

Monopropylene glycol - Industrial MSDS# 1020 Version 6.1 Effective Date 03/07/2006 According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Material Safety Data Sheet

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

Company

U1511 Shell Chemical LP

PO Box 2463

HOUSTON TX 77252-2463

USA

MSDS Request **Customer Service** 1-800-240-6737

1-866-897-4355

Emergency Telephone Number

Chemtrec Domestic

1-800-424-9300

(24 hr)

Chemtrec

: 1-703-527-3887

International (24 hr)

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.



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Advice to Physician

Treat symptomatically. Following cases of gross overexposure, 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 2.6 - 12.6 %(V)

Explosion / Flammability limits in air

421 °C / 790 °F

Auto ignition temperature 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

Protective Equipment for

Firefighters

Wear full protective clothing and self-contained breathing

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.

Do not use water in a jet.

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.

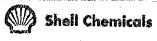
Clean Up Methods

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.



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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

Product Transfer

Temperature: 40°C maximum.
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.



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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

Respiratory Protection

Personal protective equipment (PPE) should meet

recommended national standards. Check with PPE suppliers. 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 **Protective Clothing** Chemical splash goggles (chemical monogoggles).

Skin protection not ordinarily required beyond standard issue

work clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Odour

Boiling point

Melting / freezing point

Flash point

Explosion / Flammability

limits in air

Auto-ignition temperature

Vapour pressure

Specific gravity

Density

Water solubility Solubility in other solvents

n-octanol/water partition coefficient (log Pow) Dynamic viscosity

Vapour density (air=1) Hygroscopicity

Colourless. Liquid.

Odourless.

186 - 189 °C / 367 - 372 °F

-59 °C / -74 °F 99 °C / 210 °F

2.6 - 12.6 %(V)

421 °C / 790 °F

ca. 10 Pa at 20 °C / 68 °F 1.04 at 3.89 °C / 39.00 °F

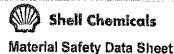
1,036 kg/m3 at 20 °C / 68 °F

Completely miscible.

Readily soluble in various organic solvents.

: 55 mPa.s at 20 °C / 68 °F

: 2.5 at 20 °C / 68 °F : Hygroscopic.



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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

Carbonyl and dioxolane derivatives may be formed.

Products

11. TOXICOLOGICAL INFORMATION

Basis for Assessment

: Information given is based on product testing, and/or similar

products, and/or components. Low toxicity: LD50 >2000 mg/kg

Acute Oral Toxicity 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.

Eve 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 Carcinogenicity Not mutagenic.

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.

Persistence/degradability

Bioaccumulation

Dissolves in water. Readily biodegradable.

Does not bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

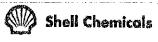
Material Disposal

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

Container Disposal

applicable regulations. Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Send to drum recoverer or metal



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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.	

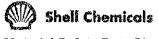
SARA Hazard Categories (311/312)

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



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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,

2, 1, 0

Reactivity)

NFPA Rating (Health,

: 0, 1, 0

Fire, Reactivity) **MSDS Version Number**

: 6.1

MSDS Effective Date

: 03/07/2006

MSDS Revisions

A vertical bar (i) in the left margin indicates an amendment

from the previous version.

MSDS Regulation

Uses and Restrictions

The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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.

FORT ATKINSON 901 JANESVILLE AVENUE

FORT ATKINSON, WI 53538-0901

(920) 563-2446 FAX (920) 563-8296 TOLL FREE 800-558-9595 10 www.eNASCO.com

FED.I.D.NO. 06-1165854

ORIGINAL INVOICE

TERMS: NET 30 DAYS

CLAIMS MUST BE MADE WITH 10 DAYS AFTER RECEIPT OF GOODS

Date 1 2/27/09 P.O. Number Order No. Contract 18905 K053113 54-0782-G Sis Code WS ld Invoice No. Account AUTO 935139 1 441-299-00 Cash with Order Special Information 315/4354179 Request Date Shipping Instructions

SYRACUSE CITY SCHOOL DISTRICT

POSTAGE:

FOB-DEST

ACCTS PAYABLE DEPT 725 HARRISON ST SYRACUSE NY 13210-2395

Remit To:

NASCO

901 Janesville Avenue Fort Atkinson, WI 53538-0901

Send this portion with your payment. Keep this portion for your records.

Date: 2/27/09 Invoice: 935139 Account: 441-299-00 Order: 54-0782-G P.O. Number: K053113 Extended Price Shipped Backorder U/M Catalog # Description Ordered SPECIAL REMARKS NO PI PI AUTH, PI WRT, FRGHT LETR, 1.75 35.00 20 SHEEP HEART 20 LS01155M EA SHIP PK/10 4.74 644.64 136 EΑ LS01436M RAT 7-9"PL 136 8.00 .80 SB09759 (SM) M OWL PELLETS/WRT C 10 10 SDS -9306 *YOUR ORDER IS COMPLETE*

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NASCO MSDS #9306

SUMMARIZED MSDS AND ENVIRONMENTAL INFORMATION FOR NASCO-GUARD® SPECIMENS UPDATED JULY 2008

Manufacturer's Name: NASCO, Fort Atkinson, Wisconsin 53538-0901 Emergency Phone Number: 920-568-5565

The following safety data applies to NASCO-Guard® preservative fluid (or tissue fluids) containing approximately 74% water, 25% propylene glycol (1, 2-propanedlo!), 0.3% or less formaldehyde, and a possible trace of phenol. The Chemical Abstracts Service (CAS) registration number for propylene glycol is 57-55-6. The CAS number for formaldehyde is 50-00-0. The CAS number for phenol is 108-95-2. As required by law, we will provide complete information on each of the fixative and preservative chemicals that may be present in our specimens.

GENERAL INFORMATION: NASCO-Guard® specimens are initially fixed in formaldehyde solutions ranging from 0.8%-3.7%. The embalming fluid of large animals (e.g., cats, dogs, fetal pigs) may also contain 1.9% phenol. All specimens are subsequently perfused with a propylene glycol-water solution until tissue fluids and ambient fluids contain 20% to 25% glycol. Residual free formaldehyde is thus reduced to 0.3% or less. Phenol, if present, is reduced commensurately. Propylene glycol is nontoxic.

APPEARANCE AND ODOR: Colorless, sweet tasting liquid with mild odor (slight disinfectant odor if phenol is present).

FIRE AND EXPLOSION HAZARD: None.

HEALTH HAZARD: NASCO-GUARD® PRESERVATIVE FLUID (OR TISSUE FLUIDS)

EYES: Direct contact with eyes may cause irritation. Wash eyes with water. Safety glasses may be worn as a precautionary measure.

SKIN: Mild irritation possible in hypersensitive individuals. Wash hands with soap and water after handling specimens. Rubber or plastic gloves may be worn as a precautionary measure.

INHALATION: Very small quantities of formaldehyde gas can cause distress (dizziness, nausea, headache, etc.) in hypersansitive individuals. Specimens should be used in a well-ventilated room.

ORAL: Because NASCO-Guard® specimens are moist packed little fluid is available for consumption. Residual phenol could be toxic, but ingestion is unlikely due to medicinal odor.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING: Drink large amounts of water. Do not induce vomiting. Get medical attention immediately.

SKIN: Wash with soap and water.

INHALATION: Remove to fresh air. Call a physician if discomfort persists.

EYES: Flush with water.

Supplemental information on chemicals that may be present in hasco-guard® specimens.

PROPYLENE GLYCOL is nontoxic, as evidenced by its wide use in foods, pharmaceuticals, and cosmetics. Ingestion may cause nausea. It may cause minor skin imitation.

FORMALDEHYDE is well known for its toxic and irritant properties. A large quantity of NASCO-Guard® would have to be ingested to inflict a lethal dose because its residual formaldehyde concentration is 0.3% or less.

PHENOL can be toxic. Because phenol has a distinct medicinal smell, however, it is unlikely that specimens containing phenol would be eaten. Phenol's wide use as a disinfectant and deodorant attests to its relative safety when used in highly diluted solutions.

Detailed MSDS information for propylene glycol is included in this summary. Detailed MSDS information for formaldehyde and phenol may be ordered from NASCO's Safety Officer, Dept. MSDS, 901 Janesville Avenue, Fort Atkinson, WI 53538-0901. Be reminded however that the tabulated chemical and physical properties are for "full strength" concentrations. Formaldehyde and phenol are present in our specimens in only trace amounts. Propylene glycol and water are the main ingredients: both are nontoxic.

DISPOSAL OF SPECIMENS:

NASCO-Guard® specimens are biodegradable. They are suited for burial in an approved sanitary landfill or for incineration. Ambient fluids may be safely disposed via city sewers.

PRESERVED SPECIMEN POLICY STATEMENT

NASCO is a manufacturer and distributor of physical science, chemistry, earth science, and life science teaching materials including preserved zoological specimens. In the course of doing business, skilled NASCO employees preserve, process, and package specimens under the trade name of NASCO-Guard® Preserved Specimens according to guidelines of the U.S. Department of Agriculture. We do not process or sell any specimens that might appear on a threatened or endangered species list.

Since 1941, NASCO has been dedicated to Educational Supply. Specimens sold in the Nasco catalog are collected and processed throughout the world. In our facility we are licensed and/or governed by the U.S. Fish and Wildlife Service, the United States (and Wisconsin) Departments of Agriculture, and the Wisconsin Department of Natural Resources. We follow all guidelines for euthanasia as listed in the Report of the American Veterinary Medical Association Panel on Euthanasia. Worldwide collections are also monitored by the Convention on International Trade in Endangered Species (CITIES). Examples of this would be fish which are collected for their food value and night crawlers which are primarily collected to use as fishing bait. Many other specimens that we supply come to us from Midwest slaughterhouses. If NASCO did not purchase materials for preservation, these inedible animal parts would normally be processed for pet food.

All the cat carcasses processed by NASCO come to us from licensed humane societies, animal shelters and animal control facilities after they have been humanely euthanized in accordance with USDA regulations. It is our policy and belief that none of the cats have been euthanized solely to serve the needs of the biological supply industry. It is our policy to process and recycle only euthanized cat carcasses.

Thank you for purchasing NASCO-Guard® specimens. If you need further information about our NASCO-Guard® Preserved Specimens, please contact us.