

Material Safety Data Sheet



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SAFETY DATA SHEET

11/ 6/2004

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

DOW CHEMICAL COMPANY LTD

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284 BATH ROAD
WEST DRAYTON
MIDDLESEX
UB7 0DQ

24 HOUR EMERGENCY RESPONSE NUMBER : +44-1553-761-251

For product information: +44-0208-917-5000

Product Name: DOWTHERM* SR-1 HEAT TRANSFER FLUID, DYED

LV70: 25630

Issue Date: May 02

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Revised: June 04 (Section(s) 8)

Use of the substance/preparation
For industrial use only.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Inhibited glycol formulation

Dangerous components (see section 16 for complete R-phrases):

			CAS	EC No
Ethylene glycol	>95 %	Xn; R22	000107-21-1	203-473-3

3. HAZARDS IDENTIFICATION

Harmful if swallowed.

4. FIRST-AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Inhalation

Move person to fresh air; if effects occur, consult a physician.

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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 articles including leather items such as shoes.

Eye Contact

Flush eyes thoroughly with water for several minutes. Remove contact lenses after 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 glass of water. If medical advice is delayed and if an adult has swallowed several grams of chemical, then give ca. 100 ml (gram) hard liquor such as 40% whisky. For children give proportionally less liquor at a dose of 8mL (8 gram, 1.5 teaspoon) of liquor for each 5 kg body weight or 2 mL per kg bodyweight (36 mL for an 18 kg child).

Note to Physician

If several grammes of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal dialysis and thiamine 100mg plus pyridoxide 50mg 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 (R)) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol, di- or triethylene glycol, ethylene glycol butyl ether, or methanol intoxication if available.

Fomepizole protocol (Brent J. et al., New Eng J Med, 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, ethylene glycol, diethylene glycol or triethylene glycol are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, central nervous system depression, renal tubular injury, and possible late stage cranial nerve involvement.

Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposures 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.

If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Water fog or fine spray. Carbon dioxide fire extinguishers. Dry chemical fire extinguishers. Foam.

Do not use direct water stream. May spread fire.

Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

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.

Protection of Firefighters

Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or a safe distance.

Specific Fire or Explosion Hazards

Keep people away. Isolate fire area 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 a protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discolouration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move containers from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimise property damage.

Other flammability information

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 vapour can accumulate at temperatures above 111 deg.C.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls/Personal Protection.

May be a slipping hazard.

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Environmental Precautions

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See section 12, Ecological Information.

Methods of Cleaning Up

Small spills: Absorb with materials such as:

Cat litter. Sawdust. Vermiculite. Zorb-all (R).

Collect in suitable and properly labelled containers.

Large spills: Dike spill immediately. Contain spill if possible. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE**Handling**

Do not swallow. See Section 8, Exposure Controls/Personal Protection.

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

When performing maintenance activities, proper care should be taken to prevent spilled fluid from entering the environment. Any spilled fluid should be absorbed and disposed of in accordance with all regulations.

Storage

Store in original unopened containers.

Do not store in containers made of: Galvanised steel.

Avoid exposure to UV-light as this can adversely affect quality.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Exposure Guidelines**

Ethylene glycol: The UK Health and Safety Executive has established an Occupational Exposure Standard(OES) of 10mg/m³ (8-hour TWA) for particulate; 60mg/m³ (8-hour TWA) and 125mg/m³ (15-min STEL) for vapour.

Engineering Controls

Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

Personal Protective Equipment**- Respiratory Protection**

Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator.

Use a CE approved air-purifying respirator with cartridge/filter for: Organic vapours and particles, type AP2.

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- Skin Protection

When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as face shield, gloves, boots, apron, or full body-suit will depend on operation. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. When handling hot material, protect skin from thermal burns as well as from skin absorption.

-Hand protection

Use chemical resistant gloves classified under standard EN 374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl").

When prolonged or frequently repeated contact may occur, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended.

NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as the instructions/specifications provided by the glove supplier.

- Eye/Face Protection

Use safety glasses. If exposure causes eye discomfort, use a full-face respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Density	: >1.0
Boiling point/range	: 163 deg.C
Water solubility	: infinite
Vapour pressure	: 2.2 mmHg (20 deg.C)
Specific gravity	: 1.1295 (16 deg.C)
Flash point	: 111 deg.C (ethylene glycol) (TCC)
Auto-ignition temp.	: 398 deg.C (ethylene glycol)
Flammability-LFL	: 3.2 %vol/vol (ethylene glycol)
Flammability-UFL	: not determined

10. STABILITY AND REACTIVITY**Chemical Stability**

Thermally stable at recommended temperatures and pressures. Exposure to elevated temperatures can cause product to decompose.

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Materials to Avoid

Avoid contact with: Strong acids. Strong bases. Strong oxidising agents.

Hazardous Decomposition Products

Decomposition products depend upon temperature, air supply and the presence of other materials.

Decomposition products may include and are not limited to: Aldehydes. Alcohols. Ethers.

Generation of gas during decomposition can cause pressure in closed systems.

Hazardous Polymerisation

Will not occur.

11. TOXICOLOGICAL INFORMATION

Data for: Ethylene glycol:

- Ingestion

Oral toxicity is expected to be moderate in humans even though tests with animals show a lower degree of toxicity. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis) and kidney failure. Swallowing may result in severe effects, even death. The lethal dose in humans is estimated to be 100 ml.

May cause nausea or vomiting. May cause abdominal discomfort or diarrhea.

The oral LD50 for rats for a similar material is 8200 mg/kg.

- Skin Contact

Brief contact is essentially nonirritating to the skin. Prolonged contact may cause slight skin irritation with local redness. May cause more severe response if skin is abraded (scratched or cut). 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 with material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.

The LD50 for skin absorption in rabbits for similar materials is >2000 mg/kg.

- Inhalation

At room temperature, exposure to vapour is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapour/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

- Eyes

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

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Mutagenicity

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

Carcinogenicity

Did not cause cancer in laboratory animals.

Developmental/Reproductive Effects

Based upon 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 route of occupational exposure, had minimal effect on the fetus in animal studies.

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals. Specifically, growth retardation and decreased litter size in rats and mice and decreasing mating frequency in mice were observed.

Systemic effects

Repeated excessive exposures may cause irritation of the upper respiratory tract.

In humans, effects have been reported on the following organs: Central nervous system.

Observations in humans include: Nystagmus (involuntary eye movement).

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

12. ECOLOGICAL INFORMATION**Mobility and Bioaccumulation Potential**

Based largely or completely on information for: Ethylene glycol: Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50).

Degradation

Based largely or completely on information for: Ethylene glycol: Material is readily biodegradable. Passes OECD Test(s) for ready biodegradability.

Aquatic Toxicity

Based largely or completely on information for: Ethylene glycol: Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50 greater than 100 mg/L in most sensitive species).

13. DISPOSAL CONSIDERATIONS

Do not dump into any sewers, on the ground, or into any body of water. Any disposal practice must be in compliance with all local and national laws and regulations.

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14. TRANSPORT INFORMATION

Product is not classified for any mode of transportation.

15. REGULATORY INFORMATION

Classification according to the UK Chemicals (Hazard Information and Packaging) Regulations, CHIP.

Hazard Symbol : Xn - Harmful

Risk Phrases : Harmful if swallowed (R22).

Safety Phrases : Keep container tightly closed (S7).
In case of accident or if you feel unwell, seek
medical advice immediately (Show the label where
possible) (S45).

Chemical name: Contains: Ethylene glycol

16. OTHER INFORMATION

Risk-phrases in Section 2
R22 - Harmful if swallowed.

The information herein is given in good faith and to the best of our knowledge but no warranty, express or implied, is made.