

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: GSP 1534-11A
 Product Use: Component of polyurethane
 Date Effective: 4/3/04

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.
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%		

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. 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.

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, CO₂, 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 Controls/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: 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: 1.12

 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 – Toxicology 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

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.

Section 16 – Other Information

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: 4/3/04

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: GSP 1534-11B
 Product Use: Component of polyurethane.
 Effective Date: 4/3/04
 Updated: 6/10/04

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

Ingredients(s)	%(by wt.)	OSHA TLV(ACGIH)	CAS NO.
Poly(oxyalkylene) Polyol	up to 70%	Not Established	9082-00-2
1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio)-	up to 30%	Not Established	102093-68-5
1,3-Benzenediamine, 2-methyl-4,6-bis(methylthio)-	up to 30%	Not Established	104983-85-9
4,4'-Methylenebiscyclohexamine	up to 10%	Not Established	1761-71-3
Diethyltoluenediamine	< 5%	Not Established	68479-98-1

Section 3 – Hazards Identification

Routes of Entry: Eye Contact, Skin Contact, Inhalation, Ingestion

Human Effects and Symptoms of Overexposure:

Eye Contact: Severe eye irritant. May cause corneal damage in some individuals. Product vapors can cause irritation.

Skin Contact: Harmful if in contact with the skin. Prolonged exposure may cause irritation. May cause skin sensitization. Certain components may be absorbed through the skin and cause nausea, headache or general discomfort.

Inhalation: Corrosive to the respiratory tract. May cause irritation of the respiratory tract.

Ingestion: Harmful if swallowed.

Chronic Effects: Contains materials which may cause cancer based on animal data. Contains materials which upon repeated contact, slight skin irritation is possible. A two year feeding study in rats showed DETDA cause effects in the pancreas, liver, thyroid and eyes. An increase in the number of tumors in the liver and thyroid of male rats and in the liver and possibly mammary gland of female rats was found.

Section 4 – First Aid Measures

- Eye Contact:** Flush thoroughly with water for 15 minutes. Consult a physician.
- Skin Contact:** Immediately wash with soap and water for 15 minutes. Remove contaminated clothing. (Wash before reuse.) Destroy contaminate shoes and leather apparel. Seek medical attention if symptoms persist.
- Inhalation:** Remove victim to fresh air. Seek medical advice if symptoms persist.
- Ingestion:** Induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Keep victims head to the side to prevent aspiration of vomit. Continue to drink water and rinse mouth out as vomiting occurs. Get medical attention.
- Note to Physicians:** Treatment based on judgement of the physician in response to reactions of the patient.

Section 5 – Fire Fighting Measures

- Flash Point:** > 275 F (> 135 C)
- Extinguishing Media:** Dry chemical; Carbon Dioxide; Foam; Water spray for large fires.
- Special Fire Fighting Procedures:** Keep people away. Isolate fire area deny unnecessary entry. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Avoid breathing smoke and vapor.
- Hazardous Decomposition Products:** Oxides of Nitrogen and Carbon

Section 6 – Accidental Release Measures

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

Spills, Leaks, or Releases: Dike spill to prevent entry into water system. For minor spills, absorb the product with saw dust or other absorbant, shovel into suitable containers for disposal. Clean floor using detergent and water. For major spills, large quantities may be pumped into sealed containers for disposal.

Section 7 – Handling and Storage

Storage Precautions: Store in well-ventilated, cool, dry area. Keep container closed to protect from contamination. Protect from atmospheric moisture by maintaining a nitrogen atmosphere.

Handling Precautions: Use standard industrial practices. After handling, wash hands before eating or smoking.

Section 8 – Exposure Controls/Personal Protection

- Eye Protection:** Full face shield with chemical goggles.
- Skin Protection:** Use gloves impervious to this material when prolonged or frequently repeated contact could occur. The breakthrough time of the selected gloves must be greater than the intended use period.
- Respiratory Protection:** For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator.
- Ventilation:** Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

Section 9 – Chemical and Physical Properties

Molecular Formula: Not applicable (mixture)
Physical Form: Liquid
Color: Varies
Odor: Odorless
Bulk Density: 9.02
Specific Gravity: 1.08
Viscosity: Not Established

Section 10 – Stability and Reactivity

Stability: This is stable material.
Hazardous Polymerization: Will not occur.
Incompatibilities: Avoid contact with oxidizing materials. Avoid contact with acids and isocyanates. The reactions of polyols and isocyanates generates heat. Avoid contact with stong acid.
Decomposition Products: Depending on temperature, air supply and presence of other materials hazardous decomposition products, may include but are not limited to: aldehydes, ketones, organic acids and polymer fragments.

Section 11 – Toxicology Information

No Data.

Section 12 – Ecological Information

No Data.

Section 13 – Disposal Considerations

Waste Disposal Method: Waste must be diposed of in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method.

Empty Container Precautions: Empty containers must be handled with care due to product residue. Do not heat or cut empty container with electric or gas torch.

Section 14 – Transportation Information

D.O.T. : Not Regulated for Non-Bulk Containers

Section 15 – Regulatory Information

California Propostion 65:

To the best of our knowledge, this product contains no levels of listed substances, which the state of California has found to cause cancer, birth defects or other reproductive effects.

Section 16 – Other Information

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

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Prepared by Gerald Salladin _____ Date _____

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Rev Date: 6/10/04