

Initial Preparation Date: 12/24/2008
Last Revision Date: None
Effective Date: 7/23/2010

MATERIAL SAFETY DATA SHEET

**PRODUCT IDENTITY: THERMAL CHARGE HEAT TRANSFER FLUID
PROPYLENE GLYCOL (PG)**

1. SUPPLIER

**OLD WORLD INDUSTRIES, INC.
4065 COMMERCIAL AVENUE
NORTHBROOK, ILLINOIS 60062
PHONE: 847-559-2000
EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC)**

2. INGREDIENTS

| <u>Material</u> | <u>CAS#</u> | <u>% By Wt.</u> | <u>PEL Mist</u> | <u>PEL Vapor</u> |
|-----------------------------|-------------|-----------------|------------------|------------------|
| Propylene Glycol | 57-55-6 | 95 | None Established | None Established |
| Potassium Phosphate Dibasic | 7758-11-4 | 2.5 | | |
| Water | 7732-18-5 | 2.5 | | |

(Does not contain IARC, NTP, OSHA and ACGIH listed carcinogens greater than 0.1%)

3. HAZARDS IDENTIFICATION

NPFA: HEALTH: 0 FLAMMABILITY: 1 REACTIVITY: 0
HMIS: HEALTH: 1 FLAMMABILITY: 1 REACTIVITY: 0

KEY: 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

Emergency Overview: This material is NOT HAZARDOUS by OSHA Hazard Communication definition.

POTENTIAL HEALTH EFFECTS

Routes of Exposure: Eye Contact, Skin Contact, Inhalation, Ingestion, Signs and Symptoms of Overdose

Eye: May cause minor eye irritation.

Skin: No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure. Not a skin absorption hazard.

Inhalation: No significant signs or symptoms indicative of any health hazard are expected to occur as a result of inhalation exposure.

Ingestion: Not a likely route of exposure. No significant signs or symptoms indicative of any health hazard are expected to occur as a result of ingestion. However, lactic acidosis, stupor and seizures have been reported following chronic ingestion and in individuals with kidney disease.

Signs and Symptoms of Overexposure: Same as above.

Medical Conditions Generally Aggravated by Exposure: Material and/or its emissions may aggravate preexisting eye disease.

Chronic Health Effects (Propylene Glycol): No chronic health hazards are expected to occur from anticipated conditions of normal use of this material.

Other Health Information: None.

4. FIRST AID MEASURES

Eyes: Immediately rinse eyes with clean water for 20-30 minutes. Retract eyelids often. Obtain medical attention if pain, blinking, tears or redness persist.

Skin: Not expected to present a significant skin hazard under anticipated conditions of normal use. If skin contact occurs, remove contaminated clothing and wash skin thoroughly.

Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain medical attention if breathing difficulty persists.

Ingestion: Ingestion unlikely. If large quantity swallowed, give lukewarm water (pint / ½ liter) if victim completely conscious / alert. Obtain medical attention.

Notes to Physician: Following acute ingestion, signs of toxicity are unlikely. Ethanol treatment, as in ethylene glycol poisoning, is inappropriate. There is no specific antidote. Treatment should be directed at the control of symptoms and the clinical condition. Monitor for acidosis and central nervous system effects.

5. FIRE FIGHTING MEASURES

Flammable Properties:

Flammability Classification: OSHA/NFPA Class IIIB combustible liquid

Flash Point / Method: 109°C (228°F) (PMCC) (Aqueous solution)

Auto-Ignition Temperature: 371°C (700°F)

Extinguishing Media:

Suitable: SMALL FIRE: Use dry chemicals, CO₂, water spray or alcohol-resistant foam.

LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable: Do not use solid water stream.

Special Fire Fighting Procedures: Wear positive pressure, self-contained breathing apparatus and other protective apparatus as warranted. Fight fire from distance or protected location - heat may build up pressure and rupture closed containers. Liquid may form slippery film. Use water spray or fog for cooling, solid stream may spread fire as burning liquid will float on water. Avoid frothing/steam explosion. Notify authorities if liquid enters sewers/public waters.

Unusual Fire and Explosion Hazards: Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air and travel long distances along ground before igniting and flashing back. Fine sprays and mists may be combustible at temperatures below normal flash point.

6. ACCIDENTAL RELEASE MEASURES

Steps to be Taken in Case Material Is Released or Spilled: Prevent flow to sewers and public waters as it may contaminate said water. Restrict water usage to prevent slip/fall hazard. Soak up small spills with inert solids. Dike and recover large land spills. Notify appropriate authorities if product enters any waterway.

7. HANDLING AND STORAGE

Handling: Hygroscopic. Handle with care. After handling, always wash hands thoroughly with soap and water. Always drain and flush systems containing propylene glycol with water before welding or other maintenance. Wear recommended personal protective equipment. Observe precautions pertaining to confined space entry.

Storage:

Bulk Drums / Larger: Stainless steel containers. Lined steel. Mild steel. Reinforced plastic. Keep drums tightly closed to prevent contamination. Store at 65° to 90°F. Use dry nitrogen or low dew point air for tank padding.

1-Gallon Containers: Store at ambient temperature.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory Protection: No special respiratory protection equipment is recommended under normal conditions of anticipated use with adequate ventilation.

Ventilation: Adequate general ventilation is required, local exhaust is recommended if possible.

Protective Gloves: None normally needed; however, wearing chemical resistant gloves is recommended if prolonged contact is expected. Avoid contact with skin. Where use can result in skin contact, practice good personal hygiene.

Eye Protection: Chemical splash goggles or full face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should not be worn.

Other Protective Equipment: None

Work Practices/Engineering Controls: Keep containers closed when not in use.

Personal Hygiene: If product-handling results in skin contact, wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before reuse.

Other Hygienic Practices: Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the tasks(s) to be performed, conditions present, duration of use and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

As of 2001, no occupational exposure limits have been established for propylene glycol by either ACGIH or OSHA.

9. PHYSICAL PROPERTIES (Propylene Glycol)

| | |
|--|--|
| Boiling Point (deg F): | 365 |
| Specific Gravity (Water =1): | 1.04 |
| Vapor Pressure (mm of Hg): | <0.1 |
| Vapor Density (air=1): | 2.6 |
| Burst Point: | Product will not freeze solid or burst. |
| Water Solubility: | Complete |
| Evaporation Rate (n-butyl acetate=1): | Slight |
| Freeze Point / Melting Point (deg F): | -76 |
| Freeze Point 50% Concentration (deg F): | -26 |
| Appearance: | Clear |
| Odor: | Slightly viscous, almost odorless liquid |

10. STABILITY and REACTIVITY

Stability: Stable
Conditions to Avoid: Heat, sparks, open flame
Materials to Avoid: Strong alkalis, strong oxidizing agents
Hazardous Decomposition or Byproducts: Carbon monoxide and other toxic vapors
Hazardous Polymerization: Not expected to occur

11. TOXICOLOGICAL INFORMATION

Skin: The LD50 for skin absorption in rabbits is >20,800 mg/kg.

Ingestion: The oral LD50 for rats is 20,000 mg/kg, and for mice is 22,000 mg/kg.

Mutagenicity: In vitro mutagenicity studies were negative. Animal mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION

Ecotoxicity: This material is expected to be non-hazardous to aquatic species.

| | Test Type | Species | Value / Units |
|-----------------------|-----------------|-------------------|---------------|
| Fish / Amphibians | LC50 / 96 hours | Sheepshead Minnow | 23,800 mg/l |
| Aquatic Invertebrates | EC50 / 48 hours | Daphnia | > 43,500 mg/l |
| Aquatic Plants | EC50 / 72 hours | Green algae | > 19,000 mg/l |

Environmental Fate: Propylene glycol is expected to degrade rapidly in the vapor phase by reaction with photochemically produced hydroxyl radicals. It has an estimated half-life of 32 hours in an average ambient atmosphere. Propylene glycol is expected to degrade relatively rapidly via biodegradation in water. It is not expected to be susceptible to hydrolysis, oxidation, volatilization, bioconcentration and adsorption to sediments. Propylene glycol is expected to degrade relatively rapidly via biodegradation in soil. Degradation in soil does not appear to be inhibited by high glycol concentrations or by subfreezing temperatures. Due to its high mobility and low adsorptivity, propylene glycol is susceptible to leaching. However, concurrent biodegradation may be rapid enough to diminish the significance of leaching. Evaporation from dry (but not moist) soil surfaces is likely to occur.

Bioaccumulation: Based on the octanol/water partition coefficient, the bioconcentration factor is estimated to be < 1.

Biodegradation: This material is expected to be readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Landfill solids at permitted sites using registered transporters. Burn concentrated liquids, avoiding flameouts, and assuring emissions comply with applicable regulations. Diluted aqueous waste may biodegrade, but avoid overloading plant biomass and assure effluent complies with applicable regulations.

14. TRANSPORT INFORMATION

U.S DEPARTMENT OF TRANSPORTATION

This product is not regulated by DOT.

IATA

Not Regulated by IATA

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization of 1988 (SARA), Title III

Section 302/304

Requires emergency planning based on “Threshold Planning Quantities” (TPQs) and release reporting based on Reportable Quantities (RQs) of “Extremely Hazardous Substances” (EHS) listed in Appendix A of 40 CFR 355. There are no components of this material with known CAS numbers that are on the EHS list.

Section 311 and 312

Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

Section 313

The material does not contain any chemical components with known CAS numbers that exceeded the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

OSHA Regulations

“Chemical-specific” U.S. Occupational Safety and Health Administration (OSHA) regulations (1910.1002 to 1910.1050) presented under 29 U.S. Code of Federal Regulations (CFR) 1910 do not apply to this material or its components.

Department of Transportation (DOT)

Other than the normal shipping instructions and information given in this MSDS, there are no other specific U.S. Department of Transportation (DOT) regulations governing the shipment of this material.

State Regulations:

California Safe Drinking Water and Toxic Enforcement Act of 1988 – Proposition 65

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels that would be subject to the proposition.

California South Coast Air Quality Management District (SCAWMD) Rule 443.1 (VOCs)

A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1, 1, 1-trichloroethane, methylene chloride (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114) and (CFC-115). By this definition, this is a VOC material.

Massachusetts Right to Know Substance List (MSL) (105 CMR Section 670.000)

Extraordinarily Hazardous Substances (MSL-EHS) must be identified when present in materials at levels greater than state specified criterion. The criterion is $\geq 0.0001\%$. Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers present in this material, at levels specified in Section 9 – Components do not require reporting under the statute.

New Jersey Registration

The New Jersey Registry 3. Registration law does not apply to this material, as none of its components are trade secrets.

Pennsylvania Right to Know Hazardous Substance List

Hazardous Substances (PA-HS) must be identified when present in material at levels greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers in this material at a level which could require reporting under the statute are:

| <u>Chemical</u> | <u>CAS #</u> |
|------------------|--------------|
| Propylene Glycol | 57-5506 |

Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 0.01\%$. Components with CAS numbers in this material, at levels specified in Section 9 Components do not require reporting under the statute.

UNITED STATES - TSCA - Inventory: Listed

WHMIS classification for product: n/a

This product has been classified in accordance with the hazard criteria of the CFR and the MSDS contains all the information required by the CFR.

16. OTHER INFORMATION

Contact: Thomas Cholke

Phone: (847) 559-2225

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