complete 12g/100ml	
Log Pow	-1.07	Test data
Auto-ignition temperature	>400 ^{o}C	
Dynamic Viscosity	0.0434 Pa.s @25 ^{o}C	
Explosive properties	No chemical group associated with explosive properties	
Oxidising properties	No chemical group associated with oxidising properties	
9.2 Other information		
Minimum ignition energy		
SADT		
Specific conductivity	4400000pS/m	
Surface tension	0.0716 N/m @ 21.5^{o}C	
Solidification (freezing) point		
Softening point		
Critical temperature		
Critical pressure		
Relative density saturated vapour/air mixture		
Saturation concentration		

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-/explosion proof appliances. Finely divided: spark- and explosion proof 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 C02 are formed.

11. TOXICOLOGICAL INFORMATION

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, C02, 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 14C02, 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 pL/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 (El), was affected by continuous exposure to monopropylene glycol under occlusive conditions. The ratio of the post-El 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 |ig/cm2/h (r2]0.999). This represents the maximum flux for neat monopropylene glycol. Based on the slope at steady-state (95.4 ng/cm2/h) and the concentration of monopropylene glycol in the applied solution, taken as its density (1,036,000 pg/cm3), the permeability coefficient for neat monopropylene glycol calculated to be 9.21xl0-5cm/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,

Propane-1,2-diol

	Parameter	Method	Value	Exposure time	Species	
Acute toxicity: oral	LD50	Equivalent or similar to OECD 401	22000mg/kg bw		Rat (Male/female)	Experimental value
Acute toxicity: dermal	LD50	Equivalent or similar to OECD 402	>2000mg/kg bw	2h	Rabbit	Experimental value
Acute toxicity: inhalation	LC50	Equivalent or similar to OECD 403	317042 mg/l	2h	Rabbit	Experimental value

Propane-1,2-diol

	Results	Method	Exposure time	Time point	Species	
Corrosion/irritation: eye	Not irritating	OECD 405:AcuteEye Irritation /Corrosion		24;48;72 hours	Rabbit	Experimental value
Corrosion/irritation: skin	Not irritating	Equivalent or similar to OECD 404		24;48;72 hours	Rabbit	Experimental value
	Slightly irritating	Patch test	24h	24 hours	Human	Experimental value
A Corrosion/irritation: inhalation	No data available					

Propane-1,2-diol

	Result	Method	Exposure time	Observation time	Species	
Sensitisation: skin	Not sensitising	OECD 429: Skin Sensitization; Local Lymph Node Assay	-		Mouse	Experimental value
	Not sensitising	Patch test			Human (male/female)	Experimental value
Sensitisation: inhalation						Not relevant expert judgement

Propane-1,2-diol

	Parameter	Method	Value	Organ	Effect	Exposure time	Species	
Specific target organ toxicity: oral	NOAEL	Other	1700 mg/kg bw/day		No effects	102 weeks (daily, 5 days/week)	Rat (Male/female)	Experimental value
Specific target organ toxicity: dermal	NOAEL	Other	0.02ml (twice a week)		No effects	10 weeks (daily, 5days/week)	Mouse (Male/female)	Experimental value
Specific target organ toxicity: inhalation	LOAEC	Other	160mg/m^3	Nose	No effects	90days	Rat (Male/female)	Experimental value

Propane-1,2-diol

	Result	Method	Exposure time	Test substrate	Organ	Effect	
Germ cell mutagenicity	Negative	OECD 471: Bacterial Reverse Mutation Test		Bacteria (S.typhimurium))			Experimental value
	Negative	OECD 473: in Vitro mammalian Chromosome Aberration Test		Human lymphocytes			Experimental value
	Negative	OECD 475: Mammalian Bone marrow Chromosome Aberration test		Rat (Male)			Experimental value

Propane-1,2-diol

	Parameter	Value	Method	Exposure time	Species	Organ	Effect	
Carcinogenicity	NOAEL	1700mg/kg Bw/day	other	102 weeks (daily,5 days/week)	Rat Male/female)			Experimental value

Propane-1,2-diol

	Parameter	Method	Value	Exposure time	Species	Organ	Effect	
Developmental toxicity	NOAEL	Equivalent or similar to OECD 414	10400 mg/kg bw/day	9 days	Mouse (Male/female)		No effect	Experimental value
Effects on fertility	NOAEL	OECD 416: two-generation reproduction toxicity study	10100 mg/kg bw/day		Mouse (Male/female)		No effect	Experimental value

Conclusion

Low acute toxicity by the oral route.
Low acute toxicity by the dermal route.
Low acute toxicity by the inhalation route.
Not classified as irritating to the skin.
Not classified as irritating to the eye.
Not sensitizing for skin.
No respiratory sensitization data available.
Low sub-chronic toxicity by the oral route.
Low sub-chronic toxicity by the dermal route.
Low sub-chronic toxicity by inhalation route.
Not classified for carcinogenicity
Not classified for mutagenic or genotoxic toxicity (negative result).
Not classified for reprotoxic or developmental toxicity

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 fishes

Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	
LC50	other	40613mg/l	96h	ONCORHYNCHUS MYKISS	STATIC SYSTEM	FRESH WATER	Experimental value

EC50 Daphnia

Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	
LC50	EPA600/4-90/027	18340 mg/l	48h	CERIODAPHNIA DUBIA	STATIC SYSTEM	FRESH WATER	Experimental value
LC50	FIFRA 72-3	18800 mg/l	96h	Americamysis bahia	STATIC SYSTEM	SALT WATER	Experimental value

EC50 other aquatic organisms

Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	

Threshold limit algae

Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	
EC50	OECD 201: Alga, Growth inhibition Test	19000mg/l	96h	Pseudokirchnerella subcapitata	STATIC SYSTEM	FRESH WATER	Experimental value
EC50	OECD 201: Alga, Growth inhibition Test	19100 mg/l	96h	SKELETOEMA COSTATUM	STATIC SYSTEM	SALT WATER	Experimental value

Long-tem toxicity to fish

Parameter	Method	Value	Duration	Test design	Fresh/salt water	
ChV	ECOSAR	2500mg/l	30days		FRESH WATER	QSAR

Long-term toxicity to aquatic invertibrates

Parameter	Method	Value	Duration	Test design	Fresh/salt water	
NOEC	EPA 600/4-89/001	13020mg/l	7days	Semi-static	FRESH WATER	Experimental value

Toxicity sediment organisms

Parameter	Method	Value	Duration	Test design	Fresh/salt water	Verwiizine
LC50	other	6983	10 days	STATIC SYSTEM	SALT WATER	Experimental value

Toxicity to water micro-organisms

Parameter	Method	Value	Duration	Test design	Fresh/salt water	Species
NOEC	other	20000 mg/l	18 days		FRESH WATER	PSEUDOMNIA SPUTIDA

Conclusion

Not harmful to fishes (LC50(96h) >1000 mg/l)
Not harmful to invertebrates(EC50 (48h)>1000mg/l)
Not harmful to algae (EC50 (72h)>1000 mg/l)
Not harmful to bacteria (EC50 >1000 mg/l)

12.2 Persistence and degradability

Biodegradation in water

Method	Value	Duration	
OECD 301F:manometric Respirometry Test	81.7%	28 days	Experimental value

Phototransformation in air (DT50 air)

Method	Value	Conc OH radicals	Reference	Remark
AOPWIN vi9.2	0.83 days	1.5 x 10^6	QSAR	

Phototransformation in water (DT50 water)

Method	Value	Conc OH radicals	Reference	Remark
other	2.3 years		Calculated value	

Conclusion
Readily biodegradable in water
Photodegradation in water occurs slowly
Biodegradation in the soil under anaerobic conditions

12.3 Bio accumulative potential

BCF fishes

Species	duration	Value	Reference	Remark
		0.09	Calculated value	

Log Pow

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

Conclusion

Bioaccumulation: not applicable

12.4 Mobility in soil

Log Pow

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

Mobility in soil

Parameter	Method	Value	Reference

Volatility (Henry's Law Constant H)

Method	Value	Temperature	Reference
EUSES calculation	0.00566	12°C	ESTIMATED VALUE

Method	Fraction air	Fraction biota	Fraction sediment	Fraction soil	Fraction water	Reference
Mackay level III	2.98%		0.07%	48.1%	48.8%	Calculated value

Conclusion

Low potential for absorption in soil

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

Global Warming Potential (GWP)

Industrial designation or common name	Lifetime	Radiative efficiency	SAR# (100-yr)	GWP 100-yr time horizon	GWP 500-yr time horizon

Ozone-depleting potential (ODP)

Industrial designation or common name	Ozone-depleting potential

Ozone layer	Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)
Surface Water	Mild water pollutant (surface water)
Ground Water	Ground water pollutant
Air Contamination	Low potential for volatization from water surface
Water Ecotoxicity reaction product	

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Provisions relating to waste

Waste material code (Directive 2008/98/EC, decision 2001/118/EC). Other organic solvents, washing liquids and mother liquors 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.

Disposal methods

Recycle by distillation. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber. 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.

Packaging/Container

Waste material code packaging (Directive 2008/98/EC). Packaging containing residues of or contaminated by dangerous substances.

14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.2 Proper Shipping Name
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.3 Transport hazard class
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.4 Packing group
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.5 Environmental
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.6 Special precautions for users
ADR/RID/IMDG/IATA
Not considered dangerous goods

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
ADR/RID/IMDG/IATA
Not considered dangerous goods

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 scenarios 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 wassergefahrdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)
TA-Luft	Propane-1,2-diol	TA-Luft Klasse 5.2.5

15.2 Chemical safety assessment
A chemical safety assessment has been performed.

16. OTHER INFORMATION

Label DSD
Labels
Not classified as dangerous according to the criteria of Regulation (EC) No 1272/2008
Full text of R Phrases referred to under sections 2 and 3
Full text of S Phrases referred to under sections 2 and 3
Additional recommendations
Remark
Label CLP
Pictograms
Full text of H-Statements referred to under sections 2 and 3

Source of key data used to compile the data sheet
Supplier information

Modifications from last revision
The Safety Data Sheets have been revised throughout in accordance with EC Regulation 1907/2006 and amendments
Date: 30/06/18