Material Safety Data Sheet
Dow Chemical Canada ULC

Product Name: SYLTHERM XLT# Heat Transfer Fluid

Issue Date: 2011.11.01
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Dow Chemical Canada ULC 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
SYLTHERM XLT# Heat Transfer Fluid

COMPANY IDENTIFICATION
Dow Chemical Canada ULC
A Subsidiary of The Dow Chemical Company
Suite 2100
450 - 1st Street S.W
Calgary, AB T2P 5H1
Canada

For MSDS updates and Product Information: 800-258-2436

Prepared By: Prepared for use in Canada by EH&S, Hazard Communications.
Revision 2011.11.01
Print Date: 11/2/2011

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: Clear
Physical State: Liquid.
Odor: Odorless to mild
Hazards of product:

CAUTION! Combustible liquid and vapor. May be harmful if inhaled. Aspiration hazard. Can enter lungs and cause damage. Isolate area. Keep upwind of spill.

Potential Health Effects

Eye Contact: May cause slight temporary eye irritation. Corneal injury is unlikely. May cause mild eye discomfort.
Skin Contact: Prolonged contact is essentially nonirritating to skin. Prolonged or repeated exposure may cause defatting of the skin leading to drying or flaking of skin.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: Prolonged excessive exposure may cause adverse effects. Signs and symptoms of excessive exposure may include: May cause dizziness and drowsiness.
Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
Aspiration hazard: Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
Reproductive Effects: For the minor component(s): In animal studies, has been shown to interfere with reproduction in females.

3. Composition/information on ingredients

Component	CAS #	Amount W/W
Octamethyltrisiloxane	107-51-7	36.0 %
Decamethyltetrasiloxane	141-62-8	28.0 %
Dodecamethylpentasiloxane	141-63-9	17.0 %
Polydimethylsiloxane	63148-62-9	>= 17.0 - < 20.0 %
Octamethyl Cyclotetrasiloxane	556-67-2	0.8 %
Hexamethyldisiloxane	107-46-0	0.5 %

Amounts are presented as percentages by weight.

4. First-aid measures

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; 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: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

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

The decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Skin contact may aggravate preexisting dermatitis.

5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

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: 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.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contacting an ignition source.
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.

See Section 9 for related Physical Properties

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Vapor explosion hazard. Keep out of sewers. Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. 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.

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: Vapor explosion hazard. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Material will float on water. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Small spills: Contain spilled material if possible. 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: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near

empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use only with adequate ventilation. 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. This product is a poor conductor of electricity and can become electrostatically charged, even in bonded or grounded equipment. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Handling operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations.

Storage

Minimize sources of ignition, such as static build-up, heat, spark or flame. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. No smoking, open flames or sources of ignition in handling and storage area. Store in tightly closed container. Use only with adequate ventilation. Do not store in: Opened or unlabeled containers. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. See Section 10 for more specific information.

8. Exposure Controls / Personal Protection

Exposure Limits

Consult local authorities for recommended exposure limits.
None established

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: Viton. Polyethylene. Neoprene. Chlorinated polyethylene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl alcohol ("PVA"). Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Butyl rubber. Polyvinyl chloride ("PVC" or "vinyl"). 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.

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, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Organic vapor cartridge.
Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance
Physical State Liquid.

Color	Clear
Odor	Odorless to mild
Odor Threshold	No test data available
pH	Not applicable
Melting Point	Not applicable to liquids
Freezing Point	< -101 °C *Literature*
Boiling Point (760 mmHg)	Not applicable.
Flash Point - Closed Cup	42 °C *Closed Cup*
Evaporation Rate (Butyl Acetate = 1)	<0.3 *Estimated.*
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: 0.7 %(V) *Literature* **Upper**: 12.5 %(V) *Literature*
Vapor Pressure	< 5 mmHg @ 25 °C *Literature*
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	0.85 25 °C/25 °C *Literature*
Solubility in water (by weight)	< 0.1 % *Literature*
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	350 °C *ASTM D2155*
Decomposition Temperature	No test data available
Kinematic Viscosity	1.66 cSt @ 20 °C *Literature*

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Product can oxidize at elevated temperatures.

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.
Decomposition products can include and are not limited to: Formaldehyde.

11. Toxicological Information

Acute Toxicity
Ingestion
Typical for this family of materials. LD50, rat > 5,000 mg/kg
Dermal
Typical for this family of materials. LD50, rabbit > 2,000 mg/kg
Inhalation
As product: The LC50 has not been determined.
Eye damage/eye irritation
May cause slight temporary eye irritation. Corneal injury is unlikely. May cause mild eye discomfort.
Skin corrosion/irritation

Prolonged contact is essentially nonirritating to skin. Prolonged or repeated exposure may cause defatting of the skin leading to drying or flaking of skin.

Sensitization

Skin

A similar material did not cause allergic skin reactions when tested in humans.

Respiratory

No relevant information found.

Repeated Dose Toxicity

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

Chronic Toxicity and Carcinogenicity

Contains component(s) which did not cause cancer in laboratory animals.

Developmental Toxicity

Contains component(s) which did not cause birth defects or any other fetal effects in lab animals.

Reproductive Toxicity

For the minor component(s): In animal studies, has been shown to interfere with reproduction in females.

Genetic Toxicology

Contains a component(s) which were negative in in vitro genetic toxicity studies. Contains component(s) which were negative in animal genetic toxicity studies.

Component Toxicology - Hexamethyldisiloxane

Inhalation	LC50, 1 h, Vapor, rat > 48 mg/l

12. Ecological Information

Toxicity

Data for Component: **Polydimethylsiloxane**

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). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (Oncorhynchus mykiss), 96 h: > 10,000 mg/l

Toxicity to Above Ground Organisms

oral LD50, Colinus virginianus (Bobwhite quail): > 5,000 mg/kg

Data for Component: **Octamethyl Cyclotetrasiloxane**

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).

Fish Acute & Prolonged Toxicity

LC50, golden orfe (Leuciscus idus), static, 96 h: > 200 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Crangon crangon (shrimp), static test, 96 h, survival: > 1,000 mg/l

Aquatic Plant Toxicity

EC50, Pseudokirchneriella subcapitata (green algae), static test, biomass growth inhibition, 96 h: > 2,000 mg/l

EC50, blue-green alga Anabaena flos-aquae, static test, biomass growth inhibition, 96 h: > 2,000 mg/l

Data for Component: **Hexamethyldisiloxane**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (Oncorhynchus mykiss), flow-through, 96 h: 3.02 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea Daphnia magna, 48 h, immobilization: 314 mg/l

Fish Chronic Toxicity Value (ChV)

fathead minnow (Pimephales promelas), 14 d, NOEC:0.104 mg/l

Persistence and Degradability

Data for Component: **Polydimethylsiloxane**

Chemical degradation (hydrolysis) is expected in the environment.

Data for Component: **Octamethyl Cyclotetrasiloxane**

No relevant information found.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.08E-12 cm3/s	16 d	Estimated.

Data for Component: **Hexamethyldisiloxane**

No relevant information found.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
9.0E-13 cm3/s	11.9 d	Estimated.

Bioaccumulative potential

Data for Component: **Polydimethylsiloxane**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 2.86 Estimated.

Data for Component: **Octamethyl Cyclotetrasiloxane**

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient, n-octanol/water (log Pow): 4.45 - 5.1 Measured
Bioconcentration Factor (BCF): 12,400; fish; Measured

Data for Component: **Hexamethyldisiloxane**

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient, n-octanol/water (log Pow): 4.20 Measured
Bioconcentration Factor (BCF): 1,300; fish; Measured

Mobility in soil

Data for Component: **Polydimethylsiloxane**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient, soil organic carbon/water (Koc): > 32,000Data for Component: **Octamethyl Cyclotetrasiloxane**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).
Henry's Law Constant (H): 8.72E-02 atm*m3/mole; 25 °C Estimated.

Data for Component: **Hexamethyldisiloxane**

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient, soil organic carbon/water (Koc): 390 - 4,600 Estimated.
Henry's Law Constant (H): 4.5E+00 atm*m3/mole; 25 °C Measured

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

TDG Small container
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: POLYDIMETHYLSILOXANE
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

TDG Large container
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: POLYDIMETHYLSILOXANE
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

IMDG
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: POLYDIMETHYLSILOXANE
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III
EMS Number: F-E,S-E
Marine pollutant.: No

ICAO/IATA
Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.
Technical Name: POLYDIMETHYLSILOXANE
Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III
Cargo Packing Instruction: 366
Passenger Packing Instruction: 355

15. Regulatory Information

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.

Hazardous Products Act Information: CPR Compliance

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification

B3	Combustible Liquid with a Flash Point of 37.8°C or more but less than 93.3°C
D2A	Material May Cause Sterility or Adversely Affect Reproductive Capability

Hazardous Products Act Information: Hazardous Ingredients
This product contains the following ingredients which are Controlled Products and/or are on the Ingredient Disclosure List (Canadian HPA Section 13 and 14).

Component	CAS #	Amount W/W
Octamethyltrisiloxane	107-51-7	36.0%
Decamethyltetrasiloxane	141-62-8	28.0%
Dodecamethylpentasiloxane	141-63-9	17.0%
Octamethyl Cyclotetrasiloxane	556-67-2	0.8%

Hexamethyldisiloxane	107-46-0	0.5%

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	2	0

Recommended Uses and Restrictions

Identified uses

Intended as a heat transfer fluid for closed-loop systems. For industrial use only. 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: 50664 / 1002 / Issue Date 2011.11.01 / Version: 5.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

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
VOL/VOL	Volume/Volume

Dow Chemical Canada ULC 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.