

MATERIAL SAFETY DATA SHEET

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005705

PROPYLENE GLYCOL USP

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SECTION V - HEALTH HAZARD DATA (Continued)

BREATHING-- OF MIST CAN CAUSE IRRITATION OF NASAL AND RESPIRATORY PASSAGES.
SWALLOWING-- CAN CAUSE GASTROINTESTINAL IRRITATION. NAUSEA, VOMITING, AND DIARRHEA.

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDRER CONTAMINATED CLOTHING BEFORE RE-USE

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET MEDICAL ATTENTION.

IF SWALLOWED: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED: REMOVE INDIVIDUAL TO FRESH AIR

PRIMARY ROUTES OF ENTRY:

INHALATION. SKIN CONTACT

EFFECTS OF CHRONIC OVER EXPOSURE: FOR PRODUCT

OVER EXPOSURE TO THIS MATERIAL (OR ITS COMPONENTS) HAS APPARENTLY BEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LABORATORY ANIMALS: LIVER ABNORMALITIES. KIDNEY DAMAGE

propylene glycol a colorless viscous hydroscopic liquid, $\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$, used in an antifreeze solutions, in hydraulic fluid, and as a solvent. Also called "propanedid." (American Heritage Encyclopedia Dictionary, page 1355

propylene glycol a colorless, visccious liquid, $\text{C}_3\text{H}_8\text{O}_2$, used as an anti-freeze, in the manufacture of polyester resins, etc. (Websters Dictionary, Second College Edition)

CHILLSAFE Fluid Superior to Automotive Antifreeze in Heat Transfer Systems using Propylene Glycol

Automotive antifreeze can be even worse than plain water and plain glycols for heat transfer systems. Antifreeze usually contains silicate-based inhibitors that coat heat exchange surfaces and reduce energy efficiency. Such components foul systems and dramatically shorten the lifetime of pump seals. Also, most antifreeze is ethylene glycol-based and has proven toxic when ingested by humans and animals.

In contrast, the low toxicity of CHILLSAFE significantly reduces the risks resulting from leakage and accidental ingestion.

Adding CHILLSAFE heat transfer fluid significantly lowers your system maintenance requirements and increases its heat transfer fluid life expectancy.

CHILLSAFE Solutions -Your Buffer Against Corrosion

CHILLSAFE Inhibited Propylene Glycol also provides superior corrosion protection. Its inhibition package minimizes corrosion by buffering the organic acids that form during normal system operations.

By contrast, plain water and plain glycols can be highly damaging to heat transfer systems. Plain water and uninhibited glycols are notorious for their corrosive attack on many metals.

Corrosion Effects of Heat Transfer Fluids

(Corrosion Weight Loss in Milligrams)

| Metal | Plain Water | CHILLSAFE™ | | |
|-----------|-------------|------------------------------|-----------------------------|----------------------------|
| | | Uninhibited Propylene Glycol | Uninhibited Ethylene Glycol | Inhibited Propylene Glycol |
| Copper | 2 | 4 | 4 | 4 |
| Solder | 100 | 1100 | 1800 | 1 |
| Brass | 5 | 5 | 10 | 4 |
| Steel | 215 | 215 | 975 | 1 |
| Cast Iron | 450 | 350 | 1200 | 3 |
| Aluminum | 110 | 15 | 165 | 2 |

Based on corrosion test **D1384; 190 deg. F** for 2 week; **30%** vol. glycol in deionized water; air bubbling.

Table shows the relative corrosion rates of CHILLSAFE heat transfer fluid compared to uninhibited ethylene and propylene glycol and plain water. The data illustrates that while water or plain glycols can be very corrosive, CHILLSAFE fluid provides a consistently high level of corrosion protection for nearly all metals of construction used in HVAC or industrial cooling systems.

CHILLSAFE fluid is not recommended for use with galvanized steel. The zinc in the galvanized coating could react with inhibitor components, thus precipitating out of the fluid and causing fouling as well as inhibitor depletion.

DEFINITIONS

Sodium Lauryl Sulfate and Sodium Laureth Sulfate:

(SLS and SLES) - Harsh detergent implicated in contact dermatitis, hair loss, systemic retention, and possible damage to eye formation in young children. AVOID THESE INGREDIENTS

Propylene Glycol - A very common carrier in cosmetic products and baby products. Serious health concerns are being raised over the use of this chemical. Material Safety Data Sheet for Propylene Glycol clearly states to "AVOID SKIN CONTACT".)

Natural Cosmetics - The term 'natural' means virtually anything the manufacturer wishes it to mean. As whole, natural cosmetics are purely an advertising gimmick. (Beware of this term.)

Taken from MORE DANGEROUS BEAUTY: Potentially Harmful Ingredients in Cosmetics by David L. **Kem** (Editor of New *Health and Longevity*)

WHAT IS PROPYLENE GLYCOL?

In the industrial world propylene glycol is used in:

- * Antifreeze
- * Brake and Hydraulic Fluid
- * Airplane Deicer
- * Paint and Coatings
- * Floor Wax
- * Portable Water Systems
- * Swimming Pools
- * Liquid Laundry Detergents
- * Pet Food and Tobacco

WHAT IS SODIUM LAURYL SULFATE?

In the industrial world sodium laurel sulfate is used as:

- * Garage Floor Cleaner
- * Engine Degreasers
- * Car Wash Soaps

SIDE EFFECTS OF PROPYLENE GLYCOL AND SODIUM LAURYL SULFATE (The effects of these chemicals are clearly more than skin deep.)

PROPYLENEGLYCOL

This common ingredient is found in many beauty **creams**, cleansers and makeup. It is **also** found in **children's personal care products**. The American Academy of Dermatologists Inc. published a clinical review in January 1991 which showed propylene glycol to cause a significant number of reactions and was a primary irritant to the skin even in low levels of concentrations.

It has been shown that propylene glycol:

- * has severe adverse health effects and has been found to cause contact dermatitis, kidney damage and liver abnormalities
- * inhibits skin cell growth in human tests
- * damages cell membranes causing rashes, dry skin and surface damage to the skin

SODIUM LAURYL SULFATE

The greatest concern of many scientists is centered around SLS, a detergent found in approximately **90% of commercial shampoos, including "no more tears" baby shampoos.**

A study has shown that:

- * shampoos (with SLS) could retard healing and keeps children's eyes from developing properly, children under six are especially vulnerable to improper eye development (*Summary of Report of Research to Prevent Blindness, Inc. conference*)
- * SLS can cause cataracts in adults and delays the healing of wounds in the surface of the cornea
- * SLS builds up in the heart, liver, lungs and brain and can cause major problems in these areas
- * SLS causes skin to flake and to separate and causes substantial roughness on the skin
- * SLS causes dysfunction of the biological systems of the skin
- * SLS is such a caustic cleanser that it actually corrodes the hair follicle and impairs its ability to grow hair.
- * SLS is routinely used in clinical studies to deliberately irritate the skin so that the effects of other substances can be tested.

Modern testing is proving time and time again that many ingredients used in personal care products are not good for the body, skin, or hair.