

NASCO MSDS
#9306

SUMMARIZED MSDS AND ENVIRONMENTAL INFORMATION
FOR NASCO-GUARD® SPECIMENS
UPDATED JANUARY 2006

Jimmy B
Safety

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-propanediol), 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 at least 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 hypersensitive 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 NASCO-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 irritation.

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 (CITES). 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.

BRENNTAG
PROPYLENE GLYCOL INDUSTRIAL



Shell Chemicals
Material Safety Data Sheet

Monopropylene glycol - Industrial
 MSDS# 1020
 Version 6.
 Effective Date 11/04/2005
 According to OSHA Hazard Communication Standard, 29 CFR
 1910.1200

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 : 1-800-240-8737
Customer Service : 1-866-897-4355
Emergency Telephone Number
Chemtrec Domestic (24 hr) : 1-800-424-9300
Chemtrec International (24 hr) : 1-703-527-3867

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Monopropylene glycol	57-55-8	100.00%W

3. HAZARDS IDENTIFICATION

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

Aggravated Medical Condition : Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Eyes. Skin.

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.



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- 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



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- Additional Advice** : appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- : 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 6 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



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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.

B. 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



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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 sensitizer.
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



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Local Legislation : away from sparks and fire. Send to drum recoverer or metal reclaimer.
 : 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)



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This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Pennsylvania 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.

MSDS Effective Date : 11/04/2005

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.