Nasco
9306.

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Nasco- Guard**

MANUFACTURER:

NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538

INFORMATION TELEPHONE NUMBER:

24-Hour Contact: CHEMTREC
800-424-9300
General Information: 800-558-9595

SECTION 2- HAZARDS IDENTIFICATION

DANGER
MAY CAUSE CANCER WHEN INHALED
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION

Relevant Routes of Exposure
Inhalation, eye contact, skin contact

Inhalation
May cause irritation to eyes and respiratory system. Formaldehyde has been classified as a known human carcinogen. The risk of injury depends on duration and level of exposure. This product contains a small amount of formaldehyde; exposures during expected use conditions are expected to be low.

Eye
May cause irritation

Skin
May cause an allergic skin reaction with direct liquid contact

Ingestion
Ingestion of this product is unlikely, however, if ingested in sufficient quantities, it may cause metabolic acidosis.

Medical Conditions Aggravated by Exposure
Pre-existing respiratory disorders may be aggravated by exposure

Target Organs
Eyes, respiratory tract

See Section 11: TOXICOLOGICAL INFORMATION for further information.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

	CAS #	EINECS #	Weight %
	57-55-6	200-338-0	Less than 50%
	50-00-0	200-001-8	>0.1% but <0.5%
	108-95-2	203-632-7	Less than 1%
	7732-18-5		Balance

SECTION 4: FIRST AID MEASURES

Eye Contact
If case of contact, immediately flush eyes with plenty of water. If easy to do, remove contact lenses if worn. Seek medical attention if irritation persists.

Inhalation
Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Skin
Wash affected area with soap and water. Seek medical attention if symptoms develop.

Ingestion
Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

SECTION 5: FIRE FIGHTING MEASURES

Suitable Extinguishing Media
Use foam, carbon dioxide (CO_2), water fog or fine spray or dry chemical to extinguish fire.

Hazardous Decomposition Products
During a fire, smoke generated can be irritating or toxic. Products of combustion include but are not limited to carbon monoxide and carbon dioxide.

Special Protective Measures for Fire Fighter
Firefighters should wear self contained breathing apparatus and full fire fighting turnout gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions
Avoid breathing vapors. Use gloves to clean up spills.

Environmental Precautions
No special hazards. Follow applicable federal, state, provincial and local regulations regarding releases.

Methods for Containment and Clean-up
Absorb with liquid binding material. Dispose in accordance with federal, state, provincial and local regulations.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling
Do not eat, drink or smoke when using this product. Avoid breathing of vapors. Avoid direct eye contact with liquids. Do not ingest. Wash hands with soap and water after use or handling.

Conditions for Safe Storage, Including Any Incompatibilities
No special storage requirements.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Guidelines

OSHA PEL	ACGIH TLV	Other Limits
NE	NE	10 mg/m^3 (TWA) (OARS WEEL)
0.75 ppm (TWA) 2 ppm (STEL)	0.3 ppm (C) (SEN)	NE
5 ppm (TWA)(S)	5 ppm (TWA)(S)	NE

Exposure Limit Abbreviations

NE= No Limit Established
OSHA PEL= Occupational Safety and Health Administration Permissible Exposure Limit
ACGIH TLV= American Conference of Governmental Industrial Hygienists Threshold Limit Value ®, 2013 Edition
OARS WEEL= Occupational Alliance for Risk Science Workplace Environmental Exposure Limit
C= Ceiling limit
TWA= Time Weighted Average
STEL= Short Term Exposure Limit
S= Skin designation
SEN= Sensitizer designation
ppm= parts per million
mg/m^3= milligrams per cubic meter of air

Appropriate Engineering Controls

General ventilation is usually adequate to control exposures. Do not use product in a confined area or areas with little or no air movement. If ventilation is not adequate, use appropriate respiratory protection.

Personal Protective Equipment

Eye Protection

Safety eyewear should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes.

Skin protection

Use gloves if there is direct contact with the liquid. Butyl or nitrile rubber gloves are recommended. Wear lab coat if liquid splashes could occur.

Respiratory Protection

Under normal use conditions, airborne exposures are not expected to exceed applicable exposure limits. If a risk assessment indicates that such protection is necessary, a NIOSH approved air purifying respirator with organic vapor cartridges may be used.

Ingestion Exposure

Wash hands after handling and before eating. Do not consume or store food in the work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid
Appearance and Odor: Clear colorless liquid. Faint disinfectant -like odor.
pH Not applicable
Melting Point: Not applicable
Initial boiling point & boiling range Not applicable

Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability	Not applicable
Upper/Lower flammability or explosive limits	Not applicable
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Relative Density	Not applicable
Solubility in Water	Not applicable
Partition Coefficient:	Not applicable
Auto-Ignition Temperature:	Not applicable
Decomposition Temperature:	Not applicable
Viscosity:	Not applicable

SECTION 10: STABILITY AND REACTIVITY

Reactivity
No dangerous reactions are expected under normal conditions of use.

Chemical Stability
Chemically stable under normal storage and handling conditions

Possibility of Hazardous Reactions
None known

Conditions to avoid
None known

Incompatible Materials
Avoid contact with strong acids, strong bases and strong oxidizers.

Hazardous Decomposition Products
Under expected usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products such as carbon monoxide, aldehydes, alcohols, ethers, organic acids and other compounds may be generated when material is subjected to high temperatures or fires.

SECTION 11: TOXICOLOGICAL INFORMATION

Nasco-Guard has not been tested as a mixture. Information about the individual components is supplied.

Acute Toxicity

Formaldehyde

LD_{50} Oral= 800 mg/kg (Rat)
LC_{50} = 400 mg/m^3 (30 min; Mice)

Phenol

LD_{50}: 530 mg/kg (Oral; Rat)
LD_{50}: 100 mg/kg (Oral; Cat)
LD_{50}: 500 mg/kg (Oral; Dog)
LD_{50}: 660-707 mg/kg (Dermal; Rat)
LC_{50} = 177 mg/m^3 (30 min/Mice)

Propylene Glycol

LD_{50}: >20,000 mg/kg (Oral; Rat, Mouse)
LD_{50}: >18,000 mg/kg (Dermal; Rabbit, Guinea pig, Dog)
LC_{50} = 317 mg/l (aerosol; 2 hr; Rabbit)

Skin Corrosion/Irritation

Formaldehyde

Administration onto the skin (rabbit): 2 mg/24 hr., Severe Irritant

Phenol

Not a sensitizer. Phenol is skin absorbable. Administration onto the skin (rabbit): 500 mg/24 hr., Severe Irritant

Propylene Glycol

May cause mild irritation, possibly due to dehydration of the skin

Eye Damage or Irritation

Formaldehyde

Administration into the eye (rabbit): 750 ug, Severe Irritant

Phenol

Concentrated solutions cause severe eye damage. Direct contact with the eye may cause redness, pain and blurred vision.

Propylene Glycol

May cause slight, temporary irritation. Corneal injury is not likely to occur.

Ingestion

May be harmful if swallowed.

Sensitization

Formaldehyde

Skin sensitizer in animal studies. No clear evidence of formaldehyde-induced asthma attributable to immunologic mechanisms has been identified. In some individuals contact dermatitis may occur.

Phenol

Not a sensitizer

Propylene Glycol

Did not cause allergic skin reactions when tested in humans. No relevant data for respiratory sensitization found.

Germ Cell Mutagenicity

Formaldehyde

Genotoxic effects after exposure via relevant routes are limited to those cells which are in direct contact with formaldehyde and no effects are observed in distant-site tissues.

Phenol

Negative and positive tests have been reported.

Propylene Glycol

Animal studies are in vitro tests were negative.

Component Carcinogenicity

Formaldehyde

Research studies of workers exposed to formaldehyde have suggested an association between formaldehyde exposure and several cancers, including nasopharyngeal cancer and leukemia. IARC-1 (Carcinogenic to Humans), NTP- K (Known to be a Human Carcinogen), AGCIH-A2 (Suspected Human Carcinogen), OSHA (Cancer Suspect Agent)

Phenol

Not listed

Propylene glycol

Not listed

Reproductive Effects

Formaldehyde

Does not have specific embryotoxic or teratogenic properties

Phenol

Does not have specific embryotoxic or teratogenic properties

Propylene glycol

Does not have specific embryotoxic or teratogenic properties

Specific Target Organ Toxicity-Single Exposure

Formaldehyde

Respiratory irritation.

Phenol

Acute ingestion and skin exposure can cause systemic effects such as anorexia, headache, dark urine, hypothermia, hypotension, arrhythmia and coma. At the phenol concentration in this product, these effects are not likely to occur.

Propylene glycol

May cause drowsiness or dizziness at high exposures when ingested.

Specific Target Organ Toxicity-Repeated Exposure

Formaldehyde

Effects limited to the area of contact (skin or respiratory tract).

Phenol

Adversely affects the nervous and hematopoietic systems; kidney, liver and skin. At the phenol concentration in this product, these effects are not likely to occur.

Propylene glycol

Repeated high exposure may cause central nervous system effects.

SECTION 12: ECOLOGICAL INFORMATION

General Product Information

Nasco-Guard has not been tested as a mixture. Information about the individual components is supplied.

Component Information

Formaldehyde

Unlikely to be a hazard because of the low percentage in the product as sold.

Phenol

Unlikely to be a hazard because of the low percentage in the product as sold.

Propylene glycol

Propylene glycol is essentially non-toxic to aquatic organisms an acute basis. Biodegradable. Does not bioconcentrate.

SECTION 13: DISPOSAL INFORMATION

Dispose using methods which are in accordance with local, state, and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

The US Department of Transportation (DOT) under CFR 172 does not regulate this product as a hazardous material. All federal, provincial, state and local laws and regulations that apply to the transport of this material must be adhered to.

Shipping Name: NA **Symbols:** NA **Hazard Class:** NA **UN #:** NA **Packing Group:** NA **DOT/IMO Label:** NA **Special Provisions:** NA	**Packaging Authorizations** **a) Exceptions:** NA **b) Group:** NA **c) Authorizations:** NA	**Quantity Limitations** **a) Passenger, Aircraft, or Railcar:** NA **b) Cargo Aircraft Only:** NA **Vessel Stowage Requirements** **a) Vessel Stowage:** NA **b) Other:** NA

The International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

Shipping Name: NA **Classification Code:** NA **UN No.:**NA	**Packaging** **a)Packing Instructions:** NA **b)Special Packing**	**Portable Tanks & Bulk Containers** **a) Instructions:** NA **b) Special Provisions:** NA

Packing Group: NA **ADR Label:** NA **Special Provisions:** NA **Limited Quantities:** NA **Special Provisions:** NA	**Provisions:** NA **c) Mixed Packing** **Provisions:** NA	

IATA– International Air Transport Association (IATA) does not regulate this product as a hazardous substance.

Shipping Name: NA **Class/Division**: NA **Hazard Label (s):**NA **UN No.:**NA **Packing Group:** NA **Excepted Quantities (EQ):** NA	**Passenger & Cargo Aircraft** **Cargo Aircraft Only (EQ)** **Pkg Inst:** NA **Max Net Qty/Pkg:** NA	**Cargo Aircraft Only** **Pkg Inst:** NA **Max Net Qty/Pkg**: NA	**Special Provisions**: NA **ERG Code**: NA

SECTION 15: REGULATORY INFORMATION

The following regulatory information may not be complete and should not be relied upon as the sole source of information regarding regulatory responsibilities.

Occupational Health and Safety Administration
This product as sold does not have a specific exposure limit but individual components of the material are regulated under the OSHA Air Contaminant Standard (1910.1000) and OSHA Formaldehyde Standard (1910.1048).

CERCLA Hazardous Substance List (40 CFR 302.4):
The following components are listed:

Formaldehyde (50-00-0): maximum 0.3% max by weight
Phenol (108-95-2): maximum 0.1% by weight

US EPA (SARA Title III) Section 302
The following components are listed:

Formaldehyde (50-00-0): maximum 0.3% max by weight; Reportable quantity-100 lbs
Phenol (108-95-2): maximum 0.1% by weight; Reportable quantity-500 lbs

SARA TITLE III, Sections 311-312 Hazard Category
This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

SARA Section 313 Information:
This product contains 2 substance subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Formaldehyde (50-00-0): maximum 0.3% max by weight
Phenol (108-95-2): maximum 0.1% by weight

California Proposition 65 Compliance
Warning: This product contains chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm):

Formaldehyde (CAS # 50-00-0)

US - New Jersey RTK - Substances
The following components are listed:

Formaldehyde (50-00-0): maximum 0.3% max by weight
Phenol (108-95-2): maximum 0.1% by weight

US - Pennsylvania RTK - Hazardous Substances
The following components are listed:

Formaldehyde (50-00-0): maximum 0.3% max by weight
Phenol (108-95-2): maximum 0.1% by weight

Canadian DSL Inventory Status
All of the components are listed on the DSL Inventory

Canada-WHMIS (Workplace Hazardous Materials Information System)
The following components are listed:

Component	WHMIS Classification
Formaldehyde 	D1A Very Toxic Material-Immediate D2A Very Toxic Material-Carcinogenicity & Mutagenicity D2B Toxic Material- Skin sensitization

Canadian Environmental Protection act (CEPA)
None of the components are on the CEPA Priorities Substances Lists

SECTION 16: OTHER INFORMATION

DATE PREPARED: **January 2, 2014 (Rev. 1)**
(Original Issue: January 2, 2014)

This document has been prepared solely for the intent of compliance with the provisions of Subpart 2 of Part 1910 of Title 29 of the Code of Federal Regulations, paragraph 1910.1200. NASCO MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR TRADE.

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name	:	**Monopropylene glycol - Industrial**
Uses	:	Generally accepted for use as a component in the manufacture of unsaturated polyester resins, functional fluids, paints and coatings and plasticizers.
Product Code	:	U1511
Company	:	**Shell Chemical LP** PO Box 2463 HOUSTON TX 77252-2463 USA
MSDS Request	:	1-800-240-6737
Customer Service	:	1-866-897-4355

Emergency Telephone Number

Chemtrec Domestic (24 hr)	:	1-800-424-9300
Chemtrec International (24 hr)	:	1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Monopropylene glycol	57-55-6	100.00%W

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour	:	Colourless. Liquid. Odourless.
Safety Hazards	:	Not classified as flammable but will burn.

Health Hazards : No specific hazards under normal use conditions.

4. FIRST AID MEASURES

General Information	:	In general no treatment is necessary, however, obtain medical advice.
Inhalation	:	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
Skin Contact	:	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
Eye Contact	:	Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist, transport to the nearest medical facility for additional treatment.
Ingestion	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

Advice to Physician	:	Treat symptomatically. Following cases of gross over-exposure, investigation of liver, kidney and eye function may be advisable. Records of such incidents should be maintained for future reference.

5. FIRE FIGHTING MEASURES

Flash point	:	99 °C / 210 °F
Explosion / Flammability limits in air	:	2.6 - 12.6 %(V)
Auto ignition temperature	:	421 °C / 790 °F
Specific Hazards	:	Clear fire area of all non-emergency personnel. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will only burn if enveloped in a pre-existing fire. Hazardous combustion products may include: Carbon monoxide.
Extinguishing Media	:	Large fires should only be fought by properly trained fire fighters. Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media	:	Do not use water in a jet.
Protective Equipment for Firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	All storage areas should be provided with adequate fire fighting facilities. Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe all relevant local and international regulations.

Protective measures	:	Avoid inhaling vapour and/or mists. Avoid contact with the skin. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Ventilate contaminated area thoroughly.
Clean Up Methods	:	For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional Advice	:	Proper disposal should be evaluated based on regulatory status of this material (refer to Section 13), potential contamination from subsequent use and spillage, and regulations governing disposal in the local area. Observe all relevant local regulations.

7. HANDLING AND STORAGE

General Precautions	:	Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Handling	:	In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. Use local exhaust extraction over processing area. For lines and fittings, avoid copper, copper alloys, zinc. Avoid contact with skin, eyes, and clothing. Air-dry contaminated clothing in a well-ventilated area before laundering. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Do not empty into drains. Handling Temperature: Ambient. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Storage	:	Prevent all contact with water and with moist atmosphere. Tanks must be clean, dry and rust-free. Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Nitrogen blanket recommended for large tanks (capacity 100 m3 or higher). Drums should be stacked to a maximum of 3 high. Keep container tightly closed. Keep dry. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Prevent ingress of water. Storage Temperature : 40°C maximum.
Product Transfer	:	Lines should be purged with nitrogen before and after product transfer. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Keep containers closed when not in use.
Additional Information	:	Ensure that all local regulations regarding handling and storage facilities are followed. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

None established.

Additional Information	:	Wash hands before eating, drinking, smoking and using the toilet.
Exposure Controls	:	No exposure controls are ordinarily required under normal conditions of use. It is good general industrial hygiene practice to minimize exposure to the material.
Personal Protective Equipment	:	Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Respiratory Protection	:	No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
Hand Protection	:	Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Incidental contact/Splash protection: PVC. Neoprene rubber. Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Thin disposable gloves should be avoided for long term use. When worn, use once and dispose.
Eye Protection	:	Chemical splash goggles (chemical monogoggles).
Protective Clothing	:	Skin protection not ordinarily required beyond standard issue work clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colourless. Liquid.
Odour	:	Odourless.
Boiling point	:	186 - 189 °C / 367 - 372 °F
Melting / freezing point	:	-59 °C / -74 °F
Flash point	:	99 °C / 210 °F
Explosion / Flammability limits in air	:	2.6 - 12.6 %(V)
Auto-ignition temperature	:	421 °C / 790 °F
Vapour pressure	:	ca. 10 Pa at 20 °C / 68 °F
Specific gravity	:	1.04 at 3.89 °C / 39.00 °F
Density	:	1,036 kg/m3 at 20 °C / 68 °F
Water solubility	:	Completely miscible.
Solubility in other solvents	:	Readily soluble in various organic solvents.
n-octanol/water partition coefficient (log Pow)	:	ca. -1
Dynamic viscosity	:	55 mPa.s at 20 °C / 68 °F
Vapour density (air=1)	:	2.5 at 20 °C / 68 °F
Hygroscopicity	:	Hygroscopic.

10. STABILITY AND REACTIVITY

Stability	:	Stable. Hygroscopic.
Conditions to Avoid	:	Heat, flames, and sparks. Temperatures above 40°C
Materials to Avoid	:	Strong oxidising agents. Strong acids.
Hazardous Decomposition Products	:	Carbonyl and dioxolane derivatives may be formed.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	:	Information given is based on product testing, and/or similar products, and/or components.
Acute Oral Toxicity	:	Low toxicity: LD50 >2000 mg/kg
Acute Dermal Toxicity	:	Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Expected to be of low toxicity: LC50 greater than near-saturated vapour concentration.
Skin Irritation :		Not irritating to skin.
Eye Irritation	:	Essentially non-irritating to eyes.
Sensitisation	:	Not a skin sensitiser.
Repeated Dose Toxicity	:	Low systemic toxicity on repeated exposure. Cats given high doses of MPG in diet showed a decrease in red blood cell survival.
Mutagenicity	:	Not mutagenic.
Carcinogenicity	:	Not carcinogenic in animal studies.
Reproductive and Developmental Toxicity	:	Not a developmental toxicant. Does not impair fertility.

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish	:	Low toxicity: LC/EC/IC50 > 100 mg/l
Aquatic Invertebrates	:	Low toxicity: LC/EC/IC50 > 100 mg/l
Algae	:	Low toxicity: LC/EC/IC50 > 100 mg/l
Microorganisms	:	Expected to have low toxicity: LC/EC/IC50 > 100 mg/l
Mobility	:	If product enters soil, it will be highly mobile and may contaminate groundwater. Dissolves in water.
Persistence/degradability	:	Readily biodegradable.
Bioaccumulation	:	Does not bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Container Disposal	:	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Send to drum recoverer or metal

reclaimer.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)
This material is not subject to DOT regulations under 49 CFR Parts 171-180.

IMDG
This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)
This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

AICS	Listed.	
DSL	Listed.	
INV (CN)	Listed.	
ENCS (JP)	Listed.	(2)-234
ISHL (JP)	Listed.	2-(8)-321
ISHL (JP)	Listed.	2-(8)-323
TSCA	Listed.	
EINECS	Listed.	200-338-0
KECI (KR)	Listed.	KE-29267
PICCS (PH)	Listed.	

SARA Hazard Categories (311/312)

No SARA 311/312 Hazards.

State Regulatory Status

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

This material does not contain any chemicals known to the State of California to cause cancer, birth

defects or other reproductive harm.

Pennsylvannia Right-To-Know Chemical List

Monopropylene glycol (57-55-6) 100.00% Listed.

16. OTHER INFORMATION

Additional Information	:	For further information, contact your local Shell company or agent.
HMIS Rating (Health, Fire, Reactivity)	:	2, 1, 0
NFPA Rating (Health, Fire, Reactivity)	:	0, 1, 0
MSDS Version Number	:	6.1
MSDS Effective Date	:	03/07/2006
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	Advice in this document relates only to product as originally supplied. Other derivative chemicals will have different properties and hazards. Advice should be sought on their safe handling and use. Do not use in theatrical fogs or other artificial smoke generator applications. Use for the manufacture of polyurethane products. This product is not intended for use in pharmaceutical, food (including animal feed) or cosmetic type applications.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.

BRENNTAG
PROPYLENE GLYCOL INDUSTRIAL

Material Safety Data Sheet

HUNTSMAN
Enriching lives through innovation

1. Product and company identification

Product name PROPYLENE GLYCOL - INDUSTRIAL **MSDS #** 00033939

Product use Solvent.

Huntsman Petrochemical Corporation
P.O. Box 4980
The Woodlands, TX 77387-4980

TELEPHONE NUMBERS
Transportation Emergency
Company: (800) 328-8501
CHEMTREC: (800) 424-9300
Medical Emergency: (409) 722-9673 (24 Hour)
General MSDS Assistance: (281) 719-6000
Technical Information: (281) 719-7780
E-MAIL: MSDS@huntsman.com

Validation date : 3/11/2009.

In case of emergency

Spills Leaks Fire or Exposure Call Chemtrec: (800) 424-9300
Medical Emergency Information: (800) 328-8501
In Mexico: 01 800 00 214 00
In Columbia: 01 800 91 6012

2. Hazards identification

Physical state : Liquid. [Liquid.]

Odor : Characteristic.

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Emergency overview : ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE.

THIS PRODUCT IS NOT TO BE USED TO PRODUCE FOGS OR MISTS IN THEATRICAL, MUSICAL, OR OTHER ENTERTAINMENT PERFORMANCES.

Aspiration hazard if swallowed. Can enter lungs and cause damage.

GENERAL INFORMATION : Read the entire MSDS for a more thorough evaluation of the hazards.

3. Composition/information on ingredients

Name	CAS number	%
Propylene glycol	57-55-6	60 - 100

4. First aid measures

Eye contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Skin contact Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Inhalation Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur.

Ingestion Wash out mouth with water. Move exposed person to fresh air. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

Notes to physician : Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

5. Fire-fighting measures

Flash point : Closed cup: 99°C (210.2°F)

Flammable limits : Lower: 2.6%
Upper: 12.6%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : In a fire or if heated, a pressure increase will occur and the container may burst.
Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Preventive Measures : Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

Engineering controls : Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For guidance on engineering control measures refer to publications such as the ACGIH current edition of 'Industrial Ventilation, a manual of Recommended Practice.'

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

9 . Physical and chemical properties

General information

Appearance

Physical state : Liquid. [Liquid.]

Color : Colorless.

Odor : Characteristic.

Odor threshold : Not available.

Important health, safety and environmental information

pH : 6

Boiling point : 186 to 189°C (366.8 to 372.2°F)

Melting point : -59°C (-74.2°F)

Flash point : Closed cup: 99°C (210.2°F)

9 . Physical and chemical properties

Oxidizing properties	: Not available.
Vapor pressure	: 0.011 kPa (0.08 mm Hg)
Relative density	: 1.04
Octanol/water partition coefficient	: -1
Viscosity	: Kinematic: <0.2 cm^2/s (<20 cSt at 40°C)
Vapor density	: 2.6 [Air = 1]
Auto-ignition temperature	: 421°C (789.8°F)
VOC content	: 28% by ASTM D 2369

10 . Stability and reactivity

Stability and reactivity	: The product is stable.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Hazardous decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide

11 . Toxicological information

Toxicity data

Acute toxicity

Product/ingredient name	test	Species	Result	Exposure
Propylene glycol	LD50 Oral	Rat	22000 to 31000 mg/kg	-
	LD50 Dermal	Rabbit	21000 mg/kg	-

Irritation/Corrosion

Potential acute health effects

Ingestion	: Aspiration hazard if swallowed. Can enter lungs and cause damage.
Inhalation	: No known significant effects or critical hazards.
Eyes	: No known significant effects or critical hazards.
Skin	: No known significant effects or critical hazards.

Potential chronic health effects

Target organs	: None known.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.

PROPYLENE GLYCOL - INDUSTRIAL

12 . Ecological information

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propylene glycol	-1	-	low

Environmental effects : This product shows a low bioaccumulation potential.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Transportation Emergency Number 1-800-424-9300 (CHEMTREC).

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	Not regulated.					-
TDG Classification	Not regulated.					-
IMDG Class	Not regulated.		-	-		-
IATA-DGR Class	Not regulated.		-	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Not regulated.

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

CERCLA: Hazardous substances. : No ingredients listed.

SARA 313 : No ingredients listed.

This product does not contain nor is it manufactured with ozone depleting substances.

California Prop 65 : 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.

Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).

15 . Regulatory information

CEPA (DSL) : All components are listed or exempted.

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

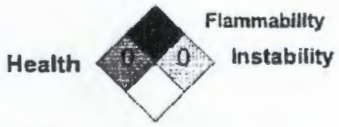
16 . Other information

Label requirements : ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE.

THIS PRODUCT IS NOT TO BE USED TO PRODUCE FOGS OR MISTS IN THEATRICAL, MUSICAL, OR OTHER ENTERTAINMENT PERFORMANCES.

Hazardous Material Information System (U.S.A.) :

National Fire Protection Association (U.S.A.) :



Date of printing : **3/11/2009.**

Date of issue : **11 March 2009**

Date of previous issue : 8/5/2008

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.
IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.
THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.
NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.

▼ Indicates information that has changed from previously issued version.