

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: GSP 1337-1 Part A
 Product Use: Epoxy Resin
 Effective Date: 1/5/05

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.)	OSHA (ACGIH) TLV	CAS NO.
Epoxy Resin (Diglycidyl Ether of Bis-Phenol A)	90%	N/E	25068-38-6
Formaldehyde Polymer with Toluene	< 10%	N/E	25155-81-1
Toluene	< 0.1%	100 ppm (50 ppm)	108-88-3

Section 3 – Hazards Identification

Primary Route(s) of Entry: Eyes, Dermal, Ingestion, Inhalation

Warning! May cause skin irritation and/or allergic reactions. May cause eye irritation and discomfort. Inhalation of mists may cause irritation in the respiratory tract. Repeated and/or prolonged exposure to low concentration of vapor may cause eye irritation.

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

Section 4 – First Aid Measures

- Eyes:** For eye contact, immediately flush eyes for at least 15 minutes with running water. Hold eyelids apart to ensure rinsing of the entire eye surface and lids with water.
- Skin:** For skin contact, wash with large amounts of running water, and soap, if available, for 15 minutes. Remove contaminated clothing and shoes. Get immediate medical attention. Discard or decontaminate clothing before re-use and destroy contaminated shoes.
- Inhalation:** Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (eg mouth to mouth) Supplemental oxygen may be indicated. Prevent aspiration of vomit. Turn victim's head to the side. Seek medical attention.
- Ingestion:** If swallowed, call physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

Overexposure Effects: Irritation, sensitization and dermatitis.

Medical Conditions Aggravated by Exposure: Allergy, eczema or skin conditions.

Additional Information: Promptly remove wet contaminated non-impervious clothing. Wash before reuse.

Section 5 – Fire Fighting Measures

Flash Point:	>262 F (127.78 C)
Extinguishing Media:	Carbon Dioxide, foam, dry chemical, water spray.
Fire Fighting Equipment:	Butyl rubber boots, gloves, and body suit and self-contained breathing apparatus.
Fire and Explosion Hazards:	Decomposition and combustion products may be toxic. May generate carbon monoxide gas. Personnel in vicinity and downwind should be evacuated.

Section 6 – Accidental Release Measures

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

Spill or Leak Procedures: Avoid all personal contact. Ventilate the space involved. Shut off or remove all ignition sources. Construct a dike to prevent spreading. Take up with absorbent material. Shovel into closable containers. Flush contaminated area with water. Clean-up personnel must be equipped with self contained breathing apparatus and butyl rubber protective clothing.

Section 7 – Handling and Storage

Handling Precautions:

Avoid contact with eyes, skin and clothing. Avoid breathing vapor, mist or spray. Use only with good ventilation. When handling, do not eat, drink or smoke. Individuals should wash thoroughly after handling.

Storage:

Store in cool, dry area in sealed containers. Keep away from: oxidizers. Keep containers closed to prevent moisture absorption and contamination.

Section 8 – Exposure Controls/Personal Protection

Personal Protective

Equipment:	Wear appropriate equipment to prevent eye or skin contact. Use of barrier cream recommended.
Eye Protection:	Wear splash resistant safety goggles.
Skin Protection:	Wear impervious gloves.
Ventilation:	Good general mechanical ventilation and local exhaust.
Respirators:	Organic vapor respirator National Institute for Occupational Safety and Health (NIOSH) approved for organic vapors recommended, if adequate ventilation is not present.
Hygienic Practices:	Wash hands before eating, smoking or using toilet facilities. Do not smoke in any chemical handling and storage area. Food or beverages should not be consumed near where this product is stored.

 Section 9 – Chemical and Physical Properties

Physical Form	Viscous Liquid
Color	Clear-Amber
Odor	Slight
Boiling Point	> 392 F (200 C)
Decomposition Temperature	> 392 F (200 C)
Viscosity	N/E
Solubility in Water	Slightly Soluable
Specific Gravity	1.15
Bulk Density	9.57 lbs/gal
Vapor Pressure	N/E

 Section 10 – Stability and Reactivity

Stability:	This is a stable material.
Hazardous Polymerization:	Will not occur.
Incompatibilities:	Strong oxidizing agents.
Instability Conditions:	Avoid strong acids or bases in bulk and elevated temperatures
Decomposition Products:	Carbon monoxide, carbon dioxide, aldehydes. Irritating toxic fumes at elevated temperatures.

 Section 11 – Toxicology Information

TOXICITY DATA FOR: Epoxy Resin

Acute Toxicity:

- Oral LD50: > 5000 mg/kg (Rat)
- Dermal LD50: > 6000 mg/kg (Rabbit)
- Eye Effects: Slight irritation (Rabbit)
- Skin Effects: Moderate irritation (Rabbit)
- Teratogenicity: No adverse effects on embryonic or fetal development were observed.

Mutagenicity:

- Ames Test: both positive and negative results
- Hamster Bone Marrow Cytogenetics (in vivo): negative
- Mouse Spermatocytes Cytogenetics (in vivo): negative
- Micronucleus Test (in vivo): negative
- Mouse Dominant Lethal Test: negative
- Alkylation of DNA: positive
- Human Mononucleated WBC (in vitro): negative
- Host Mediated Assay: negative

Sub-Chronic:

(Rat) No observable effect at highest level studied (1000 mg/kg/day for 28 days) in oral feeding study.

Chronic Toxicity:

2-Year Dermal Study in Mice: no treatment related effects.

2-Year Skin Painting Studies:

- A C3HF/BD Mice: no increased tumor incidence.
- B C57BL/6BD Mice: slight increase in epidermal localized carcinomas at high dose.
- C C3H Mice: no tumors.

Mice receiving skin applications of the Diglycidyl Ether of Bisphenol A or essentially identical resins for two years have yielded very limited evidence of weak carcinogenicity. The published report on this study concludes that this resin product “is not a systemic carcinogen when applied to the skin of CF-1 mice” and the tumor data “was of no biological importance”. Based on all available data, IARC (International Agency for Research on Cancer) has concluded in 1988 that DGEBA is not classified as a carcinogen.

Section 12 – Ecological Information

ECOLOGICAL DATA FOR: Epoxy Resin

Biodegradability: (Modified Sturm method): ~12%

Fish Toxicity:

Rainbow Trout 96 hr): LC50 1.5 mg/l

Zebra Fish (96 hr): LC50 2.4 mg/l

Invertebrate Toxicity: Daphnia Toxicity (24 hr): EC50 3.6 mg/l.

Section 13 – Disposal Considerations

Waste Disposal Method: Dispose in accordance with federal, state and local regulations.

Section 14 – Transportation Information

Department of Transportation: Not Regulated

Section 15 – Regulatory Information

US Federal Regulations:

Occupational Safety and Health Act (OSHA): This product is considered to be a hazardous chemical under the federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

SARA Title III: Section 313: None

TSCA Section 8(b) – Inventory Status: Chemical component listed on TSCA Inventory

TSCA Section 12(b) – Export Notification: This product contains chemicals which are regulated by TSCA 12(b) Regulation and it is required that proper export notification shall be sent to EPA prior to shipping out of the United States America.

CAS Number: 1675-54-3

Chemical Name: Bisphenol A Diglycidyl Ether

State Regulations:

New Jersey Right-to-Know: The following is required composition information:

CAS Number: 25068-38-6

Chemical Name: Phenol, 4,4'-(1-methylethylidene) bis-, polymer with (chloromethyl)oxirane

Pennsylvania Right-to-Know: The following is required composition information:

CAS Number: 25068-38-6

Chemical Name: Phenol, 4,4'-(1-methylethylidene) bis-, polymer with (chloromethyl)oxirane

Common Name: Bisphenol A Epoxy Resin

Comment: Not on Pennsylvania Hazardous Substance List.

Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product Name: GSP 1337-1B
 Product Use: Epoxy Hardener
 Effective Date: 1/5/05
 Updated: 5/24/06

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.)	CAS NO.
Benzyl Alcohol	<65	100-51-6
Tetraethylenepentamine (TEPA)	<5	112-57-2
Isophoronediamine (IPD)	<20	2855-13-2
Phenol	<5	108-95-2

OSHA (ACGIH) EXPOSURE LIMITS

CAS#	TWA		STEL		CEILING	
	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
100-51-6	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)
112-57-2	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)
2855-13-2	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)	N/E (N/E)

CAS#	TWA		NIOSH (REL)		NIOSH (CEILING)		OSHA Z1& Z1A (PEL & TWA)	
	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3	ppm	mg/m3
108-95-2	5	N/E	5	19	15.6	60	5	19

N/E Not Established. All values in () are U.S. ACGIH (American Conf. of Gov. Indust. Hygienists)-TLV; All others are OSHA-PEL.

Section 3 – Hazards Identification

Routes of Exposure: Eye Contact, Skin Contact, Ingestion, Skin Absorption, Inhalation
Exposure Standards: See Section 2 for exposure standards on ingredients. Maintain air contaminant concentrations in the workplace at the lowest feasible levels.
Health Hazards: Harmful if swallowed. Moderate eye irritant. Moderate respiratory tract irritant. Moderate skin irritant. May cause skin sensitization

Target Organs: Eye, Skin, Respiratory System, Kidney, Liver, Pancreas, Spleen

Signs and Symptoms of Exposure (Acute effects):

Product vapor in low concentrations can cause lacrimation, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Corneal edema may give rise to a perception of 'blue haze' or 'fog' around lights. The effect is transient and has no known residual effect. Contact with skin may cause dryness (defatting), itching and/or rash. Inhalation of mists may cause irritation in the respiratory tract. Inhalation of vapors may cause irritation in the respiratory tract. Contact with skin or eyes causes eye and skin irritation, redness and discomfort which is transient. Coughing and chest pain may result.

Product is absorbed through the skin and may cause nausea, headache and general discomfort.

Signs and Symptoms of Exposure (Possible Longer Term Effects):

Repeated and/or prolonged exposure may cause allergic reaction/sensitization.

Repeated and/or prolonged exposures may result in adverse respiratory effects (such as cough, tightness of chest or shortness of breath), adverse eye effects (such as conjunctivitis or corneal damage), adverse skin effects (such as rash, irritation or corrosion).

Exposure to high concentration can cause severe eye, skin and respiratory track burns.

Harmful if swallowed. If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Effects from inhalation of vapors may be delayed. Dryness of nasal passages may be experienced when material is inhaled over a long period of time. Repeated and/or prolonged exposure to low concentrations of vapor may cause: sore throat, eye irritation or corrosion).

Medical Condition Generally Aggravated by Exposure:

Asthma, Chronic respiratory disease (e.g. bronchitis, Emphysema), Eye disease, Skin disorders and Allergies.

This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Prolonged contact may result in chemical burns and permanent damage. Repeated or prolonged contact causes sensitization, asthma and eczema.

Section 4 – First Aid Measures

Eye Contact:	Remove contact lenses. Hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes. Seek medical advice.
Skin Contact:	Remove product and immediately flush affected area with water for at least 15 minutes. Call a physician. Remove contaminated clothing and shoes. Destroy contaminated leather apparel. Cover the affected area with a sterile dressing or clean sheeting and transport for medical care. Application of corticosteroid cream has been effective in treating skin irritation. Control shock, if present. Launder contaminated clothing prior to reuse.
Inhalation:	Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g. mouth-to-mouth). Supplemental oxygen may be indicated. Prevent aspiration of vomit. Prevent aspiration of vomit. Turn victim's head to the side. Seek medical attention.
Ingestion:	If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

Section 5 – Fire Fighting Measures

Flash Point:	230 F (110 C) TEPA; Closed Cup
Fire Hazard Classification:	Class IIIB (OSHA/NFPA)
Extinguishing Media:	Ignition will give rise to a Class B fire. In case of large fire use water spray, alcohol foam. In case of small fire use carbon dioxide (CO ₂), dry chemical, dry sand or limestone.

- Fire Fighting Procedures:** Firefighters should wear butyl rubber boots, gloves, and body suit and a self-contained breathing apparatus.
- Fire and Explosion Hazards:** May generate toxic or irritating combustion products. Sudden reaction and fire may result if product is mixed with an oxidizing agent. May generate carbon monoxide gas. May generate toxic nitrogen oxide gases. May generate ammonia gas. Personnel in vicinity and downwind should be evacuated.

Section 6 – Accidental Release Measures

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

Containment Techniques (Removal of ignition sources, diking etc.)

Stop the leak, if possible. Ventilate the space involved. Reduce vapor spreading with a water spray. Shut off or remove all ignition sources. Construct a dike to prevent spreading (includes molten liquids until they freeze).

Clean-up Procedures

If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent and place in an appropriate chemical waste container. Transfer to containers by suction, preparatory for later disposal. Place in metal containers for recovery or disposal. Flush area with water spray. Clean-up personnel must be equipped with self contained breathing apparatus and butyl rubber protective clothing. For large spills, recover spilled material with a vacuum truck.

Other Emergency Advice

Open enclosed spaces to outside atmosphere. Wear protective clothing, boots, gloves, and eye protection. At elevated temperatures a cartridge mask National Institute for Occupational Safety and Health (NIOSH) approved for ammonia may be appropriate.

Section 7 – Handling and Storage

Handling Precautions:

Avoid contact with skin or eyes. Avoid breathing of vapors. Handle in well ventilated work space. When handling, do not eat, drink, or smoke.

Storage:

Keep away from acids, oxidizers. Keep in cool, dry ventilated storage and in closed containers. Store in steel containers preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Do not store in reactive metal containers.

Other Precautions:

Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations (e.g. OSHA). Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Cancer-causing nitrosamines could be formed.

Section 8 – Exposure Controls/Personal Protection

- Eye Protection:** Full face shield with goggles underneath. Chemical resistant goggle must be worn.
- Respiratory Protection:** Wear appropriate respirator when ventilation is inadequate.
- Hand Protection:** Neoprene rubber gloves. Impermeable gloves. Polyvinyl chloride gloves. Butyl-rubber gloves. Nitrile gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.
- Respirators:** Not required under normal conditions in a well-ventilated workplace. At elevated temperatures a cartridge mask National Institute for Occupational Safety and Health (NIOSH) approved for organic vapors may be appropriate.
- Protective Clothing:** Slicker suit. Impervious clothing. Full rubber suit (rain gear). Rubber or plastic boots. Long sleeve shirts and non-cuffed trousers.
- Engineering Controls:** Maintain air concentrations in work spaces in accord with standards outlined in Sections 2 and 3. Construct a dike to prevent spreading (includes molten liquids until they freeze).

Work Practices: Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated. Discard contaminated leather articles. Launder or discard contaminated clothing. Use appropriate hand and skin lotions to protect the skin.

Section 9 – Chemical and Physical Properties

Physical Form Viscous Liquid
Color Amber
Odor Ammonical & Irritating
Boiling Point >392 F (200 C)
Viscosity Not Established
Solubility in Water Slightly Soluable
Specific Gravity 1.028
Relative Density 8.58 lbs/gal
Vapor Pressure Not Established

Section 10 – Stability and Reactivity

Stability: This is a stable material.

Incompatibilities: Mineral acids (i.e. sulfuric, phosphoric, etc.). Organic acids (i.e. acetic acid, citric acid, etc.) Oxidizing Agents (i.e. perchlorates, nitrates, etc.). Reactive metals (i.e. sodium, calcium, zinc, etc.) . Sodium or Calcium Hypochlorite. Caution! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Material reactive with hydroxyl compounds. Nitrites, nitrosating agents. A reaction accompanied by large heat release occurs when the product is mixed with acids. Heat generated may be sufficient to cause vigorous boiling creating a hazard due to splashing or splattering of hot material.

Decomposition Products: Nitrogen oxide can react with water vapors to form corrosive nitric acid (TLV=2 ppm). Carbon Monoxide in a fire. Carbon Dioxide in a fire. Ammonia when heated. Nitrogen Oxides in a fire. Irritating and toxic fumes at elevated temperatures. Nitric acid in a fire, nitroamines. Aldehydes. The oxides of nitrogen gases (except nitrous oxide) emitted on decomposition are highly toxic.

Hazardous Polymerization: Will not occur.

Section 11 – Toxicology Information

No data established for product as a whole.

Section 12 – Ecological Information

No data established for product as a whole.

Section 13 – Disposal Considerations

Waste Disposal Method: Dispose in accordance with federal, state and local regulations.

 Section 14 – Transportation Information

DOT Non-Bulk Shipping Name: Amines, liquid, corrosive, n.o.s. (Isophoronediamine (ipd))
DOT Hazard Class: 8
DOT ID Number: UN 2735
Packing Group: III

 Section 15 – Regulatory Information

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material. 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.

United States Federal Regulations:
US EPA CERCLA Hazardous Substances (40 CFR 302):
 Not Evaluated

SARA Section 311/312 Hazard Categories:
 Not Evaluated

US EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III
 Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):
 Not Evaluated

US EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III
 Section 313 Toxic Chemicals (40 CFR 372.65) – Supplier Notification Required:
 Not Evaluated

State Right-To-Know Information:
 For details of your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:
 Not Evaluated

New Jersey Environmental Hazardous Substances List and/or New Jersey, RTK Special Hazardous Substances Lists:
 Not Evaluated

California Prop. 65: This product contains the chemicals listed below, which the State of California has found to cause cancer, birth defects or reproductive harm.
 None

 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.

Company: G.S. Polymers, Inc.

Rev Date: 5/24/06