

Material Safety Data Sheet

Section 1 – Product Name and Manufacturer

Product Name: GSP 1603-2A, 1603-3A, 1603-4A, 1603-5A
 Product Use: Component of a polyurethane
 Effective Date: 7/7/03
 Updated: 4/21/04

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 – Hazardous Ingredients

CAS NO.	Hazardous Ingredients(s)	%(by wt.)	ACGIH TLV
101-68-8	4,4--Diphenylmethane Diisocyanate (MDI)	less than 60%	0.005 PPM TWA
26447-40-5	Diphenylmethane Diisocyanate (2,2,2,4)	less than 10%	not established
not established	Prepolymer reaction product of MDI and Polyol	up to 40%	not established

Section 3 – Hazards Identification

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. 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 Amber, liquid

Odor Slightly musty

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

Section 4 – First Aid Measures

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.

Section 5 – Fire Fighting Measures

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 ₂ , NO _x and some HCN.

Section 6 – Accidental Release Measures

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.

Section 7 – Handling and Storage

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 CO₂ 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.

Section 8 – Exposure Control and Personal Protection

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.

Section 9 – Chemical and Physical Properties

Chemical Name: Not applicable (mixture)
Chemical Family: Diisocyanate
Molecular Formula: Not applicable (mixture)
Appearance: Amber Liquid
Odor: Slightly musty
Odor Threshold (ppm): 0.4 (4,4'-Diphenylmethane Diisocyanate)
pH: Not applicable
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
Solubility (Other): Soluble in most organic solvents
Specific Gravity: 1.18
Bulk Density: 9.81

Section 10 – Stability and Reactivity

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.

Section 11 – Toxicological Information

TOXICOLOGICAL DATA:

Polymeric MDI:

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

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

Inhalation LC50 (rat) = 490 mg/m³/4H (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/m³), 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/m³ and no effects at 0.2 mg/m³. 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 in Non-Bulk containers

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).

CERCIA (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.

Section 16 – Other Information

HMIS RATINGS:

Health	Flammability	Reactivity
3	1	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.

Glossary:	ACGIH-	American Conference of Governmental Industrial Hygienists
	IARC-	International. Agency for Research on Cancer
	NTP-	National Toxicology Program
	OSHA-	Occupational Safety and Health Administration

Prepared by Gerald Salladin _____ Date _____

Title: Owner/President

Company: G.S. Polymers, Inc.

Date Modified: 11/21/03

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: GSP 1603-2B, 1603-3B, 1603-4B, 1603-5B

Product Use: Polyol Blend

Effective Date: 7/7/03

Updated: 4/21/04

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

Ingredient Name	CAS No.	% (by wt.)	TLV
Polyol Blend	Not Established	up to 50%	Not Established
Dibutyltin Dilaurate	77-58-7	< 0.5%	0.2 mg/m3 (STEL)

Section 3 – Hazards Identification

Route of Entry/ Exposure: Eye Contact, Skin Contact, Ingestion

Effects of Acute Exposure to the Product:

Eye Contact: May cause slight eye irritation in some individuals.

Skin Contact: May cause slight irritation in sensitive individuals.

Ingestion: Oral toxicity is low

Effects of Chronic Exposure to the Product: None known

Section 4 – First Aid Measures

Eye Contact: Flush thoroughly with water for 15 minutes. If irritation develops, consult a physician.

Skin Contact: Wash with soap and water.

Inhalation: Not expected to be a relevant route of exposure.

Ingestion: Not expected to be a relevant route of exposure. Consult a physician if large quantities are ingested.

Section 5 – Fire Fighting Measures

Flash Point:	540°F (PMCC)
Auto-ignition Temperature:	840°F
Flammable:	No
Flammable Limits (Upper):	Not determined
Flammable Limits (Lower):	Not determined
Extinguishing media:	CO ₂ , dry chemicals. H ₂ O or foam may cause frothing.
Hazardous Combustion Products:	CO, CO ₂

Section 6 – Accidental Release Measures

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

Environmental Action:	Dike spill to prevent entry into water system,
Major Spill:	If transportation spill involved, call Chemtrec (800) 424-9300. Large quantities may be pumped into sealed containers for disposal.
Minor spill:	Absorb the product with sawdust or other absorbent, shovel into suitable containers for disposal. Clean floor using detergent and water. Dispose of in accordance with Federal, State, and Local regulations.

Section 7 – Handling and Storage

Storage Requirements:	Keep container closed to protect from contamination and/or water absorption .
Handling Procedures and Equipment:	Use standard industrial practices. Wash hands after handling especially before eating, smoking or using the restroom.

Section 8 – Exposure Controls/Personal Protection

PREVENTIVE MEASURES:**Engineering Controls (e.g. ventilation, enclosed process):** No special ventilation is required**PERSONAL PROTECTIVE EQUIPMENT:**

Gloves (type of material):	Vinyl, latex, neoprene
Respiratory Protection:	None required
Eye Protection:	Should be worn
Clothing:	No special clothing required
Other:	None

 Section 9 – Chemical and Physical Properties

Appearance: Black Thixotropic Liquid
Boiling Range: Not Determined
% Volatile by Volume: None
Vapor Density: Heavier than air
Specific Gravity: 1.54
Bulk Density (lb/gal): 12.88
Solubility: Slightly Soluble
Evaporation Rate: Slower than ether

 Section 10 – Stability and Reactivity

Stable (if no, under what conditions): Yes
Conditions to Avoid: Keep from contact with oxidizing agent.
Hazardous Decomposition Products: CO, CO₂
Hazardous Polymerization (if yes, under what conditions): No

 Section 11 – Toxicology Information

No Data

 Section 12 – Ecological Information

No Data

 Section 13 – Disposal Considerations

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.

 Section 14 – Transportation Information

DOT:
 Not Regulated

 Section 15 – Regulatory Information

Federal Regulations

SARA Title III
 Section 302/304 Extremely Hazardous Substances: None
 Section 311 Hazardous Categorization: None
 Section 313 Toxic Chemical: None

 CERCLA 102(a)/DOT Hazardous Substances: None

