

**Safety Data Sheet**

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 1 of 14

**Rhino 4421-HTR-2 Epoxy Hardener****SECTION 1: Identification****Product Identifier****Product Name:** Rhino 4421-HTR-2 Epoxy Hardener**Product code:** 4421-HTR-2**Recommended Use of the Product and Restriction on Use****Relevant Identified Uses:** For Professional and Industrial Use Only**Uses Advised Against:** Not determined or not applicable.**Reasons Why Uses Advised Against:** Not determined or not applicable.**Manufacturer or Supplier Details****Manufacturer:****United States**Rhino Linings Corporation  
9747 Businesspark Avenue  
San Diego, CA 92131  
858-450-0441  
www.rhinolinings.com**Emergency Telephone Number:****North America**CHEMTREC  
800-424-9300 (24/7)**SECTION 2: Hazard(s) Identification****GHS Classification:**Acute toxicity (oral), category 4  
Acute toxicity (dermal), category 3  
Acute toxicity (inhalation), category 2  
Skin corrosion, category 1A  
Serious eye damage, category 1  
Skin sensitization, category 1  
Chronic aquatic hazard, category 3**Label elements****Hazard Pictograms:****Signal Word:** Danger**Hazard statements:**H314 Causes severe skin burns and eye damage  
H318 Causes serious eye damage  
H317 May cause an allergic skin reaction

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 2 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

H302 Harmful if swallowed  
H311 Toxic in contact with skin  
H330 Fatal if inhaled  
H412 Harmful to aquatic life with long lasting effects

### Precautionary Statements:

P201 Obtain special instructions before use  
P202 Do not handle until all safety precautions have been read and understood  
P260 Do not breathe dust, fumes, gas, mist, vapors or spray.  
P264 Wash any exposed skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product  
P271 Use only outdoors or in a well-ventilated area  
P272 Contaminated work clothing must not be allowed out of the workplace  
P280 Wear protective gloves, protective clothing, eye protection and face protection.  
P284 In case of inadequate ventilation wear respiratory protection.  
P273 Avoid release to the environment  
P310 Immediately call a POISON CENTER/doctor.  
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention  
P363 Wash contaminated clothing before reuse  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P320 Specific treatment is urgent (see Sections 4-8 of this SDS and any supplemental information on the product label).  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P405 Store locked up  
P403+P233 Store in a well-ventilated place. Keep container tightly closed  
P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

**Hazards Not Otherwise Classified:** None

## SECTION 3: Composition/Information on Ingredients

Identification	Name	Weight %
CAS Number: 2855-13-2	Isophorone diamine	45-55
CAS Number: 6864-37-5	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	15-25
CAS Number: 9046-10-0	Poly(propylene glycol) bis(2-aminopropyl ether)	10-20
CAS Number: 140-31-8	1-Piperazineethanamine	1-10
CAS Number: 25068-38-6	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	1-5

### Additional Information:

Specific chemical identity and/or exact percentage (concentration) of each ingredient may be held as confidential business information (CBI). Any ingredient not disclosed in this section may have been

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 3 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

determined not to be hazardous to health or the environment, or it may be present at a level below its disclosure threshold.

### SECTION 4: First Aid Measures

#### Description of First Aid Measures

##### General Notes:

Show this Safety Data Sheet to the doctor in attendance.

##### After Inhalation:

Treatment is urgent. Seek emergency medical treatment. If inhaled, remove person to fresh air and place in a position comfortable for breathing. Keep person at rest. If breathing is difficult, administer oxygen. If breathing has stopped, provide artificial respiration.

##### After Skin Contact:

Treatment is urgent. Seek emergency medical treatment. Remove contaminated clothing and shoes. Rinse skin with copious amounts of water [shower] for several minutes. Launder contaminated clothing before reuse.

##### After Eye Contact:

Immediately rinse eyes with plenty of gently flowing lukewarm water for 15 minutes. Remove contact lenses if present and easy to do so. Protect unexposed eye. Seek immediate medical attention, preferably from an ophthalmologist.

##### After Swallowing:

If swallowed, DO NOT induce vomiting unless told to do so by a physician or poison control center. Rinse mouth with water. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, place on the left side with head down to prevent aspiration of liquid into the lungs. Seek immediate medical attention.

#### Most Important Symptoms and Effects, Both Acute and Delayed

##### Acute Symptoms and Effects:

Exposure to skin may result in redness, pain, burning, inflammation and tissue damage. Exposure to eyes may result in irritation, redness, pain, inflammation, itching, burning, tearing, corneal damage and loss of vision. Exposure via inhalation may result in cough, sore throat, burning sensation and shortness of breath. Exposure via ingestion may result in burns of the mouth and throat, abdominal pain, burning sensation in the throat and chest, nausea, vomiting, shock or collapse.

Dermal exposure may cause an allergic skin reaction. Symptoms may include irritation, redness, pain, rash, inflammation, itching, burning and dermatitis.

Acute oral exposure may lead to dizziness, drowsiness, headache, breathing difficulties, nausea, vomiting, abdominal pain, and lowering of consciousness. Adverse effects are dependent on exposure (dose, concentration, contact time).

Acute inhalation exposure may lead to depression of the central nervous system. Symptoms include dizziness, drowsiness, headache, breathing difficulties, nausea, vomiting, abdominal pain, and lowering of consciousness. Exposure far above any stated OELs may result in respiratory depression, unconsciousness and death. Adverse effects are dependent on exposure (dose, concentration, contact time).

##### Delayed Symptoms and Effects:

Effects are dependent on exposure (dose, concentration, contact time).

#### Immediate Medical Attention and Special Treatment

##### Specific Treatment:

In case of eye contact, seek prompt medical attention while rinsing is continued.

In case of skin contact, seek prompt medical attention while rinsing is continued.

In case of ingestion, seek prompt medical attention.

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 4 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

Exposure to this product via inhalation contact requires emergency medical treatment.

### Notes for the Doctor:

Treat symptomatically.

## SECTION 5: Firefighting Measures

### Extinguishing Media

#### Suitable Extinguishing Media:

Water mist/fog, carbon dioxide, dry chemical or alcohol resistant foam.

#### Unsuitable Extinguishing Media:

Do not use water jet.

### Specific Hazards During Fire-Fighting:

Thermal decomposition may produce irritating/toxic fumes/gases.

### Special Protective Equipment for Firefighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full-face piece operated in positive pressure mode.

### Special precautions:

DO NOT GET WATER INSIDE CONTAINERS. Avoid contact with skin, eyes, hair and clothing. Do not breathe fumes/gas/mists/aerosols/vapors/dusts. Move containers from fire area if safe to do so. Use water spray/fog for cooling fire exposed containers. Avoid unnecessary run-off of extinguishing media which may cause pollution.

## SECTION 6: Accidental Release Measures

### Personal Precautions, Protective Equipment, and Emergency Procedures:

Evacuate unnecessary personnel and prevent entry. Ventilate area. Extinguish any sources of ignition. Wear recommended personal protective equipment (see Section 8). Do not get on skin, eyes or on clothing. Avoid breathing mist, vapor, dust, fume and spray. Do not walk through spilled material. Wash thoroughly after handling. Remove contaminated clothing with proper techniques in order to prevent contact with skin or eyes. Place contaminated clothing in a sealed container for future disposal.

### Environmental Precautions:

Prevent further leakage or spillage if safe to do so. Prevent from reaching drains, sewers and waterways. Discharge into the environment must be avoided.

### Methods and Material for Containment and Cleaning Up:

Fatal if inhaled. Put on appropriate personal protective equipment, including a self-contained breathing apparatus (see Section 8) before entering area of spill or leak. Avoid breathing dust, mist, fumes, vapors or spray. Do not touch damaged containers or spilled material unless wearing appropriate personal protective clothing. Stop leak if you can do it without risk. Contain and collect spillage and place in suitable container for future disposal. Dispose of in accordance with all applicable regulations (see Section 13).

### Reference to Other Sections:

For personal protective equipment see Section 8. For disposal see Section 13.

## SECTION 7: Handling and Storage

### Precautions for Safe Handling:

Use appropriate personal protective equipment (see Section 8). Prevent skin contact. Do not get in eyes. Use only with adequate ventilation. Do not add water to the corrosive product. If it is necessary to mix a corrosive product with water, do so slowly adding the corrosive to cold water, in small amounts, and stir frequently. Avoid breathing mist/vapor/spray/dust. Do not eat, drink, smoke, or use personal products when handling chemical substances. Wash affected areas thoroughly after handling. Keep away from incompatible

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 5 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

materials (See Section 10). Keep containers tightly closed when not in use. Keep only in original packaging.

### Conditions for Safe Storage, Including Any Incompatibilities:

Store in cool, dry, well-ventilated location out of direct sunlight and away from exit paths. Store in a corrosion-resistant container with a resistant inner liner. Inspect containers and storage area regularly for signs of leak and damage. Store containers at a convenient height for handling, below eye level if possible. High shelving increases the risk of dropping containers, personal injury and exposure. Ensure that appropriate fire fighting and spill-clean up equipment is readily available. Keep away from food and beverages. Protect from freezing and physical damage. Store away from heat, open flames and other sources of ignition. Store separately. Keep container tightly sealed. Store away from incompatible materials (See Section 10).

Recommended storage temperature: 16 - 32°C (60 - 90°F)

## SECTION 8: Exposure Controls/Personal Protection

Only those substances with limit values have been included below.

### Occupational Exposure Limit Values:

No occupational exposure limits noted for the ingredient(s).

### Biological Limit Values:

No biological exposure limits noted for the ingredient(s).

### Information on Monitoring Procedures:

Not determined or not applicable.

### Appropriate Engineering Controls:

Emergency eye wash stations and safety showers should be available in the immediate vicinity of use or handling. Provide adequate ventilation to maintain the airborne concentrations of vapor, mists, and/or dusts below the applicable workplace exposure limits, while observing recognized national standards (or equivalent).

### Personal Protection Equipment

#### Eye and Face Protection:

Use safety glasses with side shields or goggles. Consider the use of a face shield for splash protection. Use eye protection equipment that has been tested and approved by recognized national standards (or equivalent).

#### Skin and Body Protection:

Chemical resistant, impervious gloves approved by the appropriate standards. Gloves must be inspected prior to use. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Avoid skin contact with used gloves. Appropriate techniques should be used to remove used gloves and contaminated clothing. Full body protection should be worn. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Ensure that all personal protective equipment is approved by recognized national standards (or equivalent).

#### Respiratory Protection:

If engineering controls do not maintain airborne concentrations below the applicable workplace exposure limits, or to an acceptable level (if exposure limits have not been established), a respirator approved by recognized national standards (or equivalent) must be worn.

### General Hygienic Measures:

When handling chemical products, do not eat, drink or smoke. Wash hands after handling, before breaks, and at the end of the workday. Avoid contact with skin, eyes and clothing. Wash contaminated clothing before reuse. Perform routine housekeeping.

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 6 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

### SECTION 9: Physical and Chemical Properties

#### Information on Basic Physical and Chemical Properties

<b>Appearance</b>	Liquid
<b>Odor</b>	Amine
<b>Odor threshold</b>	Not determined or not available.
<b>pH</b>	11.0
<b>Melting point/freezing point</b>	Not determined or not available.
<b>Initial boiling point/range</b>	>252°C (>485°F)
<b>Flash point (closed cup)</b>	>116°C (>240°F)
<b>Evaporation rate</b>	Not determined or not available.
<b>Flammability (solid, gas)</b>	Not determined or not available.
<b>Upper flammability/explosive limit</b>	Not determined or not available.
<b>Lower flammability/explosive limit</b>	Not determined or not available.
<b>Vapor pressure</b>	Not determined or not available.
<b>Vapor density</b>	Not determined or not available.
<b>Density</b>	Not determined or not available.
<b>Relative density</b>	Not determined or not available.
<b>Solubilities</b>	Not determined or not available.
<b>Partition coefficient (n-octanol/water)</b>	Not determined or not available.
<b>Auto/Self-ignition temperature</b>	Not determined or not available.
<b>Decomposition temperature</b>	Not determined or not available.
<b>Dynamic viscosity</b>	Not determined or not available.
<b>Kinematic viscosity</b>	Not determined or not available.
<b>Explosive properties</b>	Not determined or not available.
<b>Oxidizing properties</b>	Not determined or not available.

### SECTION 10: Stability and Reactivity

#### Reactivity:

Not reactive under recommended handling and storage conditions.

#### Chemical Stability:

Stable under recommended handling and storage conditions.

#### Possibility of Hazardous Reactions:

Hazardous reactions are not anticipated under recommended conditions of handling and storage.

#### Conditions to Avoid:

Do not freeze. To avoid thermal decomposition, do not overheat. Avoid prolonged exposure above 250°C (482°F). Potentially violent decomposition can occur above 350°C (662°F).

#### Incompatible Materials:

N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations. Nitrous acid and other nitrosating agents, organic acids (i.e. acetic acid, citric acid etc.), Mineral acids, Oxidizing agents and Sodium hypochlorite, Halogenated compounds and amines. Products slowly corrodes copper, aluminum, zinc, and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide, possibly creating an explosion. Exothermic reaction.

#### Hazardous Decomposition Products:

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 7 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

Under normal conditions of storage and use, hazardous decomposition products should not be produced. In fire conditions, depending on temperature, air supply and presence of other materials, decomposition products can include, but are not limited to Nitric Acid, Ammonia, Nitrogen Oxides, Nitrogen oxide can react with water vapors to form corrosive nitric acid, carbon monoxide, Carbon dioxide, or Nitrosamine (Section 3).

### SECTION 11: Toxicological Information

#### Acute Toxicity

##### Assessment:

Harmful if swallowed.

Toxic in contact with skin.

Fatal if inhaled.

**Product Data:** No data available.

##### Substance Data:

Name	Route	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	oral	LD50 Rat: > 320 - < 460 mg/kg
	inhalation	LC50 Rat: 0.42 mg/L (4 hr (aerosol))
	dermal	LD50 Rabbit: > 200 - < 400 mg/kg
Isophorone diamine	oral	LD50 Rat: 1030 mg/kg
	inhalation	LC50 Rat: > 5.01 mg/L (4 hr (aerosol))
	dermal	LD50 Rat: >2000 mg/kg
Poly(propylene glycol) bis(2-aminopropyl ether)	oral	LD50 Rat: 2885.3 mg/kg
	dermal	LD50 Rabbit: 2979.7 mg/kg
1-Piperazineethanamine	oral	LD50 Rat: >1000 mg/kg
	dermal	LD50 Rabbit: 866 mg/kg
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	oral	LD50 Rat: >2000 mg/kg
	dermal	LD50 Rat: >2000 mg/kg

#### Skin Corrosion/Irritation

##### Assessment:

Causes severe skin burns and eye damage.

##### Product Data:

No data available.

##### Substance Data:

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Causes severe skin burns.
Isophorone diamine	Causes severe skin burns
Poly(propylene glycol) bis(2-aminopropyl ether)	Causes severe skin burns.
1-Piperazineethanamine	Causes severe skin burns.
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Causes skin irritation.

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 8 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

### Serious Eye Damage/Irritation

**Assessment:**

Causes serious eye damage.

**Product Data:**

No data available.

**Substance Data:**

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Causes serious eye damage.
Isophorone diamine	Causes serious eye damage.
Poly(propylene glycol) bis(2-aminopropyl ether)	Causes serious eye damage.
1-Piperazineethanamine	Causes serious eye damage.
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Causes serious eye irritation.

### Respiratory or Skin Sensitization

**Assessment:**

May cause an allergic skin reaction.

**Product Data:**

No data available.

**Substance Data:**

Name	Result
Isophorone diamine	May cause an allergic skin reaction.
1-Piperazineethanamine	May cause an allergic skin reaction.
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	May cause an allergic skin reaction.

### Carcinogenicity

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:** No data available.

**Substance Data:** No data available.

**International Agency for Research on Cancer (IARC):**

Name	Classification
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Not Applicable
Isophorone diamine	Not Applicable
Poly(propylene glycol) bis(2-aminopropyl ether)	Not Applicable
1-Piperazineethanamine	Not Applicable
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Not Applicable

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 9 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

### National Toxicology Program (NTP):

Name	Classification
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Not Applicable
Isophorone diamine	Not Applicable
Poly(propylene glycol) bis(2-aminopropyl ether)	Not Applicable
1-Piperazineethanamine	Not Applicable
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Not Applicable

**OSHA Carcinogens:** Not applicable

### Germ Cell Mutagenicity

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:**

No data available.

**Substance Data:** No data available.

### Reproductive Toxicity

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:**

No data available.

**Substance Data:** No data available.

### Specific Target Organ Toxicity (Single Exposure)

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:**

No data available.

**Substance Data:** No data available.

### Specific Target Organ Toxicity (Repeated Exposure)

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:**

No data available.

**Substance Data:** No data available.

### Aspiration toxicity

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:**

No data available.

**Substance Data:** No data available.

### Information on Likely Routes of Exposure:

No data available.

### Symptoms Related to the Physical, Chemical, and Toxicological Characteristics:

No data available.

### Other Information:

No data available.

## SECTION 12: Ecological Information

### Acute (Short-Term) Toxicity

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 10 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

**Assessment:** Based on available data, the classification criteria are not met.

**Product Data:** No data available.

### Substance Data:

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Fish LC50 <i>Leuciscus idus</i> : 31.6 mg/L (96 hr)
	Aquatic Invertebrates EC50 <i>Daphnia magna</i> : 4.6 mg/L (48 hr)
	Aquatic Plants EC50 <i>Scenedesmus subspicatus</i> : >5 mg/L (72 hr [growth rate])
Isophorone diamine	Aquatic Plants EC50 Freshwater algae: >50 mg/L (72 hr [growth rate])
	Fish LC50 <i>Leuciscus idus</i> : 110 mg/L (96 hr)
	Aquatic Invertebrates EC50 <i>Daphnia magna</i> : 23 mg/L (48 hr [mobility])
Poly(propylene glycol) bis(2-aminopropyl ether)	Aquatic Plants EC50 <i>Pseudokirchneriella subcapitata</i> : 15 mg/L (72 hr [growth rate])
	Aquatic Invertebrates EC50 <i>Daphnia Magna</i> : 80 mg/L (48 hr[immobilization])
	Fish EC50 <i>Oncorhynchus mykiss</i> : >15 mg/L (96 hr [mortality])
1-Piperazineethanamine	Aquatic Plants EC50 <i>Selenastrum capricornutum</i> : >1000 mg/L (72 hr [growth rate])
	Aquatic Invertebrates EC50 <i>Daphnia magna</i> : 58 mg/L (48 hr [mobility])
	Fish LC50 <i>Pimephales promelas</i> : 2190 mg/L (96 hr)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Aquatic Invertebrates LC50 <i>Daphnia magna</i> : 2.7 mg/L (48 hours)
	Fish LC50 <i>Oncorhynchus mykiss</i> : 1.2 mg/L (96 hr)
	Aquatic Plants EC50 <i>S. capricornutum</i> : >11 mg/L (72 hr [growth rate])

### Chronic (Long-Term) Toxicity

#### Assessment:

Harmful to aquatic life with long lasting effects.

**Product Data:** No data available.

#### Substance Data:

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Aquatic Invertebrates EC50 <i>Daphnia magna</i> : >7.2 mg/L (21 d)
Isophorone diamine	Aquatic Invertebrates NOEC <i>Daphnia magna</i> : 3 mg/L (21 d [reproduction])

### Persistence and Degradability

**Product Data:** No data available.

#### Substance Data:

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Under test conditions, no biodegradation observed (3% degradation after 28 days).
Isophorone diamine	Substance is not readily biodegradable.
Poly(propylene glycol) bis(2-aminopropyl ether)	The substance is not readily biodegradable. 0% degradation, measured by CO2 evolution, after 28 days.
1-Piperazineethanamine	Not readily biodegradable. 0% degradation in water after 28 days
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Not readily biodegradable. 6 - 12% degradation, measured by CO2 evolution, after 28 days.

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 11 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

### Bioaccumulative Potential

**Product Data:** No data available.

**Substance Data:**

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Does not significantly bioaccumulate in organisms (maximum BCF of <60 after 60 days).
Isophorone diamine	Substance has low potential for bioaccumulation. BCF: 3.16 (Aquatic sediment) [QSAR]
Poly(propylene glycol) bis(2-aminopropyl ether)	The substance has low potential for bioaccumulation based on estimated [QSAR] BCF of 3.16 L/kg (freshwater fish).
1-Piperazineethanamine	Bioaccumulation is not expected. BCF: 2.8 - 6.3 (aquatic species)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Low potential for bioaccumulation. BCF: 31 dimensionless (QSAR)

### Mobility in Soil

**Product Data:** No data available.

**Substance Data:**

Name	Result
2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Moderately mobile (log Koc: 2.6).
Isophorone diamine	Substance is moderately mobile with moderate potential for adsorption to soil and sediment (Koc: 928 at 25 °C).
Poly(propylene glycol) bis(2-aminopropyl ether)	The substance is mobile in soil with low potential for adsorption to soil and sediment [Koc: 52.1 L/kg]
1-Piperazineethanamine	Hardly Mobile (Log Koc: 4.57)

### Results of PBT and vPvB assessment

**Product Data:**

**PBT assessment:** This product does not contain any substances that are assessed to be a PBT.

**vPvB assessment:** This product does not contain any substances that are assessed to be a vPvB.

**Substance Data:**

**PBT assessment:**

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Substance is not PBT.
Isophorone diamine	The substance is considered as P (persistent), but not as bioaccumulative or toxic.
Poly(propylene glycol) bis(2-aminopropyl ether)	The substance is not PBT.
1-Piperazineethanamine	The substance is not PBT.

**vPvB assessment:**

2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)	Substance is not vPvB.
Isophorone diamine	The substance is considered as vP (very persistent), but not as bioaccumulative or toxic.
Poly(propylene glycol) bis(2-aminopropyl ether)	The substance is not vPvB.

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 12 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

1-Piperazineethanamine

The substance is not vPvB.

**Other Adverse Effects:** No data available.

### SECTION 13: Disposal Considerations

#### Disposal Methods:

The generation of waste should be avoided or minimized wherever possible. If product becomes a waste, it does not meet criteria of hazardous waste as defined in 40 CFR 261, Subpart C and D. Do not discharge into sewer system. Spill cleanup residues may still be subject to RCRA storage and disposal requirements.

Dispose waste in compliance with local, state and federal regulations via licensed waste disposal contractor.

#### Contaminated packages:

Even after emptying, container may retain residues. Containers should be completely emptied and safely stored until appropriately reconditioned or disposed through licensed contractor in accordance with government regulation. This material and its container must be disposed of in a safe way.

### SECTION 14: Transport Information

#### United States Transportation of Dangerous Goods (49 CFR DOT)

<b>UN Number</b>	UN2289
<b>UN Proper Shipping Name</b>	ISOPHORONEDIAMINE
<b>UN Transport Hazard Class(es)</b>	8 
<b>Packing Group</b>	III
<b>Environmental Hazards</b>	None
<b>Special Precautions for User</b>	None
<b>Additional Information</b>	This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

#### International Maritime Dangerous Goods (IMDG)

<b>UN Number</b>	UN2289
<b>UN Proper Shipping Name</b>	ISOPHORONEDIAMINE
<b>UN Transport Hazard Class(es)</b>	8 
<b>Packing Group</b>	III
<b>Environmental Hazards</b>	None
<b>Special Precautions for User</b>	None

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 13 of 14

**Rhino 4421-HTR-2 Epoxy Hardener**

<b>Additional Information</b>	This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.
-------------------------------	--

**International Air Transport Association Dangerous Goods Regulations (IATA-DGR)**

<b>UN Number</b>	UN2289
<b>UN Proper Shipping Name</b>	ISOPHORONEDIAMINE
<b>UN Transport Hazard Class(es)</b>	8 
<b>Packing Group</b>	III
<b>Environmental Hazards</b>	None
<b>Special Precautions for User</b>	None
<b>Additional Information</b>	This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

**SECTION 15: Regulatory Information**

**United States Regulations**

- Inventory Listing (TSCA):** All ingredients are listed-active or exempt.
- Significant New Use Rule (TSCA Section 5):** None of the ingredients are listed.
- Export Notification under TSCA Section 12(b):** None of the ingredients are listed.
- SARA Section 302 Extremely Hazardous Substances:** None of the ingredients are listed.
- SARA Section 313 Toxic Chemicals:** None of the ingredients are listed.
- CERCLA:** None of the ingredients are listed.
- RCRA:** None of the ingredients are listed.
- Section 112(r) of the Clean Air Act (CAA):** None of the ingredients are listed.

**Massachusetts Right to Know:**

140-31-8	1-Piperazineethanamine	Listed
----------	------------------------	--------

**New Jersey Right to Know:**

2855-13-2	Isophorone diamine	Listed
140-31-8	1-Piperazineethanamine	Listed

**New York Right to Know:**

2855-13-2	Isophorone diamine	Listed
140-31-8	1-Piperazineethanamine	Listed

# Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 02.24.2023

Page 14 of 14

## Rhino 4421-HTR-2 Epoxy Hardener

### Pennsylvania Right to Know:

140-31-8	1-Piperazineethanamine	Listed
----------	------------------------	--------

**California Proposition 65:** None of the ingredients are listed.

**Additional information:** Not determined.

## SECTION 16: Other Information

**Abbreviations and Acronyms:** None

### Disclaimer:

The data set forth in this sheet are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. Rhino Linings Corporation makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereof. Sections 11/12 Disclaimer (Toxicity/Ecotoxicity): This product itself has not been tested. Information given is based on data on the components and the toxicology of similar products. Section 14 (Transport Information): Information provided in Section 14 is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

**NFPA:** 3-1-0

**HMIS:** 3-1-0

**Initial Preparation Date:** 02.24.2023

### Revision Notes:

Revision Date	Notes
2018-09-21	
2020-06-04	Section 9 - pH level adjustment
2023-02-15	Internal Review

**End of Safety Data Sheet**