



## Material Safety Data Sheet

LA7510  
NORKOOL (TM) SLH 50% PREMIX

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Id:** LA7510

**Product Name:** NORKOOL (TM) SLH 50% PREMIX

**Synonyms:** None

**Chemical Family:** Glycols

**Application:** Intended as a heat transfer fluid for closed-loop systems.

**Distributed By:**

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Richmond, BC  
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**Prepared By:** The Safety, Health and Environment Department of Univar Canada Ltd.

**Preparation date of MSDS:** 05 January 2006

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Percentage (W/W)	LD50s and LC50s Route & Species:
Ethylene Glycol 107-21-1	45-55	Oral LD50 (Rat) 4000 mg/kg Dermal LD50 (Rabbit) 9530 µL/kg
Water 7732-18-5	45-55	Not available.
Sodium Nitrite 7632-00-0	0.1-1	Inhalation LC50 (Rat) 5500 µg/m <sup>3</sup> Oral LD50 (Rat) 88 mg/kg
Dipotassium phosphate 7758-11-4	1-3	Not available.
1,4-dioxane 123-91-1	0.01	Oral LD50 (Rat) 7120 mg/kg Dermal LD50 (Rabbit) 7600 µL/kg
Ethylene Oxide 75-21-8	0.01	Oral LD50 (Rat) 0.05 mg/kg Inhalation LC50 (Rat) 1.44 mg/L Inhalation LC50 (Rat) 800 ppm Inhalation LC50 (Rat) 9 mg/L
Propylene Oxide 75-56-9	0.01	Dermal LD50 (Rabbit) 1244 mg/kg Oral LD50 (Rat) 380 mg/kg Inhalation LC50 (Rat) 4000 ppm Inhalation LC50 (Rat) 9.486 mg/L

**Note:** Remainder of the ingredients are non-hazardous.

## 3. HAZARDS IDENTIFICATION

### Potential Acute Health Effects:

**Eye Contact:** Liquid, vapor, or mist causes irritation, experienced as stinging, excess blinking and tear production, with excess redness of the conjunctiva.

**Skin Contact:** No evidence of harmful effects from available information.

**Inhalation:** Mist may irritate nose and throat. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting, headache, dizziness, and irregular eye movements.

**Ingestion:** Swallowing May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure, pulmonary edema, and severe kidney damage may develop. May be fatal. A few reports have been published describing the development of weakness of the facial muscles, diminished hearing, and difficulty with swallowing, during the late stages of severe poisoning.

## 4. FIRST AID MEASURES

**Eye Contact:** In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

**Skin Contact:** Wash with soap and water. Remove contaminated clothing and launder before reuse. Get medical attention if irritation persists.

**Inhalation:** Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.

**Ingestion:** Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

**Notes to Physician:** It is estimated that the oral dose to adults is of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glycerinaldehydes, glycolic acid and oxalic acid which cause an elevated anion-gap metabolic acidosis and renal tubular injury. The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, CNS depression and kidney injury. Urinalysis may show albuminuria, hematuria and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of ethylene glycol poisoning includes elimination of ethylene glycol and metabolites, correction of metabolic acidosis and prevention of kidney injury. It is essential to have immediate and follow up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continuous infusion of 5% sodium bicarbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase, ethanol is antidotal. Given in the early stages of intoxication, it blocks the formulation of nephrotoxic metabolites. A therapeutically effective blood concentration of ethanol is in the range 100 - 150 mg/dl and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and/or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood ethylene glycol concentration greater than 25 mg/dl, or compromise of renal functions.

A more effective intravenous antidote for physician use in 4-methylpyrazole, a potent inhibitor of alcohol dehydrogenases which effectively blocks the formation of toxic metabolites of ethylene glycol. It has been used to decrease the metabolic consequences of ethylene glycol poisoning before metabolic acidosis coma, seizures and renal failure have occurred. A generally recommended protocol is a loading dose of 15 mg/kg followed by 10 mg/kg every 12 hours for 4 doses and the 15 mg/kg every 12 hours until the ethylene glycol concentrations are below 20 mg/100ml. Slow intravenous infusion is required. Since 4-methylpyrazole is dialyzable, increased dosage may be necessary during hemodialysis. Additional therapeutic measures may include the administration of cofactors involved in the metabolism of ethylene glycol. Thiamine (100 mg) and pyridoxine (50 mg) should be given every six hours.

Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be non-cardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing, and dysphagia.

## 5. FIRE FIGHTING MEASURES

**Flash Point:** 93 °C / 199.4 °F

**Flash Point Method:** Pensky-Martens Closed Cup

**Autoignition Temperature:** Not Available.

**Flammable Limits in Air (%):** Not Available.

**Extinguishing Media:** Apply alcohol-type or all-purpose-type foams by manufacturers' recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

**Special Exposure Hazards:** During a fire, ammonia and nitrogen-containing compounds may be produced.

**Hazardous Decomposition/Combustion Materials (under fire conditions):** Not available.

**Special Protective Equipment:** Fire fighters should wear full protective clothing, including self-contained breathing equipment.

**NFPA RATINGS FOR THIS PRODUCT ARE:** HEALTH 1, FLAMMABILITY 1, INSTABILITY 0

**HMIS RATINGS FOR THIS PRODUCT ARE:** HEALTH 1, FLAMMABILITY 1, REACTIVITY 0

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## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures:** Wear appropriate protective equipment.

**Environmental Precautionary Measures:** Prevent entry into sewers or streams, dike if needed. Consult local authorities.

**Procedure for Clean Up:** Isolate hazard area and restrict access. Absorb with an inert dry material and place in an appropriate waste disposal container. Avoid direct contact with material.

## 7. HANDLING AND STORAGE

**Handling:** Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing aerosols. Avoid breathing vapor. Keep the containers closed when not in use. Use with adequate ventilation. Wash thoroughly after handling. For industrial use only.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Store in accordance with good industrial practices.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering Controls:

General (mechanical) room ventilation may be adequate, if handled at ambient temperatures or in covered equipment. If ambient temperatures are exceeded or operations exist which may produce mist, aerosol or vapor, local exhaust ventilation or other engineering controls may be required.

**Respiratory Protection:** If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. NIOSH-approved atmosphere-supplying respirator or a NIOSH-approved air-purifying respirator with organic vapor cartridge and dust/mist pre-filter is recommended.

**Gloves:** Natural rubber gloves. Neoprene gloves. Nitrile gloves. Polyvinylchloride gloves.

**Skin Protection:** Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.

**Eyes:** Chemical goggles; also wear a face shield if splashing hazard exists.

**Other Personal Protection Data:** Ensure that eyewash stations and safety showers are proximal to the work-station location.

Ingredients	Exposure Limit - ACGIH	Exposure Limit - OSHA	Immediately Dangerous to Life or Health - IDLH
Ethylene Glycol	100mg/m <sup>3</sup> Ceiling	125 mg/m <sup>3</sup> Ceiling 50 ppm Ceiling	Not Available.
Water	Not available.	Not available.	Not Available.
Sodium Nitrite	Not available.	Not available.	Not Available.
Dipotassium phosphate	Not available.	Not available.	Not Available.
1,4-dioxane	20 ppm TLV-TWA	25 ppm TWA 90 mg/m <sup>3</sup> TWA	500 ppm
Ethylene Oxide	1 ppm TLV-TWA	Not available.	800 ppm
Propylene Oxide	2 ppm TLV-TWA	20 ppm TWA 50 mg/m <sup>3</sup> TWA	400 ppm

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Liquid

**Colour:** Green

**Odour:** Mild

**pH** Not Available.

**Specific Gravity:** 1.079

**Boiling Point:** 107 °C / 224.6 °F

**Freezing/Melting Point:** -38 °C / -36 °F

**Vapour Pressure:** 13 mmHg

**Vapour Density:** 1

**% Volatile by Volume:** 98 Wt%

**Evaporation Rate:** 0.79

**Solubility:** 100%

**VOCs:** Not Available.

**Viscosity:** Not Available.

**Molecular Weight:** Not Available.

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** WARNING: Do not mix this product with nitrites or other nitrosating agents because a nitrosamine may be formed. Nitrosamines may cause cancer.

**Materials to Avoid:** Strong acids and bases. Explosive decomposition may occur if combined with strong acids or strong bases and subjected to elevated temperatures. Materials reactive with hydroxyl compounds.

**Hazardous Decomposition Products:** Carbon monoxide. Carbon dioxide. Ammonia and nitrogen-containing compounds.

**Additional Information:**

## 11. TOXICOLOGICAL INFORMATION

### Principle Routes of Exposure

**Ingestion:** Swallowing May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure, pulmonary edema, and severe kidney damage may develop. May be fatal. A few reports have been published describing the development of weakness of the facial muscles, diminished hearing, and difficulty with swallowing, during the late stages of severe poisoning.

**Skin Contact:** No evidence of harmful effects from available information.

**Inhalation:** Mist may irritate nose and throat. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting, headache, dizziness, and irregular eye movements.

**Eye Contact:** Liquid, vapor, or mist causes irritation, experienced as stinging, excess blinking and tear production, with excess redness of the conjunctiva.

**Additional Information:** Repeated skin contact with ethylene glycol may, in a very small proportion of cases, cause sensitization with the development of allergic contact dermatitis. The incidence is significantly less than 1% with the undiluted material. Repeated inhalation of ethylene glycol mist may produce signs of central nervous system involvement, particularly dizziness and nystagmus (involuntary eye movement). Exposure may place individuals with existing heart problems at added risk of potential cardiac irregularities and heart failure. In animals, effects have been reported on the following organs: Kidney, liver.

May aggravate an existing kidney disease.

### Acute Test of Product:

**Acute Oral LD50:** Not Available.

**Acute Dermal LD50:** Not Available.

**Acute Inhalation LC50:** Not Available.

### Carcinogenicity:

Ingredients	IARC - Carcinogens	ACGIH - Carcinogens
Ethylene Glycol	Not listed.	A4 - Not Classifiable as a Human Carcinogen (aerosol)
Water	Not listed.	Not listed.
Sodium Nitrite	Not listed.	Not listed.
Dipotassium phosphate	Not listed.	Not listed.
1,4-dioxane	Group 2B	A3 - Confirmed animal carcinogen with unknown relevance to humans
Ethylene Oxide	Group 1	A2 - Suspected Human Carcinogen
Propylene Oxide	Group 2B	A3 - Confirmed animal carcinogen with unknown relevance to humans

**Carcinogenicity Comment:** Contains nitrites which may react with amines to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

**Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity:** Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or doses. The no-effect doses for developmental toxicity for ethylene glycol given by gavage over the period of organogenesis has been shown to be 150 mg/kg/day for the mouse and 500 mg/kg/day for the rat. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations of 150, 1000 and 2500 mg/m<sup>3</sup> for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentration, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing of ethylene glycol as a result of grooming the wetted coat. In a further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1000 and 2500 mg/m<sup>3</sup>) and developmental toxicity with minimal evidence of teratogenicity (2500 mg/m<sup>3</sup>). The no-effects concentration (based on maternal toxicity) was 500 mg/m<sup>3</sup>. In a further study in mice, no teratogenic effects could be produced when ethylene glycol was applied to the skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen. There is currently no available information to suggest that ethylene glycol has caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity. Exposure to high aerosol concentrations is only minimally effective in producing developmental toxicity.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicological Information:

Ingredients	Ecotoxicity - Fish Species Data	Acute Crustaceans Toxicity:	Ecotoxicity - Freshwater Algae Data
Ethylene Glycol	LC50 (bluegill) 27500 mg/L LC50 (goldfish) 27500 mg/L LC50 (rainbow trout) 41000 mg/L	Not Available.	Not Available.
Water	Not Available.	Not Available.	Not Available.
Sodium Nitrite	LC50 (rainbow trout (juvenile)) 0.19 mg/L	Not Available.	Not Available.
Dipotassium phosphate	Not Available.	Not Available.	Not Available.
1,4-dioxane	LC50 (fathead minnow) 9850 mg/L LC50 (bluegill sunfish) 10,000 mg/L	Not Available.	Not Available.
Ethylene Oxide	LC50 (goldfish) 90 mg/L	Not Available.	Not Available.
Propylene Oxide	LC50 (goldfish) 170 mg/L	Not Available.	Not Available.

### Other Information:

## 13. DISPOSAL CONSIDERATIONS

**Disposal of Waste Method:** Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

**Contaminated Packaging:** Empty containers should be recycled or disposed of through an approved waste management facility.

## 14. TRANSPORT INFORMATION

**DOT (U.S.):**

**DOT Shipping Name:** Not Regulated.

**DOT Hazardous Class:** Not Applicable.

**DOT UN Number:** Not Applicable.

**DOT Packing Group:** Not Applicable.

**DOT Reportable Quantity (lbs):** Not Applicable.

**Note:** No additional remark.

**Marine Pollutant:** No.

**ICAO/IATA:**

**IATA Proper Shipping Name:** Not Regulated.  
**IATA Hazard Class:** Not Applicable.  
**UN Number:** Not Applicable.  
**Packing Group:** Not Applicable.  
**IATA Label:** Not Applicable.  
**IATA Remarks:** No additional remark.

**IMDG:**

**IMDG Proper Shipping Name:** Not Regulated.  
**Hazard Class:** Not Applicable.  
**UN Number:** Not Applicable.  
**Packing Group:** Not Applicable.  
**Marine Pollutant:** No.  
**IMDG Label:** Not Applicable.  
**Remarks:** No additional remark.

**TDG (Canada):**

**TDG Proper Shipping Name:** Not Regulated.  
**Hazard Class:** Not Applicable.  
**UN Number:** Not Applicable.  
**Packing Group:** Not Applicable.  
**Note:** No additional remark.  
**Marine Pollutant:** No.

## 15. REGULATORY INFORMATION

**U.S. TSCA Inventory Status:** All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

**Canadian DSL Inventory Status:** All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

**Note:** Not available.

### U.S. Regulatory Rules

Ingredients	CERCLA/SARA - Section 302:	SARA (311, 312) Hazard Class:	CERCLA/SARA - Section 313:
Ethylene Glycol	Not Listed.	LISTED	LISTED
Water	Not Listed.	Not Listed.	Not Listed.
Sodium Nitrite	Not Listed.	LISTED	LISTED
Dipotassium phosphate	Not Listed.	Not Listed.	Not Listed.
1,4-dioxane	Not Listed.	LISTED	LISTED
Ethylene Oxide	LISTED	LISTED	LISTED
Propylene Oxide	LISTED	LISTED	LISTED

**California Proposition 65:** Listed.

**MA Right to Know List:** Listed.

**New Jersey Right-to-Know List:** Listed.

**Pennsylvania Right to Know List:** Listed.

**WHMIS Hazardous Class:**

D2A VERY TOXIC MATERIALS

D2B TOXIC MATERIALS



## 16. OTHER INFORMATION

**Additional Information:**

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.

**Disclaimer:**

**NOTICE TO READER:**

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**\*\*\*END OF MSDS\*\*\***