



# SAFETY DATA SHEET

## NRX™ Polyurethane - B

### Section 1. Identification

Product Name • **NRX™ – Polyurethane**  
Product Code • **NRX™ PU**  
Other means of Identification • Cure Agent Part B  
Product type • Liquid

#### Relevant identified uses of the substance or mixture and uses advised against

Product Use • Industrial applications, marine, oil and gas, infrastructure.  
Uses of the substance/ mixture • Coating.  
Uses advised against • Not applicable.

Manufacturer • NANORUSTX LLC  
80 Holmes Street  
Belleville, NJ 01709

Product Information • US (973) 751-2200  
Telephone Number

### Section 2. Hazards Identification

Classification of the substance or mixture • Skin Corrosion/Irritant – Category 4  
Eye Damage/Irritation – Category 4  
Oral – Category 4  
Inhalation – Category 4

#### GHS label elements:

Signal word • Warning  
Hazard statement • Causes skin irritation  
Prevention • Wash hands thoroughly after handling. Wear protective gloves.  
Response • If on skin: wash with plenty of soap and water. If skin irritation occurs: get medical advice/attention. Take off contaminated clothing and wash before reuse.



Signal word • Warning  
Hazard statement • Causes eye irritation  
Prevention • Flush eyes thoroughly after eye contact  
Response • If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.





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**Signal word****Hazard statement****Prevention****Response****Disposal**

- Warning
- Harmful if swallowed
- Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.
- If swallowed: Call a poison center or doctor/physician if you feel unwell. Rinse mouth.
- Dispose in accordance with federal, state, and local regulations.

**Signal word****Hazard statement****Prevention****Response**

- Warning
- Harmful if inhaled
- Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.
- If inhaled: remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a poison center or doctor/physician if you feel unwell.

**Other hazards which do not result in classification:** N/A

**Hazards Material Information System (United States):**

Health	2
Flammability	1
Physical Hazard	1

Hazard Codes: 0=Minimal Hazard, 1=Slight Hazard, 2=Moderate Hazard, 3=Serious Hazard, 4=Severe Hazard

### Section 3. Composition/information on ingredients

**Mixtures**

Chemical Identity	CAS No.	Concentration
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	60-100%
Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocyanate	trade secret	15-25%
Hexamethylene-1,6-Diisocyanate*	822-06-0	< 0.1%

\*Monomer content is less than 0.1% based on resin solids at the time of manufacture.

### Section 4. First aid measures

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person.



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### Description of necessary first aid measures

- Eye contact**
- Immediately flush eyes with large amounts of water or normal saline for at least 30 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.
- Skin contact**
- Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists. Wash clothing before reuse.
- Inhalation**
- Remove victim to fresh air if effects occur. If not breathing, give artificial respiration. **Get immediate medical attention.** Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours.
- Ingestion**
- **Do not induce vomiting.** If patient is conscious and can swallow, give two cups of water or milk (16oz.). **Get immediate medical attention.** Never give anything by mouth to an unconscious or convulsing person.

### Most important symptoms/effects, acute and delayed

- Signs and symptoms**
- Irritation as noted above. Skin sensitization (allergy) may be evidenced by blisters, redness, or rashes, especially hives.
- Aggravated medical conditions**
- Preexisting skin and eye disorders may be aggravated by exposure to this product. Preexisting skin and lung allergies may increase the chance of developing increased allergy symptoms from exposure to this product.
- Other health effects**
- Based on animal studies, repeated exposure to components of this product may cause damage to respiratory systems. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.

### Indication of immediate medical attention and special treatment needed, if necessary:

#### Note to physician:

- Eyes**
- Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation frequently. Workplace vapors could produce reversible corneal epithelial edema impairing vision.
- Skin**
- This product is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.
- Ingestion**
- Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the product.
- Inhalation**
- This product is a known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material must be removed from any further exposure to any isocyanate.

**Contact a Poison Control Center for additional treatment information.** Health studies have shown that many petroleum hydrocarbons pose potential human health risks, which vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.



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### Section 5. Fire-fighting measures

#### Extinguishing media

##### Suitable extinguishing media

- Use foam, dry chemical, water spray, or CO<sub>2</sub>.

##### Specific hazards arising from the chemical

- Flash Point is >200°F. Closed containers may explode when exposed to extreme heat or burst when contaminated with water (CO<sub>2</sub> evolved).

##### Special protective actions for fire-fighters

- Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, HDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition. Use water spray to cool fire-exposed surfaces and to protect personnel. Try to cover liquid spills with foam. Solvent vapors are heavier than air and may travel a considerable distance where they may linger and/or find an ignition source and flash back.

### Section 6. Accidental Release Measures

#### Personal precautions, protective equipment and emergency procedures

Evacuate nonessential personnel. Ventilate the area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied air for large spills or confined areas.

#### Methods and materials for containment and clean up

Contain spill if possible. Prevent entry into sewers and waterways. Cover spill with sawdust, vermiculite, Fuller's earth, or other absorbent material. Pour decontamination solution over spill area and allow reacting for at least 10 minutes. Collect material in open containers and add further amounts of decontamination solution. Remove containers to a safe place, cover loosely, and allow to stand for 24 to 48 hours. Wash down spill area with decontamination solutions. Decontamination Solutions: 1. nonionic surfactant Union carbide's Tergitol TMN-10 (20%) and water (80%) 2. concentrated ammonia (3-8%), detergent (2%), and water (90-95%). Dispose of in accordance with federal, state, and local regulations.

### Section 7. Handling and Storage

#### Precautions for safe handling

Ground all transfer equipment. Take precautionary measures against static discharge. Handle as an industrial chemical.

#### Conditions for safe storage, including any incompatibilities

Ground all transfer equipment. Take precautionary measures against static discharge. Handle as an industrial chemical. Keep container tightly closed when not in use to prevent moisture contamination. Do not reseal if contamination is suspected. Practice good caution and personal cleanliness to avoid skin and eye contact. Hold bulk storage under nitrogen blanket. Store in a cool (between 50 and 81°F), dry place with adequate ventilation. Keep away from open flames and high temperatures. At temperatures above 100°F, material may slowly polymerize without hazard.

### Section 8. Exposure controls/personal protection

#### Control parameters

Component	CAS No.	Percent	Exposure Limits	Source
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	60-100%	0.5 mg/m <sup>3</sup> (rec. by supplier) TWA 1.0 mg/m <sup>3</sup> (rec. by supplier) STEL	
Hexamethylene-1,6-Diisocyanate	822-06-0	< 0.1%	0.005 ppm TWA 0.02 ppm (rec. by supplier) Ceiling limit	ACGIH



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**Appropriate engineering controls:** N/A

**Individual protection measures**, such as personal protective equipment:

**Respiratory protection:** Provide adequate ventilation. Avoid breathing of vapors or mists. Airborne concentrations should be kept to lowest levels possible. When exposures are not adequately controlled, use a respirator approved for use in isocyanate environments. Selection of air purifying or positive-pressure supplied air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

**Protective Clothing: Contact Lenses should not be worn.** Precautions should be taken so that persons handling this product do not breathe the vapors or have it contact the eyes or skin. In spray operations, protection must be afforded against exposure to both vapor and spray mist. Protective clothing such as uniforms, coveralls, or lab coats must be worn. Launder or dry-clean when soiled. Gloves and goggles resistant to chemicals and petroleum distillates are required. If skin creams are used, keep the area protected only by the cream to a minimum. When handling large quantities, impervious suits, gloves, and rubber boots must be worn.

### Section 9. Physical and chemical properties

#### Appearance

Physical state	• Clear liquid.
Odor	• Slight
Odor threshold	• N/A
pH	• N/A
Melting point	• N/A
Boiling point	• Not established
Flash point	• >200°F
Evaporation rate	• Not established
Flammability (solid, gas)	• N/A
Lower and upper explosive (flammable) limits	• Not established
Vapor pressure	• Not established
Vapor density	• Not established
Relative Density (specific gravity)	• 1.16
Solubility(ies)	• Insoluble – reacts slowly with water to liberate CO <sub>2</sub> gas
Partition coefficient: n-octanol/water	• N/A
Auto-ignition temperature	• N/A
Decomposition temperature	• N/A
Viscosity	• N/A



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### Section 10. Stability and reactivity data

<b>Reactivity</b>	<ul style="list-style-type: none"><li>N/A</li></ul>
<b>Chemical Stability</b>	<ul style="list-style-type: none"><li>Stable under normal conditions of handling.</li></ul>
<b>Possibility of hazardous reactions</b>	<ul style="list-style-type: none"><li>May occur. Contact with moisture or other materials which react with isocyanates or temperatures over 400F (204C) may cause polymerization.</li></ul>
<b>Conditions to avoid</b>	<ul style="list-style-type: none"><li>Water, amines, strong bases, alcohols, metal compounds and surface-active materials.</li></ul>
<b>Incompatible materials</b>	<ul style="list-style-type: none"><li>N/A</li></ul>
<b>Hazardous decomposition products</b>	<ul style="list-style-type: none"><li>By heat and fire -- carbon monoxide, carbon dioxide, oxides of nitrogen, HCN, HDI.</li></ul>

### Section 11. Toxicology information

**Likely routes of exposure:** N/A

**Symptoms related to the physical, chemical and toxicological characteristics:**

**Eye contact:** Irritating and will injure eye tissue if not removed promptly. Prolonged vapor contact may cause conjunctivitis.

**Skin contact:** Isocyanates react with skin protein and moisture and can cause severe irritation. Has been known to cause allergic skin reaction in humans. Prolonged contact may cause blisters. Cured material is difficult to remove.

**Inhalation:** High vapor concentrations are irritating to the eyes and respiratory tract causing runny nose, sore throat, coughing, chest discomfort, shortness of breath, and reduced lung function (breathing obstruction). The solvent vapors are anesthetic, cause headaches and dizziness and may have other central nervous system effects, including death. 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 TLV. Sensitization may be either temporary or permanent.

**Ingestion:** Can result in irritation and possible corrosive action in the mouth, stomach tissue, and digestive tract. Vomiting may cause aspiration of the solvent resulting in chemical pneumonitis.

**Delayed and immediate effects and also chronic effects from short and long term exposure:** N/A

**Numerical measures of toxicity:**

Ingredient name	CAS No.	%	Acute Oral LD50	Acute Dermal LD50	Acute Inhalation LD50
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	60-100%	> 5,000 mg/kg (rat)	> 5,000 mg/kg (rabbit)	390-453 mg/m <sup>3</sup> , aerosol, 4 hrs (rat, male/female)
Hexamethylene-1,6-Diisocyanate	822-06-0	< 0.1%	Not available	Not available	Not available



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### Section 12. Ecological information

Ecotoxicity: N/A

Persistence and degradability: N/A

Bioaccumulative potential: N/A

Mobility in soil: N/A

Other adverse effects: N/A

### Section 13. Disposal considerations

Disposal methods • Dispose of in accordance with federal, state and local regulations.

### Section 14. Transport information

UN number	UN 3082
UN proper shipping name	DOT: Other regulated substances, liquid, n.o.s. (contains Hexamethylene-1,6-Diisocyanate), 9, PG III, UN 3082 IMDG: Not Regulated IATA: Not Regulated
Transport hazard class(es)	9
Packing group, if applicable	III
Environmental hazards	N/A
Transport in bulk	N/A
Special precautions for user	N/A

#### Additional transport information

\*When in individual containers of less than the Product RQ (45,359 kg), this material ships as non-regulated.

### Section 15. Regulatory information

Safety, health and environmental regulations • Not meant to be all-inclusive. Selected regulations presented.

SARA Title III Section 311/312 • Immediate health hazard, delayed health hazard, reactive health hazard  
TSCA Status • Listed on TSCA inventory.  
OSHA Hazard Comm. Std. • See Section 2.

Homopolymer of Hexamethylene Diisocyanate: MA, PA, NJ

Hydrophylic Aliphatic Polyisocyanate based on Hexamethylene Diisocyanate: NJ

CA = California Haz. Subst. List; CA65 = California Safe Drinking Water and Toxics Enforcement Act List; CT = Connecticut Tox. Subst. List; FL = Florida Subst. List; IL = Illinois Tox. Subst. List; LA = Louisiana Haz. Subst. List; MA = Massachusetts Subst. List; ME = Maine Haz. Subst. List; MN = Minnesota Haz. Subst. List; NJ = New Jersey Haz. Subst. List; NJ2 = New Jersey Other; PA = Pennsylvania Haz. Subst. List; PA2 = Pennsylvania Non-hazardous present at 3% or Greater; RI = Rhode Island Haz. Subst. List.

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### Section 16. Other information

**Date of preparation:** 4/10/2018

To the best of our knowledge, the information contained herein is accurate. Final determination of the suitability of any material is the sole responsibility of the users. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.