



SAFETY DATA SHEET

DOW SUOMI OY

Safety Data Sheet according to Reg. (EU) 2020/878

Product name: DOWCAL™ 100E Heat Transfer Fluid

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DOW SUOMI OY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: DOWCAL™ 100E Heat Transfer Fluid

UFI: TAS9-S001-P005-Q3VH

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

Identified uses: Intended as a heat transfer fluid for closed-loop systems. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Industry code, Finland: 467

Usage (function) code, Finland: 29

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

DOW SUOMI OY
C/O RANTALAINEN
SALOMONKATU 17 A
00100 HELSINKI
FINLAND

Customer Information Number:

990 800 3 6946367
SDSQuestion@dow.com

1.4 EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: +358 5210 6210

Local Emergency Contact: +358 5210 6210

Finnish Emergency Center: +358 9 471 977

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

Acute toxicity - Category 4 - Oral - H302

Specific target organ toxicity - repeated exposure - Category 2 - Oral - H373

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

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

Hazard pictograms



Signal word: **WARNING**

Hazard statements

- H302 Harmful if swallowed.
H373 May cause damage to organs (Kidney) through prolonged or repeated exposure if swallowed.

Precautionary statements

- P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
+ P330
P314 Get medical advice/ attention if you feel unwell.
P501 Dispose of contents and/or container to an approved waste disposal plant.

Contains Ethylene glycol

2.3 Other hazards

This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

Endocrine disrupting properties

- Environment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
- Human Health: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

This product is a mixture.

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
CASRN 107-21-1 EC-No. 203-473-3 Index-No. 603-027-00-1	01-2119456816-28	< 96,0 %	Ethylene glycol	Acute Tox. 4; H302 STOT RE 2; H373 (Kidney) Acute toxicity estimate Acute inhalation toxicity: > 2,5 mg/l, 6 Hour, dust/mist Acute dermal toxicity: > 10 600 mg/kg > 3 500 mg/kg
CASRN 7732-18-5 EC-No. 231-791-2 Index-No. —	—	< 10,0 %	Water	Not classified
CASRN 29385-43-1 EC-No. 249-596-6 Index-No. —	01-2119979081-35	>= 0,1 - < 0,25 %	Tolyl triazole	Acute Tox. 4; H302 Repr. 2; H361d Aquatic Chronic 2; H411 Acute toxicity estimate Acute oral toxicity: 720 mg/kg Acute dermal toxicity: > 5 000 mg/kg

If present in this product, any not classified components disclosed above for which no country specific OEL value(s) is(are) indicated under Section 8, are being disclosed as voluntarily disclosed components.

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air and keep comfortable for breathing; consult a physician.

Skin contact: Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items

such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: Do NOT induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].

4.2 Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Water fog or fine spray.. Dry chemical fire extinguishers.. Carbon dioxide fire extinguishers.. Foam.. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective..

Unsuitable extinguishing media: Do not use direct water stream.. May spread fire..

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating.. Combustion products may include and are not limited to:.. Carbon monoxide.. Carbon dioxide..

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation.. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.. Liquid mist of this product can burn.. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9..

5.3 Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles.. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container.. Burning liquids may be extinguished by dilution with water.. Do not use direct water stream. May spread fire.. Move container from fire area if this is possible without hazard.. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage..

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves).. Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location.. For protective equipment in post-fire or non-fire clean-up situations, see Section 8 of the safety data sheet..

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3 Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Cat litter. Sawdust. Vermiculite. Zorb-all®. Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. See Section 13, Disposal Considerations, for additional information.

6.4 Reference to other sections: References to other sections, if applicable, have been provided in the previous sub-sections.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

7.2 Conditions for safe storage, including any incompatibilities: Do not store in: Galvanized steel. Opened or unlabeled containers. Store in the following material(s): Carbon steel. Stainless steel. Store in original unopened container. Store away from direct sunlight. Store in tightly closed container. Use only with adequate ventilation. See Section 10 for more specific information. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact.

Storage stability

Shelf life: Use within

Bulk

24 Month

Drum

24 Month

7.3 Specific end use(s): See the technical data sheet on this product for further information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Ethylene glycol	ACGIH	TWA Vapour	25 ppm
	Further information: A4: Not classifiable as a human carcinogen		
	ACGIH	STEL Vapour	50 ppm
	Further information: A4: Not classifiable as a human carcinogen		
	ACGIH	STEL Inhalable fraction, Aerosol only	10 mg/m3
	Further information: A4: Not classifiable as a human carcinogen		
	Dow IHG	TWA	50 mg/m3
	Dow IHG	STEL	100 mg/m3
	2000/39/EC	TWA	52 mg/m3 20 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin; Indicative		
	2000/39/EC	STEL	104 mg/m3 40 ppm
	Further information: skin: Identifies the possibility of significant uptake through the skin; Indicative		
	FI OEL	HTP-arvot 8h	50 mg/m3 20 ppm
	Further information: skin: The health risk of absorbed amounts of compounds which can pass through the skin to the body cannot be evaluated from their atmospheric concentration. Therefore these compounds have the notification 'skin' in the list. Many compounds can be irritating or corrosive when in contact with the skin, especially strong acids and bases.		
	FI OEL	HTP-arvot 15 min	100 mg/m3 40 ppm
	Further information: skin: The health risk of absorbed amounts of compounds which		

can pass through the skin to the body cannot be evaluated from their atmospheric concentration. Therefore these compounds have the notification 'skin' in the list. Many compounds can be irritating or corrosive when in contact with the skin, especially strong acids and bases.

Recommended monitoring procedures

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with the Occupational Exposure Limits and the adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples should be analysed by an accredited laboratory.

Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy); European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents); European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents). Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods.

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods.

Health and Safety Executive (HSE), United Kingdom: Methods for the Determination of Hazardous Substances.

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.

L'Institut National de Recherche et de Sécurité, (INRS), France.

Derived No Effect Level

Ethylene glycol

Workers

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	106 mg/kg bw/day	n.a.	n.a.	35 mg/m3

Consumers

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	53 mg/kg bw/day	n.a.	n.a.	n.a.	7 mg/m3

Tolyl triazole

Workers

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
mg/kg bw/day	n.a.	mg/kg bw/day	n.a.	0,3 mg/kg bw/day	21,2 mg/m3	mg/kg bw/day	n.a.

Consumers

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
mg/kg bw/day	n.a.	mg/kg bw/day	mg/kg bw/day	n.a.	0,01 mg/kg bw/day	0,35 mg/m3	0,01 mg/kg bw/day	mg/kg bw/day	n.a.

Predicted No Effect Concentration

Ethylene glycol

Compartment	PNEC
Fresh water	10 mg/l
Intermittent use/release	10 mg/l
Marine water	1 mg/l
Sewage treatment plant	199,5 mg/l
Fresh water sediment	37 mg/kg dry weight (d.w.)
Marine sediment	3,7 mg/kg dry weight (d.w.)
Soil	1,53 mg/kg dry weight (d.w.)

Tolyl triazole

Compartment	PNEC
Fresh water	0,008 mg/l
Intermittent use/release	0,086 mg/l
Marine water	0,02 mg/l
Intermittent use/release	0,053 mg/l
Sewage treatment plant	39,4 mg/l
Fresh water sediment	0,117 mg/kg dry weight (d.w.)
Marine sediment	0,292 mg/kg dry weight (d.w.)
Soil	0,0187 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Use gloves with insulation for thermal protection (EN 407), when needed. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Examples of preferred glove barrier materials include: Natural rubber ("latex"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl

alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Examples of acceptable glove barrier materials include: Neoprene. When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task. When handling hot material, protect skin from thermal burns as well as from skin absorption.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2 (meeting standard EN 14387).

Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Color	Color is variable
Odor	characteristic
Odor Threshold	No test data available
pH	8,0 - 8,8 50% Literature
Melting point/freezing point	
Melting point/range	Not applicable to liquids
Freezing point	-51 - -14 °C Literature
Boiling point or initial boiling point and boiling range	

Boiling point (760 mmHg)	170 °C <i>Literature</i>
Flash point	closed cup 120 °C at 760 mmHg <i>Literature</i>
Flammability (solid, gas)	Not applicable to liquids
Flammability (liquids)	Not expected to be a static-accumulating flammable liquid.
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	3 Mbar at 20 °C <i>Literature</i>
Relative Vapor Density (air = 1)	> 1 <i>Literature</i>
Relative Density (water = 1)	1,116 - 1,119 at 25 °C <i>Literature</i>
Solubility(ies)	
Water solubility	completely miscible
Partition coefficient: n-octanol/water	not determined
Auto-ignition temperature	435 °C <i>Literature</i> Ethylene glycol
Decomposition temperature	No test data available
Kinematic Viscosity	10 - 30 mm ² /s at 20 °C <i>Literature</i>
Particle characteristics	
Particle size	Not applicable, liquid

9.2 Other information

Molecular weight	No test data available
Explosive properties	No data available
Oxidizing properties	No data available
Evaporation Rate (Butyl Acetate = 1)	< 0,5 <i>Estimated.</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: No data available

10.2 Chemical stability: Thermally stable at typical use temperatures.

10.3 Possibility of hazardous reactions: Polymerization will not occur.

10.4 Conditions to avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

10.5 Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

10.6 Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials.. Decomposition products can include and are not limited to:. Aldehydes.. Alcohols.. Ethers..

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure

Ingestion, Inhalation, Skin contact, Eye contact.

Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)

Acute oral toxicity

Information for the Product:

Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea.

As product: Single dose oral LD50 has not been determined.

Information for components:

Ethylene glycol

In humans, expected to be moderately toxic if swallowed even though oral toxicity was low when tested in animals. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure.

Lethal Dose, Human, adult, 100 ml Estimated.

Tolyl triazole

LD50, Rat, male and female, 720 mg/kg OECD Test Guideline 401

Acute dermal toxicity

Information for the Product:

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact

with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.

As product: The dermal LD50 has not been determined.

Based on information for component(s):

LD50, > 5 000 mg/kg Estimated.

Information for components:

Ethylene glycol

LD50, Rabbit, > 10 600 mg/kg

LD50, Mouse, male and female, > 3 500 mg/kg

Tolyl triazole

LD50, Rabbit, > 5 000 mg/kg

Acute inhalation toxicity

Information for the Product:

Brief exposure (minutes) is not likely to cause adverse effects.

As product: The LC50 has not been determined.

Information for components:

Ethylene glycol

LC50, Rat, male and female, 6 Hour, dust/mist, > 2,5 mg/l

Tolyl triazole

The LC50 has not been determined.

Skin corrosion/irritation

Information for the Product:

Based on information for component(s):

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

Repeated contact may cause skin irritation with local redness.

Information for components:

Ethylene glycol

Brief contact is essentially nonirritating to skin.

Prolonged contact may cause slight skin irritation with local redness.

Repeated contact may cause skin irritation with local redness.

Tolyl triazole

Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

Information for the Product:

Based on information for component(s):
May cause slight eye irritation.
Corneal injury is unlikely.

Information for components:

Ethylene glycol

May cause slight eye irritation.
Corneal injury is unlikely.
Vapor or mist may cause eye irritation.

Tolyl triazole

May cause slight eye irritation.

Sensitization

Information for the Product:

For skin sensitization:
Contains component(s) which did not cause allergic skin sensitization in guinea pigs.

For respiratory sensitization:
No relevant data found.

Information for components:

Ethylene glycol

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Tolyl triazole

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Information for the Product:

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Information for components:

Ethylene glycol

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Tolyl triazole

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Aspiration Hazard

Information for the Product:

Based on physical properties, not likely to be an aspiration hazard.

Information for components:

Ethylene glycol

Based on physical properties, not likely to be an aspiration hazard.

Tolyl triazole

Based on physical properties, not likely to be an aspiration hazard.

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Information for the Product:

Contains component(s) which have been reported to cause effects on the following organs in animals:

Kidney.

Liver.

Information for components:

Ethylene glycol

Observations in humans include:

Nystagmus (involuntary eye movement).

In animals, effects have been reported on the following organs:

Kidney.

Liver.

Tolyl triazole

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Carcinogenicity

Information for the Product:

Ethylene glycol did not cause cancer in long-term animal studies.

Information for components:

Ethylene glycol

Ethylene glycol did not cause cancer in long-term animal studies.

Tolyl triazole

No relevant data found.

Teratogenicity**Information for the Product:**

Contains component(s) which caused birth defects in laboratory animals. Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies.

Information for components:**Ethylene glycol**

Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies.

Tolyl triazole

Has caused birth defects in laboratory animals.

Reproductive toxicity**Information for the Product:**

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

Information for components:**Ethylene glycol**

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

Tolyl triazole

No relevant data found.

Mutagenicity**Information for the Product:**

In vitro genetic toxicity studies were negative for component(s) tested. Genetic toxicity studies in animals were negative for component(s) tested.

Information for components:**Ethylene glycol**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Tolyl triazole

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

11.2 Information on other hazards

Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Information for components:

Ethylene glycol

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Water

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Tolyl triazole

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

12.1 Toxicity

Ethylene glycol

Acute toxicity to fish

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, 72 860 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapita, 96 Hour, Growth rate inhibition, 6 500 - 13 000 mg/l

Toxicity to bacteria

EC50, activated sludge, 30 min, 225 mg/l, OECD 209 Test

Chronic toxicity to fish

NOEC, Pimephales promelas (fathead minnow), 7 d, 15 380 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Ceriodaphnia dubia (water flea), 7 d, 8 590 mg/l

Tolyl triazole**Acute toxicity to fish**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

LC50, Cyprinodon variegatus (sheepshead minnow), semi-static test, 96 Hour, 55 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

LC50, copepod Acartia tonsa, static test, 48 Hour, 55 mg/l

For similar material(s):

EC50, Daphnia galeata (water flea), static test, 48 Hour, 8,58 mg/l

For similar material(s):

EC50, Daphnia galeata (water flea), static test, 48 Hour, 15,8 mg/l

Acute toxicity to algae/aquatic plants

EC50, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 53 mg/l

NOEC, Skeletonema costatum (marine diatom), static test, 72 Hour, Growth rate inhibition, 30 mg/l

For similar material(s):

EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2,86 mg/l

For similar material(s):

NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 2,5 mg/l

For similar material(s):

EC10, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1,18 mg/l

For similar material(s):

NOEC, Desmodesmus subspicatus (green algae), 72 Hour, Growth rate inhibition, 1,2 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, Reproduction, 18,4 mg/l

For similar material(s):

EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0,4 mg/l

For similar material(s):

EC10, Daphnia galeata (water flea), 21 d, Reproduction, 0,97 mg/l

12.2 Persistence and degradability**Ethylene glycol**

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material has inherent, ultimate biodegradability according to OECD test (s) guidelines (reaches > 60 or 70% biodegradation in OECD test(s)).

10-day Window: Pass

Biodegradation: 90 - 100 %

Exposure time: 10 d

Method: OECD Test Guideline 301A or Equivalent

10-day Window: Not applicable

Biodegradation: 90 %

Exposure time: 1 d

Method: OECD Test Guideline 302B or Equivalent

Tolyl triazole

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Biodegradation: 4 %

Exposure time: 28 d

12.3 Bioaccumulative potential**Ethylene glycol**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): -1,36 Measured

Bioconcentration factor (BCF): 10 Leuciscus idus (Golden orfe)

Tolyl triazole

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1,71 Estimated.

Bioconcentration factor (BCF): 4,17 Estimated.

12.4 Mobility in soil**Ethylene glycol**

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 1 Estimated.

Tolyl triazole

Partition coefficient (Koc): 1647 Estimated.

12.5 Results of PBT and vPvB assessment**Ethylene glycol**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Tolyl triazole

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Ethylene glycol

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Water

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Tolyl triazole

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

12.7 Other adverse effects**Ethylene glycol**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Tolyl triazole

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

SECTION 14: TRANSPORT INFORMATION

Classification for ROAD and Rail transport (ADR/RID):

- | | |
|--|---|
| 14.1 UN number or ID number | Not applicable |
| 14.2 UN proper shipping name | Not regulated for transport |
| 14.3 Transport hazard class(es) | Not applicable |
| 14.4 Packing group | Not applicable |
| 14.5 Environmental hazards | Not considered environmentally hazardous based on available data. |
| 14.6 Special precautions for user | No data available. |

Classification for SEA transport (IMO-IMDG):

- | | |
|--|-----------------------------|
| 14.1 UN number or ID number | Not applicable |
| 14.2 UN proper shipping name | Not regulated for transport |
| 14.3 Transport hazard class(es) | Not applicable |
| 14.4 Packing group | Not applicable |

- 14.5 **Environmental hazards** Not considered as marine pollutant based on available data.
- 14.6 **Special precautions for user** No data available.
- 14.7 **Maritime transport in bulk according to IMO instruments** Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

- 14.1 **UN number or ID number** Not applicable
- 14.2 **UN proper shipping name** Not regulated for transport
- 14.3 **Transport hazard class(es)** Not applicable
- 14.4 **Packing group** Not applicable
- 14.5 **Environmental hazards** Not applicable
- 14.6 **Special precautions for user** No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**REACH Regulation (EC) No 1907/2006**

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)

Conditions of restriction for the following entries should be considered:
Number on list 3

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Listed in Regulation: Not applicable

PR - Numbers Norway: 647811

Further information

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure if swallowed.
H411	Toxic to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008

Acute Tox. - 4 - H302 - Calculation method

STOT RE - 2 - H373 - Calculation method

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

2000/39/EC	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
FI OEL	Finland. HTP Values - Concentrations Known to be Harmful
HTP-arvot 15 min	Short term exposure limit
HTP-arvot 8h	Long term exposure limit
STEL	Short term exposure limit
TWA	Time weighted average
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard
Repr.	Reproductive toxicity
STOT RE	Specific target organ toxicity - repeated exposure

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW SUOMI OY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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