



# PU3200 POLYURETHANE GROUT

## MATERIAL SAFETY DATA SHEET

**Last Revised: 16 December 2024**

### Substance/preparation and company identification

Trade name: **PU3200 POLYURETHANE GROUT** Water-activated hydrophobic PU grout.

#### Warrior Pte Ltd

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### Composition/Information on Ingredients

Name	CAS	Proportions
MDI Pre-polymer	--	20 – 40
Polymeric Di-phenylmethane Di-isocyanate	--	45 – 65
2,2-dimethyl-1-(methylethyl)-1,3-propanediyl bis(2-methylpropanoate)	--	10 – 20

### Hazard Identification

#### Emergency Overview

**Physical Appearance:** Brown liquid.

#### Immediate Concerns:

Irritating to eyes, respiratory system and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of di-isocyanates may develop in sensitized persons.

#### Potential Health Effects

##### Eyes:

Liquids, vapours, or mists are irritating to the eyes and can cause stinging, burning, lachrymation or tearing.

##### Skin:

Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization.

##### Ingestion:

Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy, or diarrhoea.

##### Inhalation:

Inhalation of vapours or mist at concentrations above the Threshold Limit Value can cause respiratory tract irritation—Nose, throat, and lungs. Chronic inhalation can result in sensitization.



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### **Signs and Symptoms of Overexposure**

#### **Eyes:**

Contact may cause moderate irritation consisting of transient redness, swelling, and mucous membrane discharge to the conjunctiva. Prolonged contact with the eyes may cause reversible corneal opacity to occur, with no visual impairment expected.

#### **Skin:**

Contact may cause minor irritation consisting of transient redness and/or swelling. Individuals with skin sensitization can develop these symptoms from contact with a small amount of liquid or vapours.

#### **Ingestion:**

Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhoea.

#### **Inhalation:**

Vapours or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, are irritating and cause nasal discharge, coughing, discomfort in nose and throat, and breathing obstruction. Individuals with respiratory sensitization may experience allergic respiratory reactions when exposed to amounts below the exposure guidelines.

### **Medical Conditions Aggravated:**

Asthma, other respiratory disorders (bronchitis, emphysema, bronchia hyper-reactivity), skin allergies, eczema.

### **Routes of Entry:**

Inhalation, skin contact, eye contact & ingestion.

### **Sensitization:**

Any individual with isocyanate sensitization should not be exposed to this product. These individuals can react to exposure well below the Threshold Limit Value. Symptoms can occur immediately or several hours after exposure.

## **First Aid Measures**

#### **Eyes:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention.

#### **Skin:**

Remove contaminated clothing. Wash affected areas thoroughly with soap and water. Wash clothing thoroughly before reuse. For severe exposure, seek medical attention immediately. For lesser exposure, seek medical attention if swelling or redness occurs, or if irritation persists after being washed.

#### **Ingestion:**

Do not induce vomiting. Never give anything by mouth to a drowsy or unconscious person. If the individual is conscious, rinse mouth with water. Give 1 to 2 cups of water to drink. Seek immediate medical attention.



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### **Inhalation:**

Remove individual from exposure, keep warm and at rest. Obtain immediate medical attention. Treatment is symptomatic for primary irritation or bronchi spasm. If breathing is laboured, oxygen should be administered by qualified personnel. Apply artificial respiration if breathing has ceased or shows signs of failing. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.

**Antidotes:** No specific antidote.

### **NOTES TO PHYSICIAN:**

Symptomatic and supportive therapy may need. Following severe exposure, medical follow-up should be monitored for at least 48 hours. It may cause respiratory sensitization or asthma-like symptoms. Respiratory symptoms, including pulmonary edema, may be delayed.

### **Fire-fighting Measures**

**Flash Point and Method:** >(200°F) Closed Cup

#### **Extinguishing Media:**

Dry Chemical, Carbon Dioxide, Chemical Foam, Water Fog or spray.

Hazardous Combustion Products: Carbon Monoxide, Carbon Dioxide, Nitrous Oxide, and HCN.

#### **Explosion Hazards:**

Closed containers could rupture explosively at elevated temperatures generated under fire conditions. During a fire, gases of a highly toxic nature may be generated by thermal decomposition or combustion. Use water to cool fire-exposed containers.

#### **Fire Fighting Procedures:**

Isolate fuel supply from fire. Use water spray to cool fire-exposed surfaces and containers. Fire fighters should wear self-contained breathing apparatus in addition to emergency fire-fighting protective clothing.

#### **Comments:**

Reacting slowly with water will produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

### **Accidental Release Measures**

#### **Small Spill:**

Clean up spills wearing proper personal protective equipment. (See Section VIII) Absorb with dry chemical absorbent, earth, sand, or any other inert material. Place in a chemical waste container. Move to outside well-ventilated area. Treat with 10 parts decontamination solution to 1 part isocyanate. Mix well. Allow to stand uncovered 48 hours before disposal.

#### **Large Spill:**

Eliminate all ignition sources. Evacuate and ventilate the area. Create a dike or trench to contain materials. Prevent entry into waterways, sewers, basements or confined areas. Clean-up personnel should wear appropriate personal protection equipment (see Section VIII). Absorb with dry chemical absorbent, earth, sand, or any other inert material. Do not use combustible material such as sawdust. Place in a chemical waste container.

Move to outside well-ventilated area. Treat with 10 parts decontamination solution to 1 part isocyanate. Mix well. Allow to stand uncovered 48 hours before disposal. Clean spill area with decontamination solution and allow to stand for 15 minutes before removal. Test atmosphere for MDI.



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### Decontamination solution:

Concentrated ammonia (5%), detergent (2%), and water (93%).

### Comments:

Dispose of by any standard method of disposal in accordance with good industrial practice and in compliance with federal, state, and local environmental protection regulations.

### Handling and Storage

#### Precautions:

Keep containers tightly sealed. Keep containers away from heat source and/or open flames. Do not store containers in open sunlight. Store in cool and well-ventilated area.

**Handling:** Wear proper personal protective equipment. Use in a well ventilated area. Avoid smoking, bare lights, or ignition sources. Keep containers securely sealed when not in use. Avoid physical damage to containers.

#### Storage:

Containers can rupture if exposed to high heat. Protect from atmospheric moisture. Keep containers sealed in order to avoid contamination. Do not reseal if contaminated. After container has been opened, blanket with nitrogen before resealing. Store indoors in a cool, well-ventilated area.

**Storage Temperature:** (55°F) minimum to (120°F) maximum

**Shelf Life:** 1 year

#### Special Sensitivity:

Material is hygroscopic and reacts with water. It will form cured particles or a film when exposed to atmospheric moisture. Fill containers with nitrogen before resealing.

### Comments:

It will react slowly with water to produce carbon dioxide which may rupture closed containers. This reaction accelerates at higher temperatures.

### Exposure controls/personal protection

#### Exposure Guidelines:

	Exposure Limits				
		OSHA PEL		ACGIH TLV	
		ppm	mg/m3	ppm	mg/m3
MDI Prepolymer	TWA	NE	NE	NE	NE
Polymeric Diphenylmethane Diisocyanate	TWA		0.20*		0.05
2,2-dimethyl-1-(methylethyl)-1,3-propanediyl bis(2-methylpropanoate)	TWA	NE	NE	NE	NE

**OSHA Table Comments:** NE = Not Established \*= Ceiling

**Engineering Controls:** Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

### Personal Protective Equipment

**Eyes and Face:** Wear safety glasses with side shields (or goggles) and a face shield.



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### Skin:

The following protective materials are recommended: Gloves – neoprene, nitrile rubber, butyl rubber. Thin latex disposable gloves should be avoided for repeated or long-term use.

### Protective Clothing:

Where contact is likely, wear chemical resistant gloves, a chemical suit, rubber boots, and chemical safety goggles plus a face shield.

### Work Hygienic Practices:

Follow good normal hygiene practices. Avoid contact with skin. Avoid eating, drinking, or smoking while using this product. Wash thoroughly after use.

### Other Use Precautions:

Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with respiratory problems including asthmatic-type conditions, chronic bronchitis, or other chronic respiratory diseases or recurrent skin eczema or skin allergies should be evaluated for their suitability of working with this product. Once a person is diagnosed as sensitized, no further exposure of the material that caused the sensitization should be permitted. The Occupational Exposure limits do not apply to previously sensitized individuals.

**Other Protective Equipment:** Safety showers and eye wash stations.

### Physical/Chemical Properties

Physical State	: Liquid
Odor	: Slightly musty
Color	: Brown
Boiling Point	: Not Determined
Freezing Point	: Not Determined
Solubility in Water	: Insoluble
Specific Gravity	: 1.090 to 1.110 (water=1) at (77°F)
Viscosity	: 300 to 400 cps at (77°F)

### Stability and Reactivity

**Conditions to Avoid:** Temperature extremes. Container contamination. Moisture.

**Stability:** Stable under recommended storage conditions

**Polymerization:** Polymerization may occur at elevated temperatures in the presence of alkalis, tertiary amines, and metal compounds.

**Hazardous Decomposition Products:** Carbon Monoxide, Carbon Dioxide, Nitrous Oxide, and HCN.

**Incompatible materials:** 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 122°F, but is accelerated at higher temperatures.



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### Toxicological Information

Ingredients	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
Polymeric Diphenylmethane Diisocyanate	> 5000 mg/kg	> 5000 mg/kg	490 mg/m <sup>3</sup> /4h (respirable aerosol)
2,2-dimethyl-1-(methylethyl)-1,3-propanediyl bis(2-methylpropanoate)	> 3200 mg/kg	> 18840 mg/kg (rat)	> 5.3 mg/L

**Eye Effects:** The vapor, aerosol, and liquid are irritant.

**Skin Effects:** Moderate Irritant. Repeated and/or prolonged contact may cause skin sensitization. There is limited evidence from animal studies that skin contact may play a role in respiratory sensitization. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

**Sensitization:** This material is a respiratory sensitizer and irritant. Repeated and/or prolonged contact may cause skin sensitization and irritation.

**Mutagenicity:** There is no substantial evidence of mutagenic potential. **Reproductive Effects:** No adverse reproductive effects are anticipated.

**General Comments:** A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol at concentrations of 0, 0.2, 1, or 6 mg/m<sup>3</sup>. No adverse effects were observed at 0.2 mg/m<sup>3</sup>. At the 1 mg/m<sup>3</sup> concentration, minimal nasal and lung irritant effects were seen. Only at the top concentration (6.0 mg/m<sup>3</sup>) was there an increased incidence of a benign tumour of the lungs (adenoma). One malignant pulmonary tumour (adenocarcinoma) was seen in the 6.0 mg/m<sup>3</sup> group. MDI administration to rats in this study did not change the distribution and incidence of tumours from those seen in control animals. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

"There are reports that chronic exposure to diisocyanates by inhalation may result in permanent decreases in lung function."

### Ecological Information

#### Ecotoxicological Information:

Polymeric MDI: LC50 (Zebra Fish) >1000 mg/L. EC50 (Daphnia magna) (24 hour) >1000 mg/L. EC50 (E. Coli) >100 mg/L.

**Chemical Fate Information:** Immiscible with water, but will react with water to produce inert and non-biodegradable solids.

**General Comments:** No testing for product as a whole.



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### Disposal Considerations

**Disposal Method:** Disposal should be in accordance with local, state, provincial or national regulations.

**Empty Container:** Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

**General Comments:** The generation of waste should be avoided or minimized whenever possible. Chemical waste, even small quantities, should never be poured down drains, sewers or waterways.

### Transport Information

**DOT (Department of Transportation)**

**Proper Shipping Name:** Not restricted when shipped below RQ.

**Technical Name:** Compound Resin

**Other Shipping Information:**

Single containers with 5,000 lbs or more of 4,4'-Methylene Diphenyl Diisocyanate are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PGIII, RQ.

**AIR (ICAO/IATA) - Proper Shipping Name:** Not restricted

**Vessel (IMO/IMDG) - Proper Shipping Name:** Not restricted

### Other Information

- Any other intended applications should be discussed with the manufacturer.
- If you have any queries relating to this MSDS, its contents or any other product safety related questions, please write to the following e-mail address: war99@singnet.com.sg
- The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.