

## Material Safety Data Sheet

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### Section 1 – Chemical Product and Company Identification

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Product Name: GSP 1539-2A, GSP 1539-3A, GSP 1539-4A  
 Product Use: Component of polyurethane  
 Date Effective: 1/21/04  
 Modified Date: 2/6/04

Manufactured by:  
 G.S. Polymers, Inc.  
 195 Arovista Ave.  
 Brea, CA 92821  
 (714) 672-0567 Fax: (714) 672-0987

In an emergency call CHEMTREC @ 800-424-9300

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### Section 2 – Composition/Information on Ingredients

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Hazardous Ingredients(s)	%(by wt.)	ACGIH TLV	CAS NO.
4,4--Diphenylmethane Diisocyanate (MDI)	up to 30%	0.005 PPM TWA	101-68-8
Diphenylmethane Diisocyanate (2,2,2,4)	up to 20%	not established	26447-40-5
Prepolymer reaction products with MDI	up to 65%		

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### Section 3 – Hazards Identification

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#### EMERGENCY OVERVIEW

**Health Hazards:** Irritating to eyes, respiratory system and skin. Risk of serious damage to respiratory system. May cause sensitization by inhalation and skin contact. May cause lung damage. Repeated inhalation of aerosol at levels above the occupational exposure limit could cause respiratory sensitization. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.

**Physical Hazards:** Reacts slowly with water to produce carbon dioxide that may rupture closed containers. This reaction accelerates at higher temperatures.

**Appearance:** Pale yellow liquid.

**Odor:** Slightly musty.

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

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### Section 4 – First Aid Measures

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**General:** In case accident or if you feel unwell. Seek medical advice immediately (Show the label where possible).

**Inhalation:** Remove patient from exposure, keep warm and at rest. Obtain medical attention. Treatment is Symptomatic for primary irritation or bronchospasm. If breathing is labored, qualified personnel should administer oxygen. Apply artificial respiration if breathing has ceased or shows signs of failing.

- Skin Contact:** Remove contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice. Contaminated clothing should be thoroughly cleaned before reuse.
- Eye Contact:** Immediately flush eyes with running water for a minimum of 15 minutes. Hold eyelids open during flushing. If irritation persists repeat flushing and obtain medical attention IMMEDIATELY.
- Ingestion:** Do NOT induce vomiting. Provided the patient is conscious, wash out their mouth with water then give 1 or 2 glasses of water to drink. Refer person to medical personnel for immediate attention.
- Note to Physicians:** Symptomatic and supportive therapy may be needed following severe exposure. In such cases, medical follow-up should be maintained for at least 48 hours.

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#### Section 5 - Fire Fighting Measures

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- Fire and Explosion Hazards:** Containers may burst under intense heat Due to reaction with water, a hazardous build-up of pressure could result if contaminated containers are re-sealed.
- Extinguishing Media:** Carbon dioxide, dry chemical, or appropriate foam. If water is used, very large quantities are required. Reaction between water and hot isocyanate may be vigorous. Contain runoff water with temporary barriers.
- Fire Fighting Protective Equipment:** Use self-contained breathing apparatus and full protective clothing (Bunker gear).
- Flash Point:** 400°F (204°C) (COC)
- Flammable Limits (Lower):** Not available.
- Flammable Limits (Upper):** Not available.
- Auto Ignition Temperature:** 240°C (464°F) (4,4'- Diphenylmethane Diisocyanate)
- Decomposition Temperature:** 646°F (341.1°C)
- Rate of Burning:** Not available.
- Explosive Power:** None.
- Sensitivity to Mechanical Impact:** None.
- Sensitivity to Static Discharge:** None.
- Combustion Products:** CO, CO<sub>2</sub>, NO<sub>x</sub> and some HCN.

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#### Section 6 – Accidental Release Measures

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**For major spills call Chemtrec (800) 424-9300.**

**Spills, Leaks, or Releases:** Clean up should only be performed by trained personnel. People dealing with major spillages should wear full protective clothing including respiratory protection. Evacuate the area. Prevent further leakage, spillage or entry into drains. Contain and absorb large spillages onto an inert, non-flammable adsorbent carrier (such as earth or sand). Shovel into open-top drums or plastic bags for further decontamination, if necessary. Wash the spillage area clean with liquid decontaminant. Test atmosphere for MDI vapor. Neutralize small spillages with decontaminant. Remove and dispose of residues. Notify applicable government authorities if release is reportable.

**Preparation of Decontamination Solution:** Prepare a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets when preparing and using solution.

**Use of Decontamination Solution:** Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Do not tighten the bungs. Mixing with wet earth is also effective, but slower.

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 Section 7 – Handling and Storage
 

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**Handling:** Avoid personal contact with the product or reaction mixture. Use only with adequate ventilation to ensure that the defined occupational exposure limit is not exceeded. The efficiency of the ventilation must be monitored regularly because of the possibility of blockage. Avoid breathing aerosols, mists and vapors. When the product is sprayed or heated, an approved MSHA/NIOSH positive-pressure, supplied-air respirator may be required.

**Storage Requirements:** Keep containers properly sealed and when stored indoors, in a well ventilated area. Keep contents away from moisture. Due to reaction with water, producing CO<sub>2</sub> gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Do not store in containers made of copper, copper alloys or galvanized surfaces. If a container is contaminated, do not reseal it. Reseal containers only after placing under a nitrogen blanket.

**Storage Temperature:** Ideal storage temperature is 16-38°C (60-100°F).

**KEEP STOCKS OF DECONTAMINANT (SEE SECTION 6) READILY AVAILABLE.**

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 Section 8 – Exposure Controls/Personal Protection
 

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**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. Follow guidelines in the ACGIH publication "Industrial Ventilation".

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eye Protection:** Chemical safety goggles. If there is a potential for splashing, use a full-face shield.

**Skin Protection:** The following protective materials are recommended. Gloves - neoprene, nitrile-butadiene rubber, butyl rubber. Thin disposable gloves should be avoided for repeated or long term use. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

**Respiratory Protection:** Use a NIOSH/MSHA-approved positive pressure air-supplied respirator equipped with a full facepiece, or an air-supplied hood, if airborne concentrations exceed or are expected to exceed the TLV. Air purifying (cartridge type) respirator are not approved for protection against Diisocyanate.

**EXPOSURE GUIDELINES:**

Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with this product. Once a person is diagnosed as sensitized, no further exposure to any sensitizer should be permitted.

**HAZARDOUS INGREDIENT(S):**

4,4'-Diphenylmethane Diisocyanate:

ACGIH TLV	0.005 ppm (8-hour, 40 hours/week)
OSHA PEL CEILING	0.02 ppm
NIOSH TLV	0.005 ppm (10-hour, 40 hours/week)
NIOSH STEL	0.02 ppm (15-minute)

NOTE: The Occupational Exposure Limits listed for isocyanates do not apply to previously sensitized individuals,

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 Section 9 – Chemical and Physical Properties
 

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**Chemical Name:**..... Not applicable (mixture)  
**Chemical Family:**..... Diisocyanate  
**Molecular Formula:** ..... Not applicable (mixture)  
**Appearance:** ..... Clear to amber liquid  
**Odor:**..... Slightly musty  
**Vapor Pressure (mm Hg at 25°C):**..... <0.0001  
**Vapor Density (Air=1):** ..... 8.5  
**Boiling Point:** ..... Not Established  
**Melting Point:** ..... Not Established  
**Solubility (Water):**..... (Reacts with water)  
**Specific Gravity:** ..... Not Established

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 Section 10 – Stability and Reactivity
 

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**Hazardous Decomposition Products:** Highly unlikely under normal industrial use. See Section 5.

**Chemical Stability:** Stable at room temperature.

**Conditions to Avoid:** Avoid high temperatures. Avoid freezing.

**Incompatibility with other Substances:** This product will react with any materials containing active hydrogens such as water, alcohol, amines, bases and acids. The reaction with water is very slow under 50°C (122°F) but is accelerated at higher temperatures.

**Hazardous Polymerization:** Polymerization may occur at elevated temperatures in the presence of alkalis, tertiary amines and metal compounds.

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 Section 11 – Toxicology Information
 

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## TOXICOLOGICAL DATA:

## Polymeric MDI:

Oral LD50 (rat) > 5,000 mg/kg

Dermal LD50 (rabbit) > 5,000 mg/kg

Inhalation LC50 (rat) = 490 mg/m<sup>3</sup>/4H (respirable aerosol)

## POTENTIAL HEALTH EFFECTS:

**Inhalation:** This product is a respiratory irritant and potential respiratory sensitizer. Repeated inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.

**Skin Contact:** Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including Diisocyanate. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or maintenance work.

**Eye Contact:** The aerosol, vapor or liquid will irritate human eyes following contact.

**Ingestion:** Ingestion may cause irritation of the gastrointestinal tract. Based on the oral LD50, this product is considered practically non-toxic by ingestion.

**Chronic Effects:** A study where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. Only at the top level (6 mg/m<sup>3</sup>), there was a significant incidence of a benign tumor of the lung (adenoma)

and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m<sup>3</sup> and no effects at 0.2 mg/m<sup>3</sup>. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the Concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur. There are reports that chronic exposure may result in permanent decrease in lung function.

**Carcinogenicity:** The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

**Mutagenicity:** There is no substantial evidence of mutagenic potential.

**Reproductive Effects:** No adverse reproductive effects are anticipated.

**Teratogenicity and**

**Fetotoxicity:** No information is available and no adverse teratogenic embryotoxic effects are anticipated.

Section 12 – Ecological Information

**Environmental Fate and Distribution:** It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

**Persistence and Degradation:** Immiscible with water, but will react with water to produce inert and non-biodegradable solids.

**Toxicity:**  
 Polymeric MDI  
 LCO (Zebra Fish) > 1000 mg/l  
 LC60 (Daphnia magna) (24 hour) > 1000 mg/l  
 EC50 (E. Coli) > 100 mg/l

Section 13 – Disposal Considerations

The generation of waste should be avoided or minimized wherever possible.

Disposal should be in accordance with local, state, provincial or national regulations. This material is not a hazardous waste under RCRA 40 OPP 261. Small quantities should be treated with a decontaminate solution (See Section 6). The treated waste is not a hazardous material under RCRA 40 CFR 261, Chemical waste, even small quantities, should never be poured down drains, sewers or waterways,

Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

Section 14 – Transportation Information

**DOT:** Not regulated

Section 15 – Regulatory Information

**USA CLASSIFICATION:**

OSHA classification:

- Physical: Not regulated.
- Health: Highly toxic. Respiratory sensitizer. Irritant.
- Target Organ: Respiratory tract. Skin.

**TSCA (Toxic Substances Control Act) Regulations:** All ingredients are on the TSCA Chemical substance inventory.

**EPCRA Section 313 (40 CFR 372):** This product contains the following chemical(s) subject to reporting requirements:  
 - 74% 4,4'-MDI (CAS 101-68-8).

**CERCLA (Comprehensive Environmental Response, Compensation and Liability Act):** 4,4'-Methylene diphenyl. Diisocyanate (CAS 101-68-8) has a 5,000 lb. RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800) 424-8802. The % of 4,4' MDI in this product is listed in Section 2 of this MSDS.

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

Massachusetts Right-to-Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know, CERCLA.

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Section 16 – Other Information

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HMIS Rating:        Health: 3            Flammability: 1            Reactivity: 0

0=Minimal; 1=Slight; 2=Moderate; 3=Serious; 4=Severe

The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication as part of G.S. Polymers' product safety program. It is not intended to constitute performance information concerning the product. No Express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

To determine applicability or effects of any law or regulation with respect to the product, user should consult his legal advisor or the appropriate government agency. G.S. Polymers does not undertake to furnish advice on such matters.

Prepared by Gerald Salladin \_\_\_\_\_ Date \_\_\_\_\_

Title: Owner

Company: G.S. Polymers, Inc.

Rev Date: 2/6/04

## Material Safety Data Sheet

### Section 1 – Chemical Product and Company Identification

Product Name: GSP 1539-2B, GSP 1539-3B, GSP 1539-4B  
 Product Use: Component of polyurethane.  
 Effective Date: 1/21/04  
 Date Modified: 2/6/04

Manufactured by:  
 G.S. Polymers, Inc.  
 195 Arovista Ave.  
 Brea, CA 92821  
 (714) 672-0567      Fax: (714) 672-0987

In an emergency call CHEMTREC @ 800-424-9300

### Section 2 – Composition/Information on Ingredients

Hazardous Ingredients(s)	%(by wt.)	ACGIH TLV	CAS NO.
Polyether polyol blend	75-100%	N/A	Proprietary
Poly(oxy(methyl-1,2-ethanediyl)), alpha-(2-aminomethylethyl)omega-(2-aminomethylethoxy)	up to 10%	Not Established	9046-10-0

### Section 3 – Hazards Identification

<b>Primary Routes of Exposure:</b>	Eye, Skin, Inhalation, Ingestion
<b>Eyes:</b>	Causes irritation, experienced as pain, with excess blinking and tear production, and seen as extreme redness and swelling of the eye and chemical burns of the eye. Severe eye damage may cause blindness.
<b>Skin:</b>	Causes severe irritation with pain, severe excess redness and swelling with chemical burns, blister formation, and possible tissue destruction. Other than the potential skin irritation effects noted above, acute (short term) adverse effects are not expected from brief skin contact; see other effects, below, for information regarding potential long term effects.
<b>Inhalation:</b>	Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, are irritation and cause nasal discharge, coughing, and discomfort in nose and throat. Prolonged or repeated overexposure may result in lung damage.
<b>Ingestion:</b>	Causes burning of mouth, throat, and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness and collapse. Aspiration may occur during swallowing or vomiting, resulting in lung damage.
<b>Sensitization Properties:</b>	Unknown
<b>Chronic Exposure:</b>	Repeated skin contact may cause a persistent irritation or dermatitis. Repeated inhalation may cause lung damage.

**Medical Conditions**

**Aggravated by Exposure:** Skin contact may aggravate an existing dermatitis (skin condition). Overexposure to vapor, dust or mist may aggravate existing respiratory conditions, such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease.

**Other Remarks:** This product contains one or more amines which may produce temporary and reversible hazy or blurred vision. Symptoms disappear when exposure is terminated.

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**Section 4 – First Aid Measures**

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**Eyes:** Immediately flush eyes with large amounts of running water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Do not attempt to neutralize with chemical agents. Obtain medical attention immediately. Continue flushing for an additional 15 minutes if medical attention is not immediately available.

**Skin:** Immediately remove contaminated clothing and shoes. Under a safety shower, flush skin thoroughly with large amounts of running water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention immediately. Discard or decontaminate clothing and shoes before reuse.

**Ingestion:** If person is conscious and can swallow, immediately give two glasses of water (16 oz.) but do not induce vomiting. This material is corrosive. If vomiting occurs, give fluids again. Have a physician determine if condition of patient will permit induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious person.

**Inhalation:** If inhaled, remove to fresh air. If not breathing or in respiratory distress, clear person's airway and start artificial respiration. With a physician's advice, give supplemental oxygen using a bag-valve mask or manually triggered oxygen supply.

**Other Instructions:** Swallowing of this corrosive material may result in severe ulceration, inflammation, and possible perforation of the upper alimentary tract, with hemorrhage and fluid loss. Aspiration of this product during induced emesis can result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Control Center for additional treatment information.

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**Section 5 – Fire Fighting Measures**

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**Ignition Temperature:** Not Determined

**Flash Point:** > 93.33 C (> 200 F)

**Flammable Limits Lower:** Not Determined

**Flammable Limits Upper:** Not Determined

**Recommended Fire Extinguishing Agents and Special Procedures:**

Water fog or fine spray. Carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream. May spread fire.

**Special Protective Equipment for Firefighters:**

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues.

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 Section 6 – Accidental Release Measures
 

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**For major spills call Chemtrec (800) 424-9300.****Procedures in Case of Accidental Release, Breakage or Leakage:**

Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

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 Section 7 – Handling and Storage
 

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**Handling:** Minimum feasible handling temperatures should be maintained. Eye wash and safety shower should be available nearby when this product is handled or used.

**Storage Requirements:** Keep containers tightly closed when not in use. Period of exposure to high temperatures should be minimized. Water contamination should be avoided. If stored above 100 F, a nitrogen atmosphere is recommended.

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 Section 8 – Exposure Controls/Personal Protection
 

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## PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Avoid eye contact. Chemical type goggles with face shield must be worn. Do not wear contact lenses.

**Skin Protection:** Protective clothing such as coveralls or lab coats must be worn. Launder or dry-clean when soiled. Gloves resistant to chemicals and petroleum distillates required. When handling large quantities, impervious suits, gloves, and rubber boots must be worn.

**Respiratory Protection:** Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

**Ventilation:** Local exhaust ventilation recommended if generating vapor, dust, or mist. If exhaust ventilation is not available or inadequate, use MSHA or NIOSH approved respirator as appropriate.

**Exposure Limit for Total Product:** None established for this product.

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 Section 9 – Chemical and Physical Properties
 

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**Chemical Name:** ..... Not applicable (mixture)  
**Molecular Formula:** ..... Not applicable (mixture)  
**Appearance:** ..... Clear to Amber  
**Odor:** ..... Ammonia Like odor  
**Flash Point:** ..... Not determined  
**Boiling Point:** ..... Not determined  
**Melting Point:** ..... Not determined  
**Solubility (Water):** ..... Reacts with water  
**Solubility (Other):** ..... Soluble in most organic solvents

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**Section 10 – Stability and Reactivity**

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**Incompatibility with Other Materials:** Reacts with acids.

**Hazardous Combustion Products:** Toxic levels of ammonia, combustion products of nitrogen, carbon monoxide, carbon dioxide, irritation aldehydes and ketones may be formed on burning in a limited air supply.

**Hazardous Polymerization:** Do not occur

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**Section 11 – Toxicology Information**

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Material has not been tested as a whole. Data below has been calculated from available data:

TOXICOLOGICAL DATA:

Oral LD50 (rat) > 500 g/kg

Dermal LD50 (rabbit) > 2000 g/kg

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**Section 12 – Ecological Information**

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No Data

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**Section 13 – Disposal Considerations**

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Do not dump into any sewers, on the ground or into any body of water. All disposal methods must be in compliance with all Federal, State and local laws and regulations. Regulations may vary in different locations. Water characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

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**Section 14 – Transportation Information**

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**DOT:**

**Proper Shipping Name:** Amines, liquid, corrosive, n.o.s. (polyoxypropylenediamine mixture)

**Hazards Class:** 8

**Identification Number:** UN 2735

**Packing Group:** III

**Label Required:** Corrosive

**IMO:**

Not evaluated.

**IATA/ICAO Class:**

Not evaluated.

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**Section 15 – Regulatory Information**

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**State Regulations**

California Proposition 65: This product contains a chemical known to the State of California to cause cancer, birth defects and/or reproductive harm.

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**Section 16 – Other Information**

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