



NORTH Metal and Chemical Co.

## 1. Company Identification and Product Hazard Overview:

<b>Product Name</b>	: Cyclohexylamine
<b>Synonyms</b>	: Aminocyclohexane; Hexahydroaniline
<b>Recommended Use</b>	: Used as a corrosion inhibitor in boiler feed water and has important applications as a chemical intermediate in insecticides, dry-cleaning soaps, gas absorbents, rubber chemicals, and plasticizers
<b>Manufactured for</b>	: <b>NORTH Metal and Chemical Company</b> P. O. Box 1985 York, PA USA 17405 Tel: 717-845-8646 Email: north@nmc-nic.com
	609 E. King St. York, PA USA 17403 Fax: 717-846-7350 Website: www.nmc-nic.com

**In Case of Emergency: Call CHEMTREC (24H): 1-800-424-9300**

## 2. Hazard Identification:

### GHS Classification:

Flammable Liquids (Category 3)  
Acute Toxicity, Oral (Category 3)  
Acute Toxicity, Dermal (Category 3)  
Skin Corrosion (Category 1B)  
Serious Eye Damage (Category 1)  
Reproductive Toxicity (Category 2)  
Acute Aquatic Toxicity (Category 3)

**Signal Word: DANGER**

**Pictograms:** Flammable, Acute Toxicity, Health Hazard, Corrosion



### Hazard Statements:

<b>H226</b>	: Flammable liquid and vapor
<b>H301 + H311</b>	: Toxic if swallowed or in contact with skin
<b>H314</b>	: Causes severe skin burns and serious eye damage.
<b>H318</b>	: Causes serious eye damage
<b>H361</b>	: Suspected of damaging fertility or the unborn child
<b>H402</b>	: Harmful to aquatic life

## 2. Hazard Identification:

### Precautionary Statements:

#### Prevention:

<b>P201</b>	: Obtain special instructions before use
<b>P202</b>	: Do not handle until all safety precautions have been read and understood
<b>P210</b>	: Keep away from heat/sparks/open flames/hot surfaces - No smoking
<b>P233</b>	: Keep container tightly closed
<b>P241</b>	: Use explosion-proof electrical/ventilating/lighting equipment
<b>P242</b>	: Use only non-sparking tools
<b>P243</b>	: Take precautionary measures against static discharge
<b>P264</b>	: Wash contact area thoroughly after handling
<b>P270</b>	: Do not eat, drink, or smoke when using this product
<b>P273</b>	: Avoid release to the environment
<b>P280</b>	: Wear protective gloves/protective clothing/eye protection/face protection.
<b>P281</b>	: Use personal protective equipment as required
<b>P303 + P361 +P353</b>	: IF ON SKIN or hair: Remove/Take off immediately all contaminated clothing. Rinse skin with water/ shower
<b>P305 + P351 + P338 + P310</b>	: IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician
<b>P301 + P310 + P330</b>	: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse Mouth
<b>P301 + P330 + P331</b>	: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
<b>P304 + P340 + P310</b>	: IF INHALED: Remove person to fresh air and keep in position comfortable for breathing
<b>P308 + P313</b>	: IF exposed or concerned: Get medical advice/attention
<b>P363</b>	: Wash contaminated clothing before reuse.
<b>P370 + P378</b>	: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
<b>P403 + P235</b>	: Store in a well-ventilated place. Keep cool.
<b>P273 + P405</b>	: Avoid release to the environment. Store Locked Up.
<b>P501</b>	: Dispose of contents/container in accordance with local/state/federal regulations.

## 3. Composition/Information on Ingredient:

<b>Chemical Name</b>	: Cyclohexylamine
<b>Chemical Family</b>	: Amines
<b>Chemical Formula</b>	: C <sub>6</sub> H <sub>13</sub> N

Substance:	CAS Number:	EC	Compo. (%)
Cyclohexylamine	108-91-8	203-629-0	<=100%

#### 4. First Aid Measures:

- General Advice:** : Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
- Eyes** : Flush skin with running water for at least fifteen minutes. Remove any contact lenses. Get medical aid/attention immediately. Continue to rinse eyes during transport to the hospital.
- Skin** : Remove contaminated clothing. Wash skin with plenty of running water and soap. Take victim immediately to the hospital. Consult a physician.
- Ingestion** : If the product is swallowed, first rinse mouth. Give small amount of water to drink. Call doctor/physician/poison center immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person. If a person vomits, place him/her in recovery position so the vomit does not enter lungs.
- Inhalation** : If safe to do so, remove individual from further exposure. Keep warm and at rest. If breathing has ceased, give artificial respiration. Do not give mouth to mouth resuscitation. Get medical attention/consult a physician immediately.
- Note to Physician** : Treat symptomatically.
- PPE for first responders** : Gloves and safety goggles are highly recommended.

#### 5. Fire Fighting Measures:

- Flash Point (°C)** : 27 °C (81 °F) - closed cup
- Flammable Limits** : Upper explosion limit: 9.4% (V); Lower explosion limit: 1.6% (V)
- Auto ignition Temp.** : Not available.
- Flammable Class** : Not available.
- General Hazard** : Evacuate personnel downwind in-order to avoid inhalation of irritating and/or harmful fumes and smoke.
- Extinguishing Media** : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.
- Special hazards arising from the substance** : Carbon oxides, Nitrogen Oxides (NO<sub>x</sub>)
- Fire Fighting Procedures:** Hazardous decomposition and combustion products such as carbon/nitrogen oxides can be formed if product is burning. Cool exposed containers with water spray to prevent over heating.
- Fire Fighting Equipment:** Respiratory and eye protection are required for fire fighting personnel. Full protective equipment (bunker gear) and self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. Evacuate area and fight fire from safe distance or a protected location. Move fire-exposed containers, if allowable without sacrificing the safety of the firefighters. If possible, firefighters should control run-off water to prevent environmental contamination.

#### 6. Accidental Release Measures:

- Protective Gear for Personnel** : Wear respiratory protection. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental Precaution** : Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- Methods and materials for containment and cleaning up** : Contain spillage, and then collect with an electronically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.
- Release Notes** : If spill could potentially enter any waterway, including intermittent dry creeks, contact local authorities.

## 7. Handling and Storage:

- Handling** : Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition. No smoking. Take measures to prevent the build up of electrostatic charge.
- Storage** : Store in a cool, dry well-ventilated area. Keep containers closed and up right when not in use. Keep product isolated from incompatible materials/conditions. Handle under inert gas. Protect from moisture. Air sensitive. Storage class (TRGS 510): Flammable Liquids

## 8. Exposure Controls and Personal Protection:

### Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Cyclohexylamine	108-91-8	TWA	10.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Eye irritation Not classifiable as a human carcinogen		
		TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Upper Respiratory Tract irritation Eye irritation Not classifiable as a human carcinogen		
		TWA	10.000000 ppm 40.000000 mg/m3	USA. NIOSH Recommended Exposure Limits

- Engineering Controls** : Use appropriate engineering controls to avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product.

### Personal Protective Equipment

**Eyes and face:** Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH.

**Skin:** Avoid direct contact with skin. Wear rubber gloves, apron, boots or whole bodysuit when handling this product. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of any contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body Protection:** Complete suit protecting against chemicals; flame retardant anti-static protective clothing. The type of protective equipment must be selected according to the concentration and amount of dangerous substance at the specific work place.

**Respiratory:** Where risk assessment shows air-purifying respirators are appropriate, use full-face respirator with multi-purpose combination respirator cartridges as a back up to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH.

- Work Hygienic Practices** : Facilities storing or using this material should be equipped with emergency eyewash, and a safety shower. Good personal hygiene practices should always be followed.

### Control of Environmental

- Exposure** : Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## 9. Chemical and Physical Properties:

<b>Appearance</b>	: Liquid	<b>Lower Explosive Limit</b>	: 1.6% (V)
<b>Odor</b>	: Characteristic (amine-like)	<b>Upper Explosive Limit</b>	: 9.4% (V)
<b>Odor threshold</b>	: Not available	<b>Vapor Pressure</b>	: 31 hPa (23 mmHg) @ 37.7°C : 13 hPa (10 mmHg) @ 22°C
<b>Color</b>	: Light yellow	<b>Vapor Density</b>	: 3.42 - (Air = 1.0)
<b>pH</b>	: 11.5 @ 100 g/l @ 20°C	<b>Relative Density</b>	: 0.867 g/cm <sup>3</sup> @ 25°C
<b>Melting Point</b>	: -17°C (1°F) - lit.	<b>Solubility</b>	: Soluble in Water
<b>Freezing Point</b>	: 3°F	<b>Partition coefficient (n-octanol/water)</b>	: log POW: 1.4
<b>Boiling Range</b>	: 134°C (273°F) - lit.	<b>Auto Ignition Temp.</b>	: 293.3°C
<b>Flash Point</b>	: 27 °C (81°F) - closed cup	<b>Molecular Weight</b>	: 99.17 g/mol
<b>Viscosity (cSt) @ 25 °C</b>	: Not available		
<b>Decomposition Temp.</b>	: Not available		
<b>Evaporation Rate</b>	: Not available		

## 10. Stability and Reactivity:

<b>Stability</b>	: The product is stable under recommended storage conditions.
<b>Possibility of Hazardous Reactions</b>	: Vapors may form explosive mixture in the air
<b>Hazardous Decomposition Products</b>	: No data available
<b>Incompatible Materials</b>	: Strong oxidizing agents, Carbon Dioxide, sodium hypochlorite, Organic acids, Mineral acids, Peroxides
<b>Conditions to Avoid</b>	: Heat, flames, sparks

## 11. Toxicological Information:

### Acute Toxicity Data:

LD50 Oral - Rat - 300 mg/kg

LC50 Inhalation - Rat - 7,500 mg/m<sup>3</sup>

Remarks: Behavioral - Excitement; muscle contraction or spasticity

LD50 Dermal - Rabbit - 277 mg/kg

### Skin corrosion/irritation:

Skin - Rabbit

Result: Severe skin irritation - 24h

### Serious eye damage/eye irritation:

Eyes - Rabbit

Result: Severe eye irritation - 24h

### Respiratory or skin sensitization:

No data available

### Germ cell mutagenicity:

No data available

### Carcinogenicity:

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

**IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible, or confirmed human carcinogen by IARC.

**NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible, or confirmed human carcinogen by NTP.

**OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible, or confirmed human carcinogen by OSHA.

### Reproductive toxicity:

Suspected human reproductive toxicant

## 11. Toxicological Information:

### Specific target organ toxicity - single exposure:

No data available

### Specific target organ toxicity - repeated exposure:

No data available

### Aspiration Hazard:

No data available

### Additional Information:

RTECS: GX0700000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Cough, Shortness of breath, Headache, Nausea

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

## 12. Ecological Information:

All work practices must be aimed at eliminating environmental contamination.

### Toxicity

**Toxicity to fish:** LC50 - *Leuciscus idus* (Golden orfe) - 44 mg/l - 96h

### Toxicity to daphnia and other aquatic invertebrates:

EC50 - *Daphnia magna* (Water flea) - 49 mg/l - 24h

EC0 - *Daphnia magna* (Water flea) - 22 mg/l - 24h

**Toxicity to algae:** EC50 - *Pseudokirchneriella subcapitata* (green algae) - 20 mg/l - 96h

**Biodegradability:** aerobic - Exposure time 20 d  
Result: 92% - readily biodegradable

**Bioaccumulative  
Potential:** No data available

**Mobility in soil:** No data available

**Results of PBT and  
vPvB assessment:** PBT/vPvB assessment not available as chemical safety assessment not required/not  
conducted

**Other Adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful to aquatic life.

## 13. Disposal Considerations:

- Disposal Method** : Dispose of waste at an appropriate waste disposal facility according to current applicable laws and regulations.
- For Large Spills** : Contain material and call local authorities for emergency assistance.
- Product Disposal** : Dispose of at a supervised incineration facility or an appropriate waste disposal facility according to current applicable local, state and federal laws, regulations and product characteristics at time of disposal.
- Empty Container** : Contaminated container should be labeled and disposed in accordance to local, state and federal laws and regulations.
- General Comments** : Refer to section 6, accidental release measures for additional information.

## 14. Transport Information:

Regulatory Information	UN No.	Proper Shipping Name	UN Class	Packing Group	Labels
US DOT	2357	Corrosive Liquids, BASIC, Organic, N.O.S.	8 (3)	II	Corrosive Sticker Flammable Sticker
IMDG	2357	Corrosive Liquids, BASIC, Organic, N.O.S.	8 (3)	II	Corrosive Sticker Flammable Sticker
IATA	2357	Corrosive Liquids, BASIC, Organic, N.O.S.	8 (3)	II	Corrosive Sticker Flammable Sticker

## 15. Regulatory Information:

### U.S. Federal Regulations:

**SARA 302 Components:** The following components are subject to reporting levels established by SARA Title III, section 302: Cyclohexylamine CAS No. 108-91-8

**SARA 313 Components:** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

**SARA 311/312:** Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right to know Components:** Cyclohexylamine CAS No. 108-91-8

**Pennsylvania Right to know Components:** Cyclohexylamine CAS No. 108-91-8

**New Jersey Right to know Components:** Cyclohexylamine CAS No. 108-91-8

**New Jersey Environmental Hazardous Substances and/or New Jersey RTK Special Hazardous:** Cyclohexylamine CAS No. 108-91-8

**California Proposition 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

**WHMIS Canada:** Class B-2: Flammable liquid with a flash point lower than 37.8°C. Class D-1B: Material causing immediate and serious toxic effects (TOXIC). Class E: Corrosive liquid

**OSHA Hazcom Standard Rating:** Hazardous

**US Toxic Substances Control Act:** Listed on the TSCA inventory

**US EPA CERCLA Hazardous Substances (40 CFR 302):** Not listed

### US EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

When discarded in its purchased form, this product meets the criteria of ignitability and should be managed as a hazardous waste (EPA Hazardous Waste Number D001). (40 CFR 261.20-24) When discarded in its purchased form, this product meets the criteria of corrosivity and should be managed as a hazardous waste (EPA Hazardous Waste Number D002). (40 CFR 261.20-24).



## 16. Other Information:

### HMIS and NFPA Rating Scale:

#### HMIS: Hazardous Materials Identification System

#### Numeric Scale for Health (Blue), Flammability (Red), and Physical Hazard (Yellow):

##### HMIS Rating:\*

HEALTH	3
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	C

RATING	HEALTH	FIRE HAZARD	PHYSICAL HAZARD
0	No significant risk to health	Will not burn	Product stable under ambient temperature and condition.
1	Can cause irritation or minor reversible	Must be preheated to burn	Product can become unstable at high temperatures and pressures.
2	Can cause temporary or residual injury	Ignites when moderately heated	Product can become unstable and cause violent chemical reaction at normal pressures and temperatures
3	Can cause serious injury	Ignition occurs at normal temperature	Product capable of forming explosive mixtures and is capable of detonation in presence
4	Can be lethal from single or repeated exposure.	Extremely flammable	Product is highly explosive and unstable. Exothermic reactions possible with decomposition, polymerization, reaction with water or self reaction

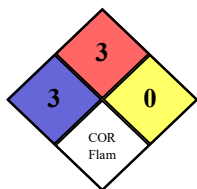
Personal Protection Code C: Gloves + Safety Goggles + Chemical Apron

#### NFPA: National Fire Protection Association

#### Numeric Scale for Health (Blue), Fire Hazard (Red), and Reactivity (Yellow):

Special (White)

##### NFPA Rating:\*



RATING	HEALTH	FIRE HAZARD	REACTIVITY
0	Minimal Hazard	Will not burn	Normally Stable
1	Can cause significant irritation	Must be preheated to burn	Unstable at high temperatures
2	Can cause temporary incapacitation or residual injury	Ignites when moderately heated	Normally unstable. Can readily go under violent chemical reaction but do not detonate.
3	Can cause permanent injury.	Ignition occurs at normal temperature	Capable of detonation, or of explosive reaction, but requires a strong ignition source.
4	Can be lethal.	Extremely flammable	May explode at normal temperatures and pressures

Revision Date: October 8, 2018

Reason for Revision: Added secondary flammable UN Class

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