Safety Data Sheet

Freeman 2050 Resin

Section 1 Identification

Product Identifiers

Freeman 2050 Resin

Relevant Identified Uses of the Substance or Mixture

Component for two-part semi-rigid polyurethane elastomer. For industrial/professional use only.

Details of the Supplier of the Safety Data Sheet

Freeman Manufacturing & Supply Company
1101 Moore Road, Avon, OH 44011-4034 USA
Telephone +1 (440) 934-1902
Email contactus@freemansupply.com

24 Hour emergency telephone number:
CHEMTREC (800) 424-9300

Section 2 Hazards Identification

GHS Classification in Accordance with 29 CFR 1910.1200 (OSHA HCS)

Acute Toxicity, Inhalation, Category 2
Skin Irritation, Category 2
Eye Irritation, Category 2A
Respiratory Sensitization, Category 1
Skin Sensitization, Category 1
Specific Target Organ Toxicity Single Exposure, Category 3

Label Elements

Danger

Hazard Statements

H330 Fatal if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Precautionary Statements

P260 Do not breathe fumes, vapors, mists or sprays.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves, eye protection, and face protection.
P284 In case of inadequate ventilation wear respiratory protection.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
P316 Get emergency medical help immediately.
P319 Get medical help if you feel unwell.
P333+P317 If skin irritation or rash occurs: Get medical help.
P337+P317 If eye irritation persists: Get medical help.
P342+P316 If experiencing respiratory symptoms: Get emergency medical help immediately.

Section 2 Hazards Identification

P362+P364 Take off contaminated clothing and wash it before reuse.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents and container in accordance with local, regional and national regulations.

Supplemental Information

Individuals sensitized to isocyanates should discontinue use. Long-term overexposure to isocyanates may cause lung damage. This is one part of a two-part system. Read and understand the hazard information on Hardener before using.

Section 3 Composition/Information on Ingredients

Ingredient Name	CAS Number	Concentration (%)
4,4'-methylene di(cyclohexyl isocyanate)	5124-30-1	30-40
4,4'-methylene di(cyclohexyl isocyanate)/polyether polyol prepolymer	Unknown	60-70

Other ingredients are not listed because they are either not hazardous or are below concentration/cut-off thresholds.

Section 4 First-Aid Measures

Description of First Aid Measures

Eye Contact: Rinse thoroughly with water for at least 15 minutes, holding the eyelids open to be sure the material is washed out. Get medical attention if irritation develops or persists.

Skin Contact: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention if irritation develops or persists. Launder clothing before re-use. Discard items that cannot be decontaminated.

Inhalation: Remove person to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if you feel unwell.

Most Important Symptoms/Effects

Causes skin and eye irritation. Vapors or mists may cause respiratory irritation. May cause allergic skin and/or respiratory reaction in sensitized persons. Symptoms include skin rash, wheezing, shortness of breath, and other asthma symptoms. Prolonged inhalation overexposure may damage the lungs and respiratory system.

Indication of Immediate Medical Attention/Special Treatment

Immediate medical attention is required for asthmatic symptoms or serious inhalation exposures. Respiratory symptoms, including pulmonary edema, may be delayed. Person receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Persons sensitized to isocyanates should not use this product.

Section 5 Fire-Fighting Measures

Extinguishing Media

Use water fog, foam, carbon dioxide, or dry chemical. Do not use solid water stream. Solid stream of water into hot product may cause violent steam generation or eruption.

Special Hazards

Not classified as flammable or combustible. Product will burn under fire conditions.

Section 5 Fire-Fighting Measures

Special Protective Equipment & Precautions for Fire-Fighters

Wear positive pressure, self-contained breathing apparatus, and full-body protective clothing. Cool fire-exposed containers with water.

Section 6 Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures

Remove ignition sources. Clear non-emergency personnel from the area. Wear appropriate protective clothing to prevent eye and skin contact and avoid breathing vapors. Ventilate area. Caution: Spill area may be slippery.

Methods and Materials for Containment and Cleanup

Cover with an inert absorbent material and collect into an appropriate container for disposal. Do not seal the container since CO_2 is generated on contact with moisture and dangerous pressure buildup can occur. Decontaminate floor area with a mixture of water plus isopropyl alcohol (20%), household ammonia (10%), and detergent (2%).

Section 7 Handling and Storage

Safe Handling

Do not breathe fumes, vapors, mists or sprays. Use with properly positioned local exhaust ventilation to prevent exposure. Avoid contact with the eyes, skin and clothing. Wash thoroughly after handling. Do not eat, drink or smoke in the work area. Keep container closed when not in use.

Safe Storage

Store indoors at temperatures between 55°F and 95°F. Store in original, unopened containers. Protect from atmospheric moisture and water since isocyanates react with water to form CO2 leading to potentially dangerous pressure build up in sealed containers.

Section 8 Exposure Controls/Personal Protection

Occupational Exposure Limits

Chemical Name	CAS Number	TWA – ACGIH - TLV	NIOSH
4,4'-methylene di(cyclohexyl isocyanate)	5124-30-1	0.005 ppm	0.01 ppm (C)

Ventilation

Use with properly positioned local exhaust ventilation to prevent exposure and maintain air levels below the occupational exposure limits.

Personal Protective Equipment

Respiratory Protection: If ventilation is not adequate, use an approved respirator with organic vapor cartridges or supplied air. Respirator selection and use should be based on contaminant type, form, and concentration. For higher exposure or in an emergency, use a supplied air respirator.

Skin Protection: Wear impervious gloves, such as butyl rubber or nitrile rubber.

Eye Protection: Wear chemical safety glasses or goggles.

Other Protective Measures

Wear impervious clothing to prevent skin contact and contamination of personal clothing. An eye wash facility and washing facility should be available in the work area. Follow applicable regulations and good Industrial Hygiene practice.

Section 9 Physical and Chemical Properties

Appearance	Clear pale yellow liquid, may have tinge of violet
Odor	Mild, acrid
Odor Threshold	No data available
pH	No data available
Melting/Freezing Point	No data available
Boiling Point	No data available
Flash Point	>149°C (300°F)
Evaporation Rate	No data available
Flammability Limits	No data available
Vapor Pressure	≤ 0.00001 mm Hg at 20°C
Vapor Density	> 1 (air = 1)
Relative Density	1.07 at 25°C
Solubility	Insoluble in water; reacts slowly
Coefficient: n-Octanol/Water	Reacts with water
Auto-Ignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	35-750 cP at 25°C

Section 10 Stability and Reactivity

Reactivity

Isocyanates react with many chemicals, including alcohols and amines, and the rate of reaction increases with temperature. Reaction with water generates carbon dioxide and heat.

Chemical Stability

Stable under recommended conditions.

Possibility of Hazardous Reactions

Elevated temperatures can cause hazardous polymerization. Polymerization can be catalyzed by strong bases or water. Reaction with water generates carbon dioxide, and results in heat and pressure buildup in closed systems.

Conditions to Avoid

Avoid moisture and temperatures below 55°F and above 95°F to protect product integrity and prevent pressure buildup in closed containers.

Incompatible Materials

Avoid contact with water, acids, bases, alcohols, strong oxidizers, and some metals (e.g., aluminum, zinc, brass, tin, and copper).

Hazardous Decomposition Products

Possibly isocyanate vapor, carbon monoxide, nitrogen oxides, and traces of hydrogen cyanide.

Section 11 Toxicological Information

Acute Toxicity Values

Chemical Name	LC_{50} Inhalation (Rat)	LD_{50} Oral (Rat)	LD_{50} Dermal (Rabbit)
4,4'-methylene di(cyclohexyl isocyanate)	0.295 mg/L, 4hr	9,900 mg/kg	10,000 mg/kg

Acute Health Effects

Eye Contact: Cause serious eye irritation.

Skin Contact: Causes skin irritation. May cause an allergic skin reaction.

Section 11 Toxicological Information

Inhalation: Fatal if inhaled. May cause respiratory irritation.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Ingestion: No data available.

Chronic Health Effects

Respiratory Sensitization: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sensitization: May cause an allergic skin reaction.
Germ Cell Mutagenicity: Components are not classified as mutagens.
Carcinogenicity: Components are not classified as carcinogens.
Reproductive Toxicity: Components are not classified as reproductive toxins.
Specific Target Organ Toxicity: Repeated or prolonged exposure to isocyanates above exposure limits may cause an allergic sensitization of the respiratory tract causing an asthma-like response upon re-exposure. Repeated overexposure to isocyanates has been associated with decreased lung function. Repeated or prolonged dermal contact with this product may cause allergic skin sensitization in some individuals.

Section 12 Ecological Information

Ecotoxicity: No data available. Avoid release to the environment.
Persistence and Degradability: Product is expected to hydrolyze in water and, upon exposure to air, degrade by photochemical processes.
Bioaccumulative Potential: Isocyanates are not expected to bioaccumulate.
Mobility in Soil: In the aquatic and terrestrial environmental, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Section 13 Disposal Considerations

Dispose according to local, state, and federal regulations. Upon exposure to moisture, product forms an inert, non-hazardous solid. As supplied, this product is not a RCRA hazardous waste (per 40 CFR 261).

Section 14 Transport Information

DOT/IMDG

Not regulated for transport.

IATA

UN3334, Aviation regulated liquid, n.o.s. (4,4'-methylene di(cyclohexyl isocyanate)), 9, PG III.

Section 15 Regulatory Information

U.S. Federal Regulations

CERCLA 103 Reportable Quantity: This product is not subject to reporting under CERCLA.
Some states have more stringent reporting requirements.
SARA TITLE III Section 311/312: See Section 2
Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: Diisocyanates Category (N120) 30-40%
Section 302 Extremely Hazardous Substances (TPQ): None.
EPA Toxic Substances Control Act (TSCA): All components of this product are listed on TSCA.

U.S. State Regulations

California Proposition 65: This product does not contain substances known to the State of California to cause cancer and/or reproductive harm. www.P65Warnings.ca.gov

Section 16 Other Information

Training Advice

All personnel using/handling these products should be trained in proper chemical handling and the need for, and use of, engineering controls and protective equipment.

Recommended Uses and Restrictions

This product is intended for industrial use only.

Note on GHS Hazard Pictogram

In the U.S., the Exclamation Mark pictogram is required on the label for this product owing to its hazard classification. In most other countries, however, the Exclamation Mark pictogram should not appear with the Skull & Crossbones pictogram.

Disclaimer

The following supersedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict of liability arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

Initial issue date: October 1, 2021
Previous revision date: October 1, 2021
Current revision date: February 14, 2025

FREEMAN Manufacturing & Supply Company

Safety Data Sheet

Freeman 2050 Hardener

Section 1 Identification

Product Identifiers

Freeman 2050 Hardener

Relevant Identified Uses of the Substance or Mixture

Component for two-part semi-rigid polyurethane elastomer. For industrial/professional use only.

Details of the Supplier of the Safety Data Sheet

Freeman Manufacturing & Supply Company
1101 Moore Road, Avon, OH 44011-4034 USA
Telephone +1 (440) 934-1902
Email contactus@freemansupply.com

24 Hour emergency telephone number:
CHEMTREC (800) 424-9300

Section 2 Hazards Identification

GHS Classification in Accordance with 29 CFR 1910.1200 (OSHA HCS)

Acute Toxicity (Oral) – Category 4
Acute Toxicity (Dermal) – Category 4
Eye Irritation – Category 2A
Specific Target Organ Toxicity – Repeated Exposure Category 2
Hazardous to the Aquatic Environment – Acute Hazard Category 1
Hazardous to the Aquatic Environment – Chronic Hazard Category 1

Label Elements

Warning

Hazard Statements

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H319 Causes serious eye irritation.
H373 May cause damage to organs (pancreas) through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long-lasting effects.

Precautionary Statements

P260 Do not breathe fumes, vapors, mist or spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P317 Get medical help.
P280 Wear protective gloves, protective clothing, eye protection and face protection.
P301+P317 IF SWALLOWED: Get medical help.
P302+P352 IF IN ON SKIN: Wash with plenty of soap and water.
P319 Get medical help if you feel unwell.
P330 Rinse mouth.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.
P501 Dispose of contents and container in accordance with local, regional, and national regulations.

Supplemental Information

This is one part of a two-part system. Read and understand the hazard information on Resin before using.

Section 3 Composition/Information on Ingredients

Ingredient Name	CAS Number	Concentration (%)
Diethyltoluenediamine	68479-98-1	30-40

Other ingredients are not listed because they are either not hazardous or are below concentration/cut-off thresholds.

Section 4 First-Aid Measures

Description of First Aid Measures

Eye Contact: Rinse thoroughly with water, holding the eyelids open to be sure the material is washed out. Remove contact lenses if safe and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.

Skin Contact: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention immediately.

Inhalation: Remove person to fresh air. Get medical attention if symptoms develop or persist.

Ingestion: Do not induce vomiting unless directed to do so by medical personnel. Get medical attention immediately.

Most Important Symptoms/Effects

Harmful if swallowed. Harmful in contact with skin.

Indication of Immediate Medical Attention/Special Treatment

Get immediate medical attention if swallowed or in contact with skin.

Section 5 Fire-Fighting Measures

Extinguishing Media

Use water fog, foam, carbon dioxide, or dry chemical. Do not use solid water stream.
Solid stream of water into hot product may cause violent steam generation or eruption.

Special Hazards

Not classified as flammable or combustible. Product will burn under fire conditions.

Special Protective Equipment & Precautions for Fire-Fighters

Wear positive pressure, self-contained breathing apparatus, and full-body protective clothing. Cool fire-exposed containers with water.

Section 6 Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures

Remove ignition sources. Clear non-emergency personnel from the area. Wear appropriate protective clothing to prevent eye and skin contact and avoid breathing vapors.

Methods and Materials for Containment and Cleanup

Cover with an inert absorbent material and collect into an appropriate container for disposal. Avoid releases to the environment. Report spills and releases as required to appropriate authorities.

Section 7 Handling and Storage

Safe Handling

Use with adequate ventilation. Avoid contact with the eyes, skin, and clothing. Wash thoroughly after handling. Do not eat, drink, or smoke in the work area. Keep container closed when not in use.

Safe Storage

Store indoors at temperatures below 120°F. Store in original containers. Avoid getting moisture into containers. Keep containers tightly closed.

Section 8 Exposure Controls/Personal Protection

Occupational Exposure Limits

None established.

Ventilation

Use with adequate general or local exhaust ventilation to minimize exposure levels.

Personal Protective Equipment

Respiratory Protection: If ventilation is not adequate, use an approved respirator with organic vapor cartridges or supplied air. Respirator selection and use should be based on contaminant type, form, and concentration. For higher exposure or in an emergency, use a supplied air respirator.

Skin Protection: Wear impervious gloves, such as butyl rubber or nitrile rubber.

Eye Protection: Wear chemical safety glasses or goggles.

Other Protective Measures

Avoid contaminating work surfaces and/or touching contaminated surfaces. Wear impervious clothing to prevent skin contact and contamination of personal clothing. An eye wash facility and washing facility should be available in the work area. Follow applicable regulations and good Industrial Hygiene practice.

Section 9 Physical and Chemical Properties

Appearance	Clear yellow to amber liquid
Odor	Slightly pungent
Odor Threshold	No data available
pH	No data available
Melting/Freezing Point	No data available
Boiling Point	No data available
Flash Point	>176°C (350°F)
Evaporation Rate	No data available
Flammability Limits	No data available
Vapor Pressure	< 0.1 mm Hg at 25°C
Vapor Density	No data available
Relative Density	1.02 at 25°C
Solubility	Slightly soluble in water
Coefficient: n-Octanol/Water	No data available
Auto-Ignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	500-1500 cP at 25°C

Section 10 Stability and Reactivity

Reactivity

Not normally reactive.

Chemical Stability

Stable under recommended conditions.

Possibility of Hazardous Reactions

Reaction with strong oxidizers generates heat.

Conditions to Avoid

Avoid excessive heat.

Incompatible Materials

Avoid contact with strong oxidizers.

Hazardous Decomposition Products

Thermal decomposition will generate oxides of carbon and nitrogen, organic acids, and other toxic organic compounds.

Section 11 Toxicological Information

Acute Toxicity Values

Chemical Name	CAS Number	LD_{50} Oral (Rat)	LD_{50} Dermal (Rabbit)
Diethyltoluenediamine	68479-98-1	738 mg/kg	2,000 mg/kg

Acute Health Effects

Eye Contact: Causes serious eye irritation.
Skin Contact: May cause mild skin irritation. Dermal exposure is the most likely route of exposure.
Inhalation: Vapors and mists may cause mild respiratory irritation.
Ingestion: Not fully determined, but single oral dose toxicity is low. Ingesting large amounts may cause adverse gastrointestinal effects.

Chronic Health Effects

Respiratory Sensitization: Components are not classified as respiratory sensitizers.
Skin Sensitization: Components are not classified as skin sensitizers.
Germ Cell Mutagenicity: Components are not classified as mutagens.
Carcinogenicity: Components are not classified as carcinogens.
Reproductive Toxicity: Components are not classified as reproductive toxins.
Specific Target Organ Toxicity: May cause damage to pancreas through prolonged or repeated exposure.

Section 12 Ecological Information

Ecotoxicity: Very toxic to aquatic life with long lasting effects. Do not release into the environment.
Persistence and Degradability: Not readily biodegradable.
Bioaccumulative Potential: Not expected to bioaccumulate.
Mobility in Soil: No data available.

Section 13 Disposal Considerations

Dispose according to local, state, and federal regulations.
Upon mixing in proper ratio with Freeman 2050 Resin, product forms an inert, non-hazardous solid.

Section 14 Transport Information

DOT

Non-bulk packages (<119gal or <882lb) are not regulated for transport in any mode.
Bulk Packages: UN3082, Environmentally hazardous substance, liquid, n.o.s., (diethyltoluenediamine), 9, III.

IATA/IMDG

UN3082, Environmentally hazardous substance, liquid, n.o.s., (diethyltoluenediamine), 9, III, MARINE POLLUTANT.
Excepted from IATA and IMDG regulations if shipped in quantities of 5L (1.32gal) or less.
(See IATA SP A197 and IMDG 2.10.2.7).

Section 15 Regulatory Information

U.S. Federal Regulations

CERCLA 103 Reportable Quantity: This product is not subject to reporting under CERCLA.
Some states have more stringent reporting requirements.

Section 15 Regulatory Information

SARA TITLE III Section 311/312: See Section 2
Section 313 Toxic Chemicals: This product contains no chemicals subject to SARA Title III Section 313 Reporting requirements.
Section 302 Extremely Hazardous Substances (TPQ): None.
EPA Toxic Substances Control Act (TSCA): All components of this product are listed on TSCA.

State Regulations

California Proposition 65: This product does not contain substances known to the State of California to cause cancer and/or reproductive harm. www.P65Warnings.ca.gov

Section 16 Other Information

Training Advice

All personnel using/handling these products should be trained in proper chemical handling and the need for, and use of, engineering controls and protective equipment.

Recommended Uses and Restrictions

This product is intended for industrial/professional use only.

Disclaimer

The following supersedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict of liability arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

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Current revision date: February 14, 2025