


# TECHNICAL & SAFETY DATA SHEET

<b>Technical Data Sheet</b>		
<b>L-21 Novolac Epoxy Liner</b>		
<b>POLYMER NATION CHEMICAL COMPANY, LLC</b>		
<p><b>Product Overview:</b> L-21 is a high viscosity, nonylphenol-free, novolac resin (not a Bis F masquerading as a novolac). It has been designed as a chemical resistant liner for higher levels of protection than our standard Bisphenol A epoxies.</p> <p><b>Uses:</b> L-21 is most often used as a high-build finish coat in areas that require high heat and/or a high degree of protection from chemical attack. It provides protection from acids, caustics and solvents. For specific chemical resistance information contact Lab@polymerNation.com</p> <p><b>Preparation:</b> The preparation method for each project is determined by a full understanding of the substrate to be coated, the chemistry of the coating system being used, the coating system thickness, and numerous other factors. The coating installer should fully read and understand ICRI Guideline NO.03732 and OSHA 29 CFR 1926.1153 before starting preparatory work. The aim, of preparing a substrate for coating applications, is to roughen the surface, remove weak layers, contaminants, dirt, debris and present a solid, clean, dry substrate for the primer. If unsure as to the level of preparation needed contact Polymer Nation at Lab@polymerNation.com.</p> <p>The data below represents the most pertinent information needed by a professional installer to understand and efficiently install this material. The data was gathered at temperatures of 72-75 F and 30-50% RH. A wide array of independent and company test data has been compiled on this product but is too large to place on this Technical Data Sheet. Please direct inquiries for detailed test reports on this product to Lab@polymerNation.com.</p>		
<b>Description</b>	<b>Results</b>	<b>Notes</b>
<b>Kit Yield in Gallons</b>	3, 15, 165	Material can be supplied in larger packaging upon request and with minimum quantities
<b>Number of Components</b>	2	
<b>Mix Ratio by Volume</b>	2:1	It is always preferred to mix the entire kit, whenever possible, to avoid off-ratio mixtures
<b>Ideal Application Temperatures</b>	60F-90F	Verify that substrate temperature is above 5 degrees of dewpoint during application and cure of material to avoid a potential amine blush
<b>Mixed Viscosity in cP@25C/77F</b>	1200	Warmer temperatures will reduce viscosity and lower temperatures will increase viscosity
<b>Gel Time</b>	45 min.	Warmer temperatures will decrease gel time and lower temperatures will increase gel time
<b>Dry to Touch</b>	6 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
<b>Through Dry</b>	10 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
<b>Dry to Walk</b>	12 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
<b>Dry to Lightly Use</b>	24 Hours	Warmer temperatures will reduce time and colder temperatures will increase time
<b>Full Cure</b>	7 Days	Warmer temperatures will reduce time and colder temperatures will increase time
<b>Shore Hardness at 24 hours</b>	D65	Warmer temperatures will increase hardness
<b>Shore Hardness at 7 days</b>	D85	Warmer temperatures will shorten time to reach full hardness
<b>Gloss @ 60 Degree Angle</b>	80-85	Applying material close to dew point will decrease gloss and may result in an amine blush
<b>VOC's of Mixed Material</b>	<50g/L	EPA Method 24
<b>Color Scale per ASTM D1500</b>	N/A	Clear to slightly amber before filler is introduced
<b>Solids by Volume Mixed</b>	100%	
<b>Storage</b>	60F-90F	Store material between 60-90 degrees F in a protected dry location.
<b>Odor</b>	Subtle	Measuring odor offensiveness is difficult so experience with chemicals has been consulted here
<b>Application Thickness in Mils</b>	6-12 mils depending on porosity of substrate and desired purpose	
<b>Disposal</b>	Dispose of material, containers, solvents, etc., per Federal, State and local guideline, rules and laws	
<b>Available Colors</b>	Clear and Color Packs	
<b>Mixing &amp; Installation</b>	Combine all of part A and B into a single container, large enough to accept the entire kit. Mix at 350 RPM for 2-3 minutes using an appropriate mixing blade and making sure not to introduce excessive air into the solution. Pour the entire content from the container onto the floor and follow normal squeegee and back roll techniques. Recoat within 24 hours. Clean tools with a solvent similar to Xylene or Acetone.	
<p>Polymer Nation believes the information contained herein to be true and accurate. Information contained herein is for evaluation purposes only. Polymer Nation makes no warranty, express or implied based upon this literature and assumes no liability or responsibility for consequential or incidental damages as a result of the use of these products and systems described herein, including any warranty of merchantability or fitness. Last Rev. 4.14.22</p> <p style="text-align: center;"><a href="http://PolymerNation.com">PolymerNation.com</a></p>		

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## Chemical Resistance Testing

	1 Day	7 Days
<b>ACIDS, INORGANIC</b>		
10% Hydrochloric	E	E
30% Hydrochloric	E	E
10% Nitric	E	E
50% Phosphoric	E	G
37% Sulfuric	E	E
98% Sulfuric	E	E
<b>ACIDS, ORGANIC</b>		
10% Acetic	G	F
10 % Citric	E	E
Oleic	E	E
<b>ALKALIES</b>		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
<b>SOLVENTS</b>		
Ethylene Glycol	E	E
Isopropanol	E	E
Methanol	P	P
d-Limonene	E	E
Jet Fuel	E	E
Gasoline	E	E
Mineral Spirits	E	E
Xylene	E	E
Methylene Chloride	P	P
MEK	P	P
PMA	G	F
<b>MISCELLANEOUS</b>		
20% Ammonium Nitrate	E	E
Brake Fluid	E	E
Bleach	E	E
Motor Oil	E	E
Skydrol®500B	E	E
Skydrol®LD4	E	E
20% Sodium Chloride	E	E
10% TSP	E	E

**Legend:**

**E- Excellent (Not Effected)**

**G-Good (Limited Negative Effect)**

**F-Fair (Moderate Negative Effect)**

**P-Poor (Unsatisfactory)**

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DATE ISSUED:	8/22/22
MSDS REF. No:	L20 Part A/E6

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** L-21 Part A  
**Product Code:** E6  
**Supplier/Manufacturer:** POLYMER NATION CHEMICAL  
1949 Swanson Court  
Gurnee, IL 60031  
(847) 774-5038

**EMERGENCY PHONE:** CHEMTREC, US (800) 424-9300 24-hours  
**ORIGINAL DATE ISSUED:** 3/21/13 **REVISION DATE:** 2/12/2020

**Recommended end use:** Half of a two-component system designed for application and use as a protective coating.

## 2. HAZARDS IDENTIFICATION

### Classification of Substance

#### GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):

Skin Irritation – Category 2  
Eye Irritation – Category 2B  
Skin Sensitization – Category 1  
Germ Cell Mutagenicity – Category 2  
Acute Aquatic Hazard – Category 2  
Chronic Aquatic Hazard – Category 2

### GHS Label Elements, Including Precautionary

**Statements GHS Signal Word:** **DANGER**

**GHS Hazard Pictograms:**



### GHS Hazard Statements:

H315 – Causes skin irritation  
H317 – May cause an allergic skin reaction  
H320 – Causes eye irritation  
H341 – Suspected of causing genetic defects  
H401 – Toxic to aquatic life  
H411 – Toxic to aquatic life with long lasting effects

### GHS Precautionary Statements:

P280 - Wear protective gloves/protective clothing/eye protection/face protection. P264 - Wash skin thoroughly after handling.  
P261 – Avoid breathing dust / fume / mist / vapor / spray.  
P273 – Avoid release into the environment.  
P302 + 352 – If on skin, wash with 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.  
P333+313 – If skin irritation or rash occurs, get medical attention.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Chemical Ingredients

CAS#	% by weight	Chemical Name
28064-14-4	80-100%	Product of Phenol-Formaldehyde Novolac with Epichlorohydrin
2210-79-9	7-15%	2,3-epoxypropyl o-tolyl ether
30499-70-8	0.5-3%	Polyfunctional Epoxy
Secret	1-5%	Inorganic White Pigment
1333-86-4	0.1-1%	Carbon Black

## 4. FIRST AID MEASURES

**After inhalation:** Move exposed person to fresh air. Get medical attention immediately. If it is suspected that fumes are still present, the rescuer should wear an appropriate make of self-contained breathing apparatus. Keep person warm and at rest. If not breathing or breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing air to give

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mouth to mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.  
**After skin contact:** Flush contaminated skin with plenty of water. Wash with soap and water. Remove contaminated clothing and shoes. May cause irritation and allergic reaction. Get medical attention if you feel unwell or if irritation occurs.  
**After eye contact:** Get medical attention immediately. Immediately flush eyes gently with large amounts of water for at least 20-30 minutes. Retract eyelids often. Check for and remove any contact lenses.  
**After swallowing:** Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

## 5. FIRE FIGHTING MEASURES

**Flash Point:** Not flammable or combustible.  
**Suitable extinguishing agents:** Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.  
**For safety reasons unsuitable extinguishing agents:** None.  
**Special hazards arising from the substance or mixture:** Hazardous decomposition products formed under fire conditions – carbon oxides.  
**Advice for firefighters:** Do not enter fire area without proper protection. Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH) approved or equivalent. See Section 10 – decomposition products possible. Fight fire from safe distance / protected location. Heat / impurities may increase temperature / build pressure / rupture closed containers, spreading fire, increasing risk of burns / injuries. Use water spray / fog for cooling.  
**Additional information:** Cool endangered receptacles with water spray.

## 6. ACCIDENTAL RELEASE MEASURES

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Do not touch or walk-through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protection equipment.  
**Environmental precautions:** Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Notify authorities of any releases to sewers, soils, waterways, or air.  
**Methods and material for containment and cleaning up:** Stop the leak if it can be done without risk. Move containers from the spill area. Prevent entry into sewers, waterways, or soils. Contain and collect spillage with non-combustible, absorbent material such as sand, earth, vermiculite, or diatomaceous earth. Place in container for disposal according to local regulations via a licensed waste disposal contractor. See Section 1 for emergency contact information and Section 13 for waste disposal.

## 7. HANDLING AND STORAGE

**Handling Precautions:** Can cause skin and eye irritation and allergic skin reaction. Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash hands and face before eating, drinking, and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.  
**Storage Requirements:** Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool, and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.  
**Further information about storage conditions:** Store in cool, dry conditions in well-sealed receptacles.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** Use local exhaust ventilation to maintain airborne concentrations below exposure limits. Respiratory protection may be required in addition to general room ventilation. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing and wash thoroughly before reuse. Shower after work using plenty of soap and water.  
**Personal Protective Equipment**  
**General protective and hygienic measures:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.  
**Respiratory protection:** Use a properly fitted, air purifying or air supplied respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards or the product and the safe working limits of the selected respirator.  
**Protection of hands:** Gloves should be impervious neoprene or rubber. Use of barrier cream is recommended. Clean thoroughly after each use.  
**Eye protection:** Eye protection such as chemical splash goggles and / or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should not be worn.  
**Body protection:** When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head, and face protection should be worn.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance/Physical State:</b>	Colorless to Light Amber Liquid	<b>Flash Point:</b>	>200°F / 95°C
<b>Specific Gravity (water=1@39.2F):</b>	1.14 at 77°F   25°C	<b>Autoignition Temperature:</b>	Not Available
<b>pH:</b>	Not Available	<b>Melting/Freezing Temp:</b>	40°C   104°F
<b>Boiling Point:</b>	336°C   637°F	<b>Ignition Temperature:</b>	Not Available
<b>Lower Explosive Limit:</b>	Not Applicable	<b>Upper Explosive Limit:</b>	Not Applicable
<b>Vapor Pressure:</b>	<0.1 mm Hg	<b>Vapor Density (air=1)</b>	Not Available
<b>Evaporation Rate (Bac=1):</b>	None	<b>Odor:</b>	Light possible
<b>Odor Threshold:</b>	Not Available		

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## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable under recommended storage conditions.

**Conditions to Avoid:** Avoid strong acids, bases in bulk and elevated temperatures.

**Materials to Avoid:** Reactive or incompatible with acids, oxidizers, amines.

**Decomposition – Hazardous:** Decomposition products formed under fire conditions may include carbon oxides, nitrogen oxides, aldehydes.

## 11. TOXICOLOGICAL INFORMATION

Oral LD50 >4000 mg/kg (rat); Dermal LD50 20,000 mg/kg (rabbit).

**Primary irritant effect:** 1). On the skin - Irritant; 2). On the eye - Irritant.

**Sensitization:** May cause skin or respiratory sensitization.

## 12. ECOLOGICAL INFORMATION

**Aquatic toxicity:** No data available.

**Persistence and degradability:** Persistent. Not readily biodegradable.

**Mobility in soil:** No data available.

## 13. DISPOSAL CONSIDERATIONS

**Recommendation:** The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residuals. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Uncleaned Packaging:** Recommendation: Disposal must be made according to official regulations.

## 14. TRANSPORT INFORMATION

### DOT Shipping Information

<b>DOT Proper Shipping Name:</b>	N/A – not DOT regulated		
<b>DOT Technical Name:</b>	N/A		
<b>DOT Hazard Class:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>DOT ID Number:</b>	N/A	<b>Packing Group</b>	N/A

### IMDG

<b>Technical Name:</b>	N/A – not regulated		
<b>Hazard Class:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>ID Number:</b>	N/A	<b>Packing Group</b>	N/A
<b>Special Marking:</b>	N/A		

### IATA

<b>Technical Name:</b>	N/A – not regulated		
<b>Hazard Class:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>ID Number:</b>	N/A	<b>Packing Group</b>	N/A
<b>Special Marking:</b>	N/A		

### ADR

<b>Technical Name:</b>	N/A – not regulated		
<b>Hazard Class:</b>	N/A	<b>Hazard Subclass:</b>	N/A
<b>ID Number:</b>	N/A	<b>Packing Group</b>	N/A
<b>Special Marking:</b>	N/A	<b>Limited Quantities:</b>	N/A

## 15. REGULATORY INFORMATION

### TSCA INVENTORY STATUS

All components are listed or exempt

### OSHA HAZARDS

Skin Sensitizer

Irritant

Corrosive Material

### HMIS Classification

Health Hazard;

2

### NFPA Rating

2

Flammability

1

1

Physical Hazards

0

0

### SARA TITLE III: Section 311/312 Hazard Class

Acute Health Hazard, Chronic Health Hazard

### SARA TITLE III: Section 313 (40CFR370)

This product does not contain a chemical which is listed in Section 313 at or above the de minimus concentrations

### CERCLA Information (40CFR302.4)

This material contains no hazardous or extremely hazardous substances at or above the de minimus concentrations as defined by

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CERCLA or SARA Title III, and release is therefore not reportable.

**California Proposition 65 Information:**

This product contains, no listed substances known to the state of California to cause cancer and/or reproductive toxicity.

## 16. OTHER INFORMATION

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable. This MSDS has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, POLYMER NATION CHEMICAL CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.

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DATE ISSUED:	8/22/22
MSDS REF. No:	L-20 Part B/H6

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** L-21 Part B  
**Product Code:** H6  
**Supplier/Manufacturer:** POLYMER NATION CHEMICAL  
1949 Swanson Court  
Gurnee, IL 60031  
(847) 774-5038

**EMERGENCY PHONE:** CHEMTREC, US (800) 424-9300 24-hours  
**ORIGINAL DATE ISSUED:** 3/21/13 **REVISION DATE:** 8/4/2022

**Recommended end use:** Half of a two-component system designed for application and use as a protective coating.

## 2. HAZARDS IDENTIFICATION

### Classification of Substance

#### GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):

H227 – Flammable Liquids 4  
H314 – Skin Corrosion 1  
H318 – Eye Damage 1  
H334 – Respiratory Sensitization  
H317 – Skin Sensitization  
H361 – Reproductive Damage

#### GHS Label Elements, Including Precautionary

Statements GHS Signal Word: **DANGER**

#### GHS Hazard Pictograms:



#### GHS Hazard Statements:

H227 – Combustible liquid  
H314 – Causes severe skin burns and eye damage  
H317 – May cause an allergic skin reaction  
H318 – Causes serious eye damage  
H334 – May cause an allergy or asthma symptoms or breathing difficulties if inhaled  
H361 – Suspected of damaging fertility or the unborn child

#### GHS Precautionary Statements:

P201 – Obtain special instructions before use.  
P202 – Do not handle until all safety precautions have been read and understood.  
P210 – Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.  
P260 – Do not breathe dust / fume / gas / mist / vapors / spray.  
P261 – Avoid breathing dust / fume / gas / mist / vapors / spray.  
P264 – Wash hands, forearms, and face thoroughly after handling.  
P272 – Contaminated work clothing must not be allowed out of workplace.  
P280 – Wear protective gloves / protective clothing / eye protection / face protection.  
P284 – In case of inadequate ventilation, wear respiratory protection.  
P301+P330+P331 – If swallowed, rinse mouth. DO NOT induce vomiting.  
P302+P352 – If on skin, wash with plenty of water.  
P303+P361+P353 – If on skin (or hair), immediately remove contaminated clothing. Rinse skin with water / shower.  
P304+P340 – If inhaled, remove person to fresh air and keep comfortable for breathing.  
P304+P341 – If inhaled and breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 – If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.  
P308+P313 – If exposed or concerned, get medical advice / attention.  
P310 – Immediately call a poison center or doctor.  
P321 – Specific treatment.  
P333+P313 – If skin irritation or rash occurs, get medical advice / attention.  
P342+P311 – If experiencing respiratory symptoms, get medical advice / attention.  
P363 – Wash contaminated clothing before reuse.

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P370+P378 – In case of fire, use media other than water to extinguish.

P403+P235 – Store in a well-ventilated place. Keep cool.

P405 – Store locked up.

P501 – Dispose of contents / container to hazardous or special waste collection point in accordance with local, regional, national and / or international regulations.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients		
CAS #	%	Chemical Name
694-83-7	Trade Secret	1,2-Cyclohexanediamine
61788-44-1	Trade Secret	Phenol, styrenated
38640-62-9	Trade Secret	Diisopropyl-naphthalene
39423-51-3	Trade Secret	Propylidyn-trimthanol, propoxylated, reaction products with ammonia
102-71-6	Trade Secret	Triethanolamine
110-85-0	Trade Secret	Piperazine
140-31-8	Trade Secret	1-Piperazineethanamine

Full text of hazard classes and H statements, see Section 16.

## 4. FIRST AID MEASURES

General information: If exposed or concerned, get medical advice / attention. Call a poison center / doctor / physician if you feel unwell. Call a physician immediately. After inhalation: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms, call a poison center or a doctor. After skin contact: Rinse skin with water / shower. Wash skin with plenty of water. Immediately remove all contaminated clothing. Call a physician immediately. If skin irritation or rash occurs, get medical advice / attention. After eye contact: Rinse eyes with water as a precaution. 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. Call a physician immediately. After swallowing: Rinse mouth. Do not induce vomiting. Call a physician immediately. Call a poison center / doctor / physician if you feel unwell. Most important symptoms and effects, both acute and delayed: After inhalation – may cause an allergy or asthma symptoms or breathing difficulties if inhaled. After skin contact – burns. May cause an allergic skin reaction. After eye contact – serious damage to eyes. After ingestion – burns.

## 5. FIRE FIGHTING MEASURES

**Flash Point:** 74° C

**Suitable extinguishing agents:** Water spray, dry powder, foam, carbon dioxide.

**Advice for firefighters:** Do not attempt to act without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

**Additional information:** Combustible liquid. This product is non-reactive under normal conditions of use, storage, and transport.

## 6. ACCIDENTAL RELEASE MEASURES

Ventilate spillage area. No open flames, no sparks, no smoking. Avoid contact with skin and eyes. Do not breathe dust / fume / gas / mist / vapors / spray. Do not attempt to act without suitable protective equipment. For further information refer to Section 8.

Environmental precautions: Avoid release into the environment.

Methods and material for containment and cleaning up: Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters. Dispose of materials as solid residues at an authorized site.

## 7. HANDLING AND STORAGE

**Handling Precautions:** Ensure good ventilation of the workstation. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Wear personal protective equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Do not breathe dust / fume / gas / mist / vapors / spray.

**Storage Requirements:** Store in a well-ventilated place. Keep cool. Store locked up.

**Further information about hygiene measures:** Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink, or smoke when using this product. Always wash hands after handling the product.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:** Ensure good ventilation of the workstation.

**Personal Protective Equipment:**

**Respiratory protection:** Wear respiratory protection

**Protection of hands:** Protective gloves.

**Eye protection:** Safety glasses.

**Body protection:** Wear suitable protective clothing.

**Limitation and supervision of exposure into the environment:** Avoid release into the environment.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance/Physical State:</b>	Liquid   Light Yellow	<b>Flash Point:</b>	74 °C
<b>Specific Gravity or Density:</b>	0.992 g/cm <sup>3</sup>	<b>Odor Threshold:</b>	No data available
<b>Odor:</b>	Amine-like	<b>Melting Point:</b>	Not applicable
<b>pH:</b>	11	<b>Boiling Point:</b>	200 °C
<b>Freezing Point:</b>	No data available	<b>Flammability (solid, gas):</b>	Not applicable
<b>Relative Evaporation Rate (butyl)</b>	No data available	<b>Relative Vapor Density at 20</b>	No data available



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acetate=1)		°C	
<b>Vapor Pressure:</b>	No data available	<b>Solubility:</b>	No data available
<b>Relative Density:</b>	No data available	<b>Auto-ignition Temperature:</b>	No data available
<b>Log Pow:</b>	No data available	<b>Viscosity, Kinematic</b>	No data available
<b>Decomposition Temperature:</b>	No data available	<b>Explosion Limits:</b>	No data available
<b>Viscosity, Dynamic:</b>	No data available	<b>Oxidizing Properties:</b>	No data available
<b>Explosive Properties:</b>	No data available		

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal conditions.

**Chemical Reactivity:** The product is non-reactive under normal conditions of use, storage, and transport.

**Conditions to Avoid:** Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

**Materials to Avoid:** No additional information available.

**Decomposition – Hazardous:** Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## 11. TOXICOLOGICAL INFORMATION

<b>Phenol, styrenated (61788-44-1)</b>	
LD50 oral rat	2100 – 3700 mg/kg
LD50 dermal rabbit	>7940 mg/kg
LC50 inhalation rat (mg/l)	>2.5 mg/l (exposure time: 6h)
ATE US (oral)	2100 mg/kg body weight
<b>1,2-Cyclohexanediamine (694-83-7)</b>	
LD50 oral rat	4566 mg/kg
LC50 inhalation rat (mg/l)	>3.23 mg/l/4h
ATE US (oral)	4566 mg/kg body weight
<b>Diisopropyl naphthalene (38640-62-9)</b>	
LD50 oral rat	3900 mg/kg
LD50 dermal rat	>4500 mg/kg
LC50 inhalation rat (mg/l)	>5.64 mg/l/4h
ATE US (oral)	3900 mg/kg body weight
<b>1-Piperazineethanamine (140-31-8)</b>	
LD50 oral rat	2140 µl/kg
LD50 dermal rabbit	880 µl/kg
ATE US (oral)	2140 mg/kg
ATE US (dermal)	880 mg/kg
<b>Triethanolamine (102-71-6)</b>	
LD50 oral rat	4190 mg/kg
LD50 dermal rabbit	>20000 mg/kg
ATE US (oral)	4190 mg/kg
<b>Piperazine (110-85-0)</b>	
LD50 oral rat	600 mg/kg
LD50 dermal rabbit	1590 mg/kg
ATE US (oral)	600 mg/kg body weight
ATE US (dermal)	1590 mg/kg body weight

**Skin corrosion / irritation:** Causes severe skin burns and eye damage.

**Serious eye damage / irritation:** Causes serious eye damage.

**Respiratory or skin sensitization:** May cause an allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

**Germ cell mutagenicity:** Not classified.

**Carcinogenicity:** Not classified.

<b>Triethanolamine (102-71-6)</b>	
IARC group	3-Not classifiable

**Reproductive toxicity:** Suspected of damaging fertility or the unborn child.

**Specific target organ toxicity – single exposure:** Not classified.

**Specific target organ toxicity – repeated exposure:** Not classified.

**Aspiration hazard:** Not classified.

## 12. ECOLOGICAL INFORMATION

Before neutralization, the product may represent a danger to aquatic organisms.

<b>Diisopropyl naphthalene (38640-62-9)</b>	
LC50 fish 1	>1000 mg/l (Exposure time: 96 h – species - Cyprinus Carpio [static])
LC50 fish 2	>1000 mg/l (Exposure time: 96 h – species – Oryzias Latipes [static])
<b>1-Piperazineethanamine (140-31-8)</b>	

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LC50 fish 1	1950 – 2460 mg/l (Exposure time: 96 h – species – Pimephales Promelas [flow-through])
EC50 Daphnia 1	32 mg/l (Exposure time: 48 h – species – Daphnia Magna)
LC 50 fish 2	>1000 mg/l (Exposure time: 96 h – species – Poecilia Reticulata [semi-static])
<b>Triethanolamine (102-71-6)</b>	
LC50 fish 1	10600 – 13000 mg/l (Exposure time: 96 h – species – Pimephales Promelas [flow-through])
LC50 fish 2	>1000 mg/l (Exposure time: 96 h – species – Pimephales Promelas [static])
<b>Piperazine (110-85-0)</b>	
LC fish 1	>10000 mg/l (Exposure time: 96 h – species – Lepomis Macrochirus [static])

## Bioaccumulative potential

<b>Phenol, styrenated (61788-44-1)</b>	
Log Pow	>4 (at 22 °C)
<b>Diisopropylnaphthalene (38640-62-9)</b>	
BCF fish 1	203
Log Pow	>4 (at 25 °C)
<b>1-Piperzaineethanamine (140-31-8)</b>	
BCF fish 1	(no bioaccumulation expected)
Log Pow	-1.48
<b>Triethanolamine (102-71-6)</b>	
BCF fish 1	<3.9
Log Pow	-2.53
<b>Piperazine (110-85-0)</b>	
BCF fish 1	0.3-3.9

## 13. DISPOSAL CONSIDERATIONS

Dispose of contents / container in accordance with licensed collector's sorting instructions.

## 14. TRANSPORT INFORMATION

### DOT Shipping Information

<b>DOT Proper Shipping Name:</b>	UN2735 Polyamines, liquid, corrosive, n.o.s. (1,2-Cyclohexanediamine, Piperazine), 8, III
<b>DOT Technical Name:</b>	UN2735
<b>DOT Hazard Class:</b>	8 – corrosive material 49 CFR 173.136
<b>DOT Packaging Group:</b>	III – Minor Damage
<b>DOT Packaging Non-Bulk (49 CFR 173.xxx):</b>	203
<b>DOT Packaging Bulk (49 CFR 173.xxx):</b>	241
<b>DOT Special Provisions (49 CFR 172.102):</b>	IB3-Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T7-4 178.274(d)(2) Normal ...I. 178.274(d)(3) TP1-The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees Celsius of the liquid during filling. TP28-A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.274 of this subchapter, where the test pressure is 1.5 times the MAWP.
<b>DOT Packaging Exceptions (49 CFR 173.xxx):</b>	154
<b>DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27):</b>	5 L
<b>DOT Quantity Limitations Cargo aircraft only (49 CFR 174.74):</b>	60 L
<b>DOT Vessel Stowage Location:</b>	A-The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
<b>DOT Vessel Stowage Other:</b>	52 – Stow "separated from" acids.
<b>Emergency Response Guide (ERG) Number:</b>	153

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## 15. REGULATORY INFORMATION

### US Federal Regulations

<b>Phenol, styrenated (61788-44-1)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory
<b>1,2-Cyclohexanediamine (694-83-7)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory
<b>Diisopropylnaphthalene (38640-62-9)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory
<b>1-Piperazineethanamine (140-31-8)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory
<b>Triethanolamine (102-71-6)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory
<b>Piperazine (110-85-0)</b>
Listed on the United States TSCA (Toxic Substances Control Act) inventory

### US State Regulations

<b>1-Piperazineethanamine (140-31-8)</b>
U.S. – Massachusetts – Right To Know List
U.S. – New Jersey – Right to Know Hazardous Substance List
U.S. – Pennsylvania – RTJ (Right to Know) list
<b>Triethanolamine (102-71-6)</b>
U.S. – Massachusetts – Right To Know List
U.S. – Minnesota – Hazardous Substance List
U.S. – New Jersey – Right to Know Hazardous Substance List
U.S. – Pennsylvania – RTJ (Right to Know) List
<b>Piperazine (110-82-0)</b>
U.S. – Massachusetts – Right To Know List
U.S. – New Jersey – Right to Know Hazardous Substance List
U.S. – Pennsylvania – RTJ (Right to Know) list

## 16. OTHER INFORMATION

Full text of H-phrases:

Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Asp. Tox. 1	Aspiration hazard Category 1
Eye Dam. 1	Serious eye damage / eye irritation Category 1
Flam. Liq. 4	Flammable liquids Category 4
Repr. 2	Reproductive toxicity Category 2
Resp. Sens. 1	Respiratory sensitization Category 1
Skin Corr. 1	Skin corrosion / irritation Category 1
Skin Corr. 1B	Skin corrosion / irritation Category 1B
Skin Sens. 1	Skin sensitization Category 1
H227	Combustible liquid
H302	Harmful if swallowed
H304	Maybe fatal if swallowed and enters airways
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H334	May cause an allergy or asthma symptoms or breathing difficulties if inhaled
H361	Suspected of damaging fertility or the unborn child

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety, and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

THE INFORMATION HEREIN HAS BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, POLYMER NATION CHEMICAL CANNOT GIVE ANY GUARANTEES REGARDING INFORMATION FROM OTHER SOURCES, AND EXPRESSLY DOES NOT MAKE ANY WARRANTIES, NOR ASSUMES ANY LIABILITY FOR ITS USE.