ProREZ™
Performance Resins and Coatings
ProREZ Coatings, LLC
P.O. Box 153, Cromwell, CT 06416-0153
877.511.3456 ● www.prorezcoatings.com

Safety Data Sheet

Date Issued: 12/07/22 **Version: 1.1**

1. CHEMICAL PRODUCTS AND COMPANY IDENTIFICATION

Product Names/Trade Names: BioThane Resin
Chemical Family: Polyurethane Resin
Manufacturer's Name: ProREZ Coatings, LLC
PO BOX 153
Cromwell, CT 06416-0153 USA
General No.: (877) 511-3456 (8:00am to 5:00pm Eastern Time)

Company 24 Hour Emergency Response Information: CHEMTEL: 1-800-255-3924
Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

2. HAZARDS IDENTIFICATION

Emergency Overview: Caution! The toxicological properties of this material have not been fully investigated. May cause eye and skin irritation. May cause respiratory and digestive tract irritation.
Target Organs: No data found.

Classification of the substance

Skin Irritation:	2;H315	Causes skin irritation.
Eye Damage:	1;H318	Causes serious eye damage.
Skin Sensitivity:	1;H317	May cause an allergic skin reaction.

Label Elements
Hazardous components that must be listed on the label:
Contains cement and silica/quartz

Signal Word: Danger

Pictograms:

Hazard Statements:

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.

Precautionary Statements

P261	Avoid breathing dust, fume, gas, mist, vapors, spray.
P264	Wash thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves, eye protection, face protection.

Response Statements

P302+352	IF ON SKIN: Wash with plenty of soap and water.
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER, doctor or physician.
P333+313	If skin irritation or a rash occurs: Get medical advice or attention.
P362	Take off contaminated clothing and wash before reuse.

Storage

No GHS storage statements

Disposal

P501	Dispose of contents or container in accordance with local and national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredients/Chemical Designations	% By Weight	GHS Classification
Vegetable Oil Polyol Blend CAS Number: Proprietary	75% - 100%	Not Classified
1,3,3-trimethyl-N-(2-methylpropylidene)-5-[(2-methylpropylidene)amino]cyclohexanemethylamine CAS Number: 0054914-37-3	1% - 5%	Skin Corr. 1;H314 Skin Sens. 1;H317 Aquatic Chronic 3;H412
Zeolite CAS Number: 0001318-02-1	1% - 5%	Not Classified
Dimethyl adipate CAS Number: 0000627-93-0	1% - 5%	Not Classified

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.
*PBT/vPvB - PBT-substance or vPvB-substance.
The full texts of the phrases are shown in Section 16.

4. FIRST-AID MEASURES

General: In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.
Eye contact: Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention
Skin Contact: Remove contaminated clothing. Wash skin thoroughly with soap and water or use a r ecognized skin cleanser.
Inhalation: Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious, place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Ingestion: If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed.
Overview: No specific symptom data available.
Treat symptomatically. Check section 2.2 (GHS Label Elements) for further details.
Eyes: Causes serious eye damage.
Skin: May cause an allergic skin reaction. Causes skin irritation.

5. FIRE-FIGHTING MEASURES

Suitable Fire Extinguishing Media: Recommended extinguishing media; alcohol resistant foam, CO_2, powder, water spray.
Unsuitable extinguishing media: Do not use; water jet.

Special hazards arising from the substance or mixture:
Hazardous decomposition: No hazardous decomposition data available.
Avoid breathing dust, fume, gas, mist, vapors, spray.

Precautions for fire fighters: As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean-up immediately after fire. No smoking.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Put on appropriate personal protective equipment (see section 8).

Environmental Precautions: Do not allow spills to enter drains or waterways.
Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

Methods for Cleaning up: Ventilate the area and avoid breathing vapors. Take the personal protective measures listed in section 8. Contain and absorb spillage with non-combustible materials e.g. sand, earth, and vermiculite. Place in closed containers outside buildings and dispose of according to the Waste Regulations.

7. HANDLING AND STORAGE

Handling: Handle containers carefully to prevent damage and spillage.
Check section 2.2 (GHS Label Elements) for further details. - [Prevention]

Storage: Incompatible materials: No data available.
Check section 2.2 (GHS Label Elements) for further details. - [Storage]

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

OSHA PEL (TWA): Not Determined
ACGIH TLV (TWA): Not Determined
NIOSH REL (TWA): Not Determined

Engineering measures: Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Hygiene measures: Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.
Check section 2.2 (GHS Label Elements) for further details.

Personal Protection:
Respiratory - If workers are exposed to concentrations above the exposure limit, they must use the appropriate, certified respirators.
Eyes – Wear safety glasses with side shields to protect the eyes. An eye wash station is suggested as a good workplace practice.
Skin - Wear PVC or rubber gloves to keep skin contact to a minimum. Refer to the manufacturer's recommendations regarding the suitability of any gloves used.
Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Color: Pale-yellow, syrupy oil Physical State: Liquid
Odor	Not determined
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	> 300ºC (572ºF)
Flash Point	> 200ºC (393ºF)
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** Not Measured
	Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Measured
Relative Density	0.97214886
Solubility in Water	Not Measured
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	390 cPs

10. STABILITY AND REACTIVITY

Chemical stability: Stable under normal circumstances. Hazardous Polymerization will not occur.
Conditions to avoid: No data available.
Materials to avoid: No data available.
Hazardous decomposition products: No hazardous decomposition data available.

11. TOXICOLOGICAL INFORMATION

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Vegetable Oil Polyol Blend - (Proprietary)	No data available.	No data available.	No data available.	No data available.	No data available.
1,3,3-trimethyl-N (2-methylpropylidene)-5-[(2-methylpropylidene)amino] cyclohexanemethylamine - (54914-37-3)	4,150.00, Rat - Category: 5	> 5,000.00, Rat - Category: NA	No data available.	No data available.	No data available.
Zeolite - (1318-02-1)	5,110.00, Rat - Category: NA	> 2,000.00, Rabbit - Category: NA	No data available.	No data available.	No data available.
Dimethyl adipate - (627-93-0)	> 5,000.00, Rat - Category: NA	> 1,000.00, Rabbit - Category: NA	No data available.	No data available.	No data available.

Carcinogen Data

CAS Number	Ingredient	Source	Value
0000627-93-0	Dimethyl adipate	OSHA NTP IARC ACGIH	Regulated Carcinogen: No; Known: No; Suspected: No Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No; No Established Limit
0001318-02-1	Zeolite	OSHA NTP IARC ACGIH	Regulated Carcinogen: No; Known: No; Suspected: No Group 1: No; Group 2a: No; Group 2b: No; Group 3: Yes; Group 4: No; No Established Limit
0054914-37-3	1,3,3-trimethyl-N-(2-methylpropylidene)-5-[(2-methylpropylidene) amino]cyclohexanemethylamine	OSHA NTP IARC ACGIH	Regulated Carcinogen: No; Known: No; Suspected: No Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No; No Established Limit
Proprietary	Vegetable Oil Polyol Blend	OSHA NTP IARC ACGIH	Regulated Carcinogen: No; Known: No; Suspected: No Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No; No Established Limit

Classification	Category	Hazard Description
Skin corrosion/irritation	2	Causes skin irritation.
Serious eye damage/irritation	1	Causes serious eye damage.
Respiratory sensitization	—	Not Applicable
Skin sensitization	1	May cause an allergic skin reaction.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Not available.
BOD5 and COD: Not available.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/L	48 hr EC50 crustacea, mg/L	ErC50 algae, mg/L
Vegetable Oil Polyol Blend - (Proprietary)	No data available.	No data available.	No data available.
1,3,3-trimethyl-N-(2-methylpropylidene)-5-[(2-methylpropylidene)amino] cyclohexanemethylamine - (54914-37-3)	101.00, Danio rerio	22.20, Daphnia magna	101.00, Algae
Zeolite - (1318-02-1)	1,800.00, Danio rerio	1,000.00, Daphnia magna	560.00, Chlorella vulgaris
Dimethyl adipate - (627-93-0)	No data available.	72.00, Daphnia magna	101.00, Pseudokirchnerella subcapitata

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Observe all federal, state, and local regulations when disposing of this substance.

14. TRANSPORT INFORMATION

DOT Classification: Not Regulated.

15. REGULATORY INFORMATION

Regulatory Overview: The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA): All components of this material are either listed or exempt from listing on the TSCA Inventory.
EPCRA 302 Extremely Hazardous: To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
EPCRA 313 Toxic Chemicals: To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
Proposition 65 - Carcinogens (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
Proposition 65 - Developmental Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
Proposition 65 - Female Repro Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
Proposition 65 - Male Repro Toxins (>0.0%): To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.
Proposition 65 Label Warning: This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

16. OTHER INFORMATION

Hazardous Material Information System (HMIS):

Scale 0-4		*NFPA*	*HMIS*
4=Severe Hazard	**Health**	**1**	**1**
3=Serious Hazard	**Flammability**	**1**	**1**
2=Moderate Hazard	**Reactivity**	**0**	**0**
1=Slight Hazard			
0=Minimal Hazard			

THE INFORMATION AND RECOMMENDATIONS PRESENTED HEREIN ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE. USER MUST CONDUCT THEIR OWN TESTS TO DETERMINE THE SUITABILITY OF THESE PRODUCTS FOR THEIR PARTICULAR PURPOSES AND USAGE. BECAUSE OF NUMEROUS FACTORS AFFECTING RESULTS, PROREZ COATINGS, LLC AND ITS AFFILIATION MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR PURPOSE, OTHER THAN MATERIAL CONFORMS TO OUR APPLICABLE CURRENT SPECIFICATIONS. PROREZ COATINGS, LLC ASSUMES NO LEGAL RESPONSIBILITY FOR USE OR RELIANCE ON THE INFORMATION CONTAINED IN THIS SAFETY DATA SHEET.

END OF DATA SHEET

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Safety Data Sheet

Date Issued: 6/20/23 **Version: 1.0**

1. CHEMICAL PRODUCTS AND COMPANY IDENTIFICATION

Product Names/Trade Names: BioThane Hardener
Chemical Family: MDI Polyisocyanate
Manufacturer's Name: ProREZ Coatings, LLC
PO BOX 153
Cromwell, CT 06416-0153 USA
General No.: (877) 511-3456 (8:00am to 5:00pm Eastern Time)

Company 24 Hour Emergency Response Information: CHEMTEL: 1-800-255-3924
Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

2. HAZARDS IDENTIFICATION

Emergency Overview: Danger. May cause allergic skin reaction. May cause skin, eye, and respiratory tract irritation. Harmful by inhalation and if swallowed.

Signal Word: Danger

Pictograms:

Hazard Statements:
H320 Causes eye irritation.
H315 Causes skin irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Olfactory) through prolonged or repeated exposure (inhalation).

Precautionary Statements (Prevention)
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P271 Use only outdoors or in a well-ventilated area.
P260 Do not breathe dust/gas/mist/vapors.
P201 Obtain special instructions before use.
P261 Avoid breathing mist.

P202 Do not handle until all safety precautions have been read and understood.
P284 (In case of inadequate ventilation) wear respiratory protection.
P272 Contaminated work clothing should not be allowed out of the workplace.
P264 Wash with plenty of water and soap thoroughly after handling. Respiratory Protection Standard (29 CFR 1910.134) or regional standards.

Precautionary Statements (Response)

P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P311	IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P314	Get medical advice/attention if you feel unwell.
P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P333 + P311	If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician.
P362 + P364	Take off contaminated clothing and wash before reuse.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P337 + P311	If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Storage):

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P235	Keep cool.
P405	Store locked up.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal

Hazard(s) not otherwise classified (HNOC): No specific dangers known, if the regulations/notes for storage and handling are considered.

Inhalation: Inhalation of isocyanate mists or vapors may cause respiratory irritation, breathlessness, chest discomfort and reduced pulmonary function. Overexposure well above the PEL may result in bronchitis, bronchial spasms and pulmonary edema. Long-term exposure to isocyanates has been reported to cause lung damage, including reduced lung function which may be permanent. Acute or chronic overexposure to isocyanates may cause sensitization in some individuals, resulting in allergic respiratory reactions including wheezing, shortness of breath and difficulty breathing. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

Skin and Eyes: Avoid contact with skin and eyes. Skin or eye contact may cause irritation.

Ingestion: May cause irritation of the digestive tract with symptoms that include abdominal pain, nausea, vomiting, and diarrhea.

Carcinogenicity: No carcinogenic substances as defined by IARC, NTP and/or OSHA.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	% By Weight	CAS Number
P-MDI	≥15 - ≤40%	9016-87-9
Diphenylmethane-4,4'-diisocyanate (MDI)	≥40 - ≤65%	101-68-8
Dimethyl Blend	≥5 - ≤15%	1119-40-0, 106-65-0, 627-93-0

4. FIRST-AID MEASURES

Inhalation: Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention is required.
Skin Contact: Remove contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.
Eye contact: In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water, occaisionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Immediate medical attention required.
Ingestion: Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Additional Information:
Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11: Eye irritation, skin irritation, allergic symptoms
Hazards: Symptoms can appear later.
Hazard Information on Diphenylmethane-4,4'-diisocyanate (MDI): Respiratory sensitization may result in allergic (asthma-like) signs in the lower respiratory tract including wheezing, shortness of breath and difficulty breathing, the onset of which may be delayed. Repeated inhalation of high concentrations may cause lung damage, including reduced lung function, which may be permanent. Substances eliciting lower respiratory tract irritation may worsen the asthma-like reactions that may be produced by product exposures.

Indication of any immediate medical attention and special treatment needed.

Note to physician:
Antidote: Specific antidotes or neutralizers to isocyanates do not exist.
Treatment: Treatment should be supportive and based on the judgement of the Physician in response to the reaction of the patient.

5. FIRE-FIGHTING MEASURES

Suitable Fire Extinguishing Media: Use water spray, dry powder, carbon dioxide, foam.

Unusual Fire and Explosion Hazards: Hazards during fire-fighting: nitrous gases, fumes/smoke, isocyanate, vapor.

Advice for Fire Fighters: Firefighters should be equipped with self-contained breathing apparatus and turn-out gear. Keep containers cool by spraying with water if exposed to fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental Precautions: Do not discharge into drains/surface waters/groundwater.

Containment/Clean-up Measures: For small amounts: Absorb isocyanate with suitable absorbent material (see § 40 CFR, sections 260, 264 and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside). Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 8 % concentrated ammonia, 2 % detergent. Treat spill at a 10 to 1 ratio. Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide.

For large amounts: If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal.

For residues: The following measures should be taken for final cleanup: Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes. Dike spillage.

7. HANDLING AND STORAGE

Handling: Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. When handling heated product, vapors of the product should be ventilated, and respiratory protection used. Wear respiratory protection when spraying. Danger of bursting when sealed gastight. Protect against moisture. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing.

Storage: Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases. Segregate from bases.
Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2).
Further information on storage conditions: Formation of CO2 and buildup of pressure possible. Keep container tightly closed and in a well-ventilated place. Empty spaces of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture.

Storage Stability:
Storage temperature: 60 - 80°F
Protect against moisture and moisture contamination.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Special Note for Exposure Control: Consult local authorities for further acceptable exposure limits.

Component	Result	ACGIH/OSHA
Diphenylmethane-4,4'-diisocyanate (MDI) CAS 101-68-8	STEL	
	TWA	0.005 ppm
	PEL	CLV 0.02 ppm/0.2 mg/m^3
P-MDI CAS 9016-87-9	STEL	
	TWA	0.005 ppm
	PEL	CLV 0.02 ppm/0.2 mg/m^3

Engineering Measures/Controls: Provide local exhaust ventilation to maintain recommended P.E.L.

Environmental Exposure Controls: Avoid release to the environment. Construct a dike to prevent spreading of spills. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Hygiene Measures: Wear protective clothing as necessary to prevent contact. Eye wash fountains and safety showers must be easily accessible. Observe the appropriate PEL or TLV value. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or disposed of.

Personal protective equipment:
Respiratory: When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NIOSH-certified air-purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place. For emergency or non-routine, high exposure situations, including confined space entry, use a NIOSH-certified full face-piece pressure demand self-contained breathing apparatus (SCBA) or a full face-piece pressure demand supplied-air respirator (SAR) with escape provisions.
Eye/Face: Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.
Hands: Chemical resistant protective gloves should be worn to prevent all skin contact., Suitable materials may include, chloroprene rubber (Neoprene), nitrile rubber (Buna N), chlorinated polyethylene, polyvinylchloride (Pylox), butyl rubber, depending upon conditions of use.
Skin/Body: Cover as much of the exposed skin as possible to prevent all skin contact. Suitable materials may include saran-coated material, depending upon conditions of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form	Liquid	**Appearance/Description**	Light brown liquid
Color	Light brown	**Odor**	Faint odor, aromatic
Boiling Point	200°C	**Bulk Density**	No data
Specific Gravity	Ca. 1.23 g/cm^3 @ 20°C	**UEL**	No data
Water Solubility	Reacts	**LEL**	No data
Flash Point	Approx. 200°C	**NVW**	No data

10. STABILITY AND REACTIVITY

Chemical stability: Stable under normal conditions of use and storage.
Possibility of hazardous reactions: Reacts with water, with formation of carbon dioxide (risk of bursting). Reacts with alcohols. Reacts with acids. Reacts with alkalis. Reacts with amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.
Conditions to avoid: Moisture.
Materials to avoid: Acids, amines, alcohols, water, alkaline, strong bases, substances/products that react with isocyanates.
Hazardous decomposition products: Carbon monoxide, carbon dioxide, nitrogen oxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapors. Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

11. TOXICOLOGICAL INFORMATION

Primary routes of exposure:
Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.
Acute toxicity:
Assessment of acute toxicity: Inhalation of vapors may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function. Inhalation exposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema. Isocyanates have also been reported to cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed
Information on: Diphenylmethane-4,4’-diisocyanate (MDI)
LD50 Oral Rat (male/female) > 2,000 mg/kg (Directive 84/449/EEC, B.1)
LC50 rat (male/female) 2.0 mg/L (OECD Guideline 403). An aerosol was tested.
LD50 rabbit (male/female) > 9,400 mg/kg

Assessment other acute effects
Assessment of STOT single: Causes temporary irritation of the respiratory tract.
Irritation/corrosion: Assessment of irritating effects: Irritating to eyes, respiratory system and skin. Skin contact may result in dermatitis, either irritative or allergic.
Information on: Diphenylmethane-4,4'-diisocyanate (MDI)
Skin Corrosion/Irritation (Rabbit, Draize Test): Irritating.
Eye Corrosion/Irritation (Rabbit, Draize Test): Irritating.

Sensitization
Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract. As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapor-only exposure. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)
Buehler test (guinea pig): Sensitizing
Local Lymph Node Assay (Mouse, LLNA): Sensitizing. Can cause skin sensitization.
Skin Corrosion/Irritation (Guinea Pig): Sensitizing. Note: Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. However, the relevance of this result for humans is unclear.

Chronic Toxicity/Effects
Assessment of repeated dose toxicity: The substance may cause damage to the olfactory epithelium after repeated inhalation. The substance may cause damage to the lung after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Information on Diphenylmethane-4,4'-diisocyanate (MDI):
Experimental/calculated data: rat (Wistar) (male/female) Inhalation 2 years, 6 hr/day 0, 0.2, 1, 6 mg/m^3, olfactory epithelium
NOAEL: 0.2 mg/m^3
LOAEL: 1 mg/m^3
The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure. Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

Genetic toxicity
Assessment of mutagenicity: The substance was mutagenic in various bacterial test systems; however, these results could not be confirmed in tests with mammals.

Information on Diphenylmethane-4,4'-diisocyanate (MDI):
Genetic toxicity in vitro: OECD Guideline 471 Ames-test Salmonella typhimurium: with and without metabolic activation, ambiguous.
Information on Diphenylmethane-4,4'-diisocyanate (MDI):
Genetic toxicity in vivo: OECD Guideline 474 Micronucleus assay rat (male) Inhalation negative. No clastogenic effect reported.

Carcinogenicity
Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure.
Experimental/calculated data: OECD Guideline 453 rat Inhalation 0, 0.2, 1, 6 mg/m^3. Result: Lung tumors

Reproductive toxicity
Assessment of reproduction toxicity: Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

Teratogenicity
Assessment of teratogenicity: The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Development
OECD Guideline 414 rat Inhalation 0, 1, 4, 12 mg/m^3
NOAEL Mat.: 4 mg/m^3
NOAEL Teratog.: 4 mg/m^3
The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Symptoms of Exposure
Eye irritation, skin irritation, allergic symptoms
Medical conditions aggravated by overexposure. The isocyanate component is a respiratory sensitizer. It may cause allergic reaction leading to asthma-like spasms of the bronchial tubes and difficulty in breathing. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Contact may aggravate pulmonary disorders. Persons with history of respiratory disease or hypersensitivity should not be exposed to this product. Pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum) are suggested. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates. Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended.

12. ECOLOGICAL INFORMATION

Toxicity:
Assessment of aquatic toxicity: There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. Based on long-term (chronic) toxicity study data, the product is very likely not harmful to aquatic organisms.
The product may hydrolyze. The test result may be partially due to degradation products. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Toxicity to fish: LC0 (96 h) > 1,000 mg/L, Brachydanio rerio (OECD Guideline 203, static)

Aquatic invertebrates: EC50 (24 h) > 1,000 mg/L, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants: EC0 (72 h) 1,640 mg/L (growth rate), Scenedesmus subspicatus (OECD Guideline 201, static)

Microorganisms/Effect on activated sludge:

Toxicity to microorganisms: OECD Guideline 209 aquatic aerobic bacteria from a domestic water treatment plant/EC50 (3 h): > 100 mg/L

Persistence and degradability: Assessment biodegradation and elimination (H2O): Not readily biodegradable. The product is unstable in water. The elimination data also refer to products of hydrolysis.

Elimination information: 0 % BOD of the ThOD (28 d) (OECD Guideline 302 C) (aerobic, activated sludge) Poorly biodegradable.

Assessment of stability in water: In contact with water the substance will hydrolyze slowly.

Information on stability in water hydrolysis: $t^{1/2}$ 20 h (25 °C)

Bioaccumulation Potential
Assessment of bioaccumulation potential: Significant accumulation in organisms is not to be expected.
Bioconcentration factor: 200 (28 d), Cyprinus carpio (OECD Guideline 305 E).

Mobility in soil
Assessment of transport between environmental compartments: The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Incinerate or dispose of in a licensed facility. Do not discharge substance/product into sewer system.
Empty Container Precautions: Steel drums must be emptied and can be sent to a licensed drum reconditioner for re-use, a scrap metal dealer or an approved landfill. Do not attempt to refill or clean containers since residue is difficult to remove. Under no circumstances should empty drums be burned or cut open with gas or electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.

14. TRANSPORT INFORMATION

Land transport: USDOT Not classified as a dangerous good under transport regulations
Sea transport: IMDG Not classified as a dangerous good under transport regulations
Air transport: IATA/ICAO Not classified as a dangerous good under transport regulations
Further information: DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this MSDS for the RQ for this product.

15. REGULATORY INFORMATION

Federal Regulations Registration Status: TSCA listed
EPCRA 311/312 (Hazard categories): Acute; Chronic
EPCRA 313:
CAS Number 9016-87-9
Chemical name: 101-68-8 Diphenylmethane-4,4'-diisocyanate (MDI) P-MDI
CERCLA RQ 5000 LBS
CAS Number 9016-87-9; 101- 68-8
Chemical name: P-MDI; Diphenylmethane-4,4'-diisocyanate (MDI)

State regulations

State RTK	**MA, NJ, PA**
	MA, NJ, PA
	NJ
CAS Number	**9016-87-9**
	101-68-8
	26447-40-5
Chemical name	**P-MDI**
	Diphenylmethane-4,4'-diisocyanate (MDI)
	Methylenediphenyl diisocyanate

NFPA Hazard codes: Health: 2 Fire: 1 Reactivity: 1 Special:
HMIS III rating: Health: 2¤ Flammability: 1 Physical Hazard:1

16. OTHER INFORMATION

Hazardous Material Information System (HMIS):

Scale 0-4		*NFPA*	*HMIS*
4=Severe Hazard	**Health**	**2**	**2¤**
3=Serious Hazard	**Flammability**	**1**	**1**
2=Moderate Hazard	**Reactivity**	**1**	
1=Slight Hazard	**Physical Hazard**		**1**
0=Minimal Hazard			

THE INFORMATION AND RECOMMENDATIONS PRESENTED HEREIN ARE ACCURATE TO THE BEST OF OUR KNOWLEDGE. USER MUST CONDUCT THEIR OWN TESTS TO DETERMINE THE SUITABILITY OF THESE PRODUCTS FOR THEIR PARTICULAR PURPOSES AND USAGE. BECAUSE OF NUMEROUS FACTORS AFFECTING RESULTS, PROREZ COATINGS, LLC AND ITS AFFILIATION MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR PURPOSE, OTHER THAN MATERIAL CONFORMS TO OUR APPLICABLE CURRENT SPECIFICATIONS. PROREZ COATINGS, LLC ASSUMES NO LEGAL RESPONSIBILITY FOR USE OR RELIANCE ON THE INFORMATION CONTAINED IN THIS SAFETY DATA SHEET.

END OF DATA SHEET