



## Material Safety Data Sheet

The Dow Chemical Company

**Product Name:** DOWFROST\* 35 Heat Transfer Fluid

**Issue Date:** 01/05/2011

**Print Date:** 01 Oct 2012

The Dow Chemical Company 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.

### 1. Product and Company Identification

**Product Name**

DOWFROST\* 35 Heat Transfer Fluid

**COMPANY IDENTIFICATION**

The Dow Chemical Company  
2030 Willard H. Dow Center  
Midland, MI 48674  
United States

Customer Information Number:

800-258-2436

SDSQuestion@dow.com

**EMERGENCY TELEPHONE NUMBER**

24-Hour Emergency Contact:

989-636-4400

Local Emergency Contact:

989-636-4400

### 2. Hazards Identification

**Emergency Overview**

**Color:** Colorless

**Physical State:** Liquid.

**Odor:** Characteristic

**Hazards of product:**

No significant immediate hazards for emergency response are known.

**OSHA Hazard Communication Standard**

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential Health Effects**

**Eye Contact:** May cause slight temporary eye irritation. Corneal injury is unlikely.

**Skin Contact:** Prolonged contact is essentially nonirritating to skin. Repeated contact may cause flaking and softening of skin.

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.

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**Inhalation:** At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of upper respiratory tract (nose and throat).

**Ingestion:** Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

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

**Effects of Repeated Exposure:** In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

### 3. Composition Information

Component	CAS #	Amount
Propylene glycol	57-55-6	> 33.0 - < 39.0 %
Water	7732-18-5	< 65.0 %
Dipotassium hydrogen phosphate	7758-11-4	< 3.0 %

### 4. First-aid measures

#### Description of first aid measures

**General advice:** If potential for exposure exists refer to Section 8 for specific personal protective equipment.

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

**Skin Contact:** Wash skin with plenty of water.

**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:** No emergency medical treatment necessary.

#### 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), no additional symptoms and effects are anticipated.

#### Indication of immediate medical attention and special treatment needed

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

### 5. Fire Fighting Measures

#### Suitable extinguishing media

To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

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

**Hazardous Combustion Products:** Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** This material will not burn until the water has evaporated. Residue can burn.

#### Advice for firefighters

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**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. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

**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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

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

**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.

## 7. Handling and Storage

### Handling

**General Handling:** No special precautions required. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

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. 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.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Propylene glycol	WEEL	TWA Aerosol.	10 mg/m <sup>3</sup>

### Personal Protection

**Eye/Face Protection:** Use safety glasses (with side shields).

**Skin Protection:** Wear clean, body-covering clothing.

**Hand protection:** Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. 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 chloride ("PVC" or "vinyl"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). **NOTICE:** The selection of a

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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.

**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. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: depending on levels, organic vapor/particulate or positive pressure air-supplying. Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

#### Engineering Controls

**Ventilation:** 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.

### 9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Colorless
Odor	Characteristic
Odor Threshold	No test data available
pH	10.0 <i>Literature</i>
Melting Point	Not applicable to liquids
Freezing Point	-16.4 °C (2.5 °F) <i>Literature</i>
Boiling Point (760 mmHg)	102.8 °C (217.0 °F) <i>Literature</i>
Flash Point - Closed Cup	Not applicable, Water boils off
Evaporation Rate (Butyl Acetate = 1)	< 0.5 <i>Estimated</i> .
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	Lower: 2.6 % (V) <i>Literature</i> Propylene glycol. Upper: 12.5 % (V) <i>Literature</i> Propylene glycol. 16.7 mmHg @ 20 °C <i>Literature</i>
Vapor Pressure	>1.0 <i>Literature</i>
Vapor Density (air = 1)	1.035 20 °C/20 °C <i>Literature</i>
Specific Gravity (H <sub>2</sub> O = 1)	100 % <i>Literature</i>
Solubility in water (by weight)	
Autoignition Temperature	371 °C (700 °F) <i>Literature</i> Propylene glycol.
Decomposition Temperature	No test data available
Kinematic Viscosity	3.6 cSt <i>Literature</i>

### 10. Stability and Reactivity

#### Reactivity

No dangerous reaction known under conditions of normal use.

#### Chemical stability

Thermally stable at recommended temperatures and pressures.

#### Possibility of hazardous reactions

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Polymerization will not occur.

**Conditions to Avoid:** Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible Materials:** Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

**Hazardous decomposition products**

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

## 11. Toxicological Information

**Acute Toxicity**

**Ingestion**

For the major component(s): Propylene glycol. LD50, Rat > 20,000 mg/kg

**Dermal**

For the major component(s): Propylene glycol. LD50, Rabbit > 20,000 mg/kg

**Inhalation**

For component(s) tested. No deaths occurred following exposure to a saturated atmosphere. LC50, 8 h, Vapor, Rat 4.1 mg/l

**Eye damage/eye irritation**

May cause slight temporary eye irritation. Corneal injury is unlikely.

**Skin corrosion/irritation**

Prolonged contact is essentially nonirritating to skin. Repeated contact may cause flaking and softening of skin.

**Sensitization**

**Skin**

For the major component(s): Did not cause allergic skin reactions when tested in humans.

**Respiratory**

No relevant information found.

**Repeated Dose Toxicity**

In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

**Chronic Toxicity and Carcinogenicity**

Similar formulations did not cause cancer in laboratory animals.

**Developmental Toxicity**

For the major component(s): Did not cause birth defects or any other fetal effects in laboratory animals.

**Reproductive Toxicity**

For the major component(s): In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

**Genetic Toxicology**

In vitro genetic toxicity studies were negative. For the major component(s): Animal genetic toxicity studies were negative.

## 12. Ecological Information

**Toxicity**

For the major component(s): Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

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#### **Persistence and Degradability**

For the major component(s): Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

#### **Bioaccumulative potential**

**Bioaccumulation:** For the major component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

#### **Mobility in soil**

**Mobility in soil:** For the major component(s):, Potential for mobility in soil is very high (Koc between 0 and 50).

### **13. Disposal Considerations**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. ALL disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler, Reclaimer, Incinerator or other thermal destruction device.

### **14. Transport Information**

**DOT Non-Bulk**  
NOT REGULATED

**DOT Bulk**  
NOT REGULATED

**IMDG**  
NOT REGULATED

**ICAO/IATA**  
NOT REGULATED

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. 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.*

### **15. Regulatory Information**

#### **OSHA Hazard Communication Standard**

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This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312**

Immediate (Acute) Health Hazard	No
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313**

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:**

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Propylene glycol	57-55-6	> 33.0 - < 39.0 %

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:**

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)**

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

**Toxic Substances Control Act (TSCA)**

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

**CEPA - Domestic Substances List (DSL)**

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

**16. Other Information**

**Hazard Rating System**

NFPA	Health	Fire	Reactivity
	0	0	0

**Recommended Uses and Restrictions**

Intended as a heat transfer fluid for closed-loop systems. This product is acceptable for use where there is possibility of incidental food contact and as a product for use in the immersion or spray freezing of wrapped meat and packaged poultry products. 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.

**Revision**

Identification Number: 50713 / 1001 / Issue Date 01/05/2011 / Version: 4.0

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

Product #: 492056 Name: DOWFROST 35/65 BLEND Desc:

From: BRENNETAG GREAT LAKES INC. To: Friday, July 12, 2013

**Product Name:** DOWFROST\* 35 Heat Transfer Fluid

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**Legend**

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

*The Dow Chemical Company 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.*