SAFETY DATA SHEET

SECTION 1) CHEMICAL PRODUCT AND SUPPLIER'S IDENTIFICATION

CAS Number: 108-91-8

Product Name: Cyclohexylamine

Revision Date: Jul 04, 2017 **Date Printed:** Dec 22, 2020

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Manufacturer's Name: Thames River Chemical Corp.

Address: 5230 Harvester Road Burlington, ON, CA, L7L 4X4

Emergency Phone: CHEMTREC (800) 424-9300

Information Phone Number: 905-681-5353

Fax: 905-681-5377

Product/Recommended Uses: For laboratory or industrial use only.

SECTION 2) HAZARDS IDENTIFICATION

Classification

Acute aquatic toxicity - Category 3

Acute toxicity Dermal - Category 3

Acute toxicity Oral - Category 3

Flammable Liquids - Category 3

Reproductive Toxicity - Category 2

Serious Eye Damage - Category 1

Skin Corrosion - Category 1B

Specific Target Organ Toxicity - Single Exposure - Category 1

Pictograms

Signal Word

Danger

Hazard Statements - Health

Toxic in contact with skin

Toxic if swallowed

Suspected of damaging fertility or the unborn child

Causes serious eye damage

Causes severe skin burns and eye damage

Causes damage to organs.

Hazard Statements - Physical

Flammable liquid and vapor

Hazard Statements - Environmental

Harmful to aquatic life

Precautionary Statements - General

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Precautionary Statements - Prevention

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

Wash/Wash hands thoroughly after handling.

Do not eat, drink or smoke when using this product.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical, ventilating, lighting equipment.

Use only non-sparking tools.

Take action to prevent static discharges.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust/fume/gas/mist/vapors/spray.

Precautionary Statements - Response

IF ON SKIN: Wash with plenty of water and soap.

Call a POISON CENTER or doctor, if you feel unwell.

Specific treatment (see first-aid on the SDS).

Take off immediately all contaminated clothing. And wash it before reuse.

IF SWALLOWED: Immediately call a POISON CENTER or doctor.

Rinse mouth.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

In case of fire: Use carbon dixoxide, alcohol foam, water spray or dry chemical to extinguish.

IF exposed or concerned: Get medical advice/attention.

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.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Wash contaminated clothing before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF exposed or concerned: Call a POISON CENTER or doctor.

Precautionary Statements - Storage

Store locked up.

Store in a well-ventilated place. Keep cool.

Precautionary Statements - Disposal

Dispose of contents/container in accordance with local/national/international regulation. Waste management should be in full compliance with national, regional and local laws.

Physical Hazards Not Otherwise Classified

No data available.

Health Hazards Not Otherwise Classified

No data available.

SECTION 3) COMPOSITION/INFORMATION ON INGREDIENTS

CAS	Chemical Name	% By Weight
0000108-91-8	CYCLOHEXANAMINE	100% - 100%

SECTION 4) FIRST-AID MEASURES

Inhalation

Get medical advice/attention if you feel unwell or are concerned. If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

Remove source of exposure or move person to fresh air and keep comfortable for breathing. Eliminate all ignition sources if safe to do so. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by the POISON CENTER/doctor.

Eye Contact

Immediately call a POISON CENTER/doctor. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 30 minutes or until medical aid is available. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.

Skin Contact

Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Immediately call a POISON CENTER/doctor. Store contaminated clothing under water and wash before re-use or discard. Rinse skin with lukewarm, gently flowing water/shower for a duration of 30 minutes or until medical aid is available.

Ingestion

If vomiting occurs naturally, lie on your side, in the recovery position. Immediately call a POISON CENTER/doctor.

Most Important Symptoms and Effects, Both Acute and Delayed

No data available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

SECTION 5) FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Do NOT direct a solid stream of water or foam into burning molten material; this may cause spattering and spread the fire.
Water spray or fog.
Foam.
Dry chemical powder.
BCF (where regulations permit). Use caution when applying carbon dioxide in confined spaces. Large Fire: Water spray, fog or alcohol-resistant foam.

Unsuitable Extinguishing Media

Do not use straight stream of water.

Specific Hazards in Case of Fire

Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Many vapors are heavier than air. Containers may explode in fire. Many liquids are lighter than water. May form an ignitable vapor/air mixture in closed tanks or containers. Runoff to sewer may create fire or explosion hazard. Vapors may form explosive mixtures with air Vapors may travel to source of ignition and flashback Vapors will spread along ground and collect in low or confined areas (sewers, basements, tanks) Polymer: May polymerize explosively when heated or involved in a fire. Fire will produce irritating and corrosive gases. Contact with metals may evolve flammable hydrogen gas.

Fire-fighting Procedures

Nitromethane and nitroethane: Do not use dry chemical extinguishers to control fires. Isolate immediate hazard area and keep unauthorized personnel out. Move undamaged containers from immediate hazard area if it can be done safely. Stop spill/release if it can be done safely. Cool containers with flooding quantities of water until well after fire is out. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. Product has a low flashpoint: Use of water spray when fighting fire may be inefficient. Large Fire: Dike fire-control water for later disposal; do not scatter the material

Special Protective Actions

Wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

SECTION 6) ACCIDENTAL RELEASE MEASURES

Emergency Procedure

Isolate hazard area and keep unauthorized personnel away. Stay uphill and/or upstream. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Evacuate and isolate hazard area and keep unauthorized personnel away. A vapor-suppressing foam may be used to reduce vapors.

Recommended Equipment

Wear chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Wear liquid tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus (SCBA).

Personal Precautions

DO NOT get on skin, eyes or clothing. Avoid breathing vapor or mist.

Environmental Precautions

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers. Dike far ahead of liquid spill for later disposal.

Methods and Materials for Containment and Cleaning up

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material. Ventilate area after clean-up is complete.

SECTION 7) HANDLING AND STORAGE

General

Wash hands after use. Do not get in eyes, on skin or on clothing. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Use good personal hygiene practices. Eating, drinking and smoking in work areas is prohibited. Remove contaminated clothing and protective equipment before entering eating areas. This product is not intended for human or animal consumption. Use pneumatic and/or mechanical systems for bulk transfer of the substance Use exhaust ventilation and/or dust collecting filters for bulk transfer and storage. Use approved respiratory protection when handling. Keep bulk of materials out of sewer drains. Eyewash stations and showers should be available in areas where this material is used and stored

Ventilation Requirements

Use only with adequate ventilation to control air contaminants to their exposure limits. Report ventilation failures immediately. The use of local ventilation is recommended to control emissions near the source.

Storage Room Requirements

Do not store large quantities of flammable liquids in the same storage cabinet. Store in dry, cool areas, out of direct sunlight and away from other sources of heat. Store in original containers. Keep containers securely sealed. Keep away from incompatible materials (e.g. oxidizers). Store flammable and combustible liquids in areas that are cool, dry and well ventilated to reduce vapour concentrations. Never use plastic or glass containers for storing flammable liquids. Keep containers securely sealed when not in use. Bond and ground metal containers/cylinders when transferring. Avoid storing in direct sunlight or near other heat sources; eliminate all sources of ignition. Cabinets must be labelled; FLAMMABLE - KEEP FIRE AWAY. Avoid storing in basements. Protect containers against banging or other physical damage when storing, transferring, or using them. Procedures must be conducted in a fume hood, glove box, or other suitable containment device. Segregate from other hazard classes and store in a cool, dry, well ventilated area, away from sources of ignition and incompatibilities. Provide secondary containment for toxic materials. Store, handle, and use corrosive materials in well-ventilated areas. Keep the smallest amount of material in work areas. Do not store on metal shelves. Store containers in plastic tubs or trays as secondary containment. Avoid rapid temperature changes in liquid storage areas. Store at temperatures above their respective freezing/melting point. Never store corrosives above eye level. Label cabinets with "TOXIC CHEMICALS" or similar warning.

SECTION 8) EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection

Wear indirect-vent, impact and splash resistant goggles when working with liquids

Skin Protection

Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber.

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 should be followed. Check with respiratory protective equipment suppliers.

Appropriate Engineering Controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	CANsmg	CANsppm	CANtmg	CANtppm	OSHA STEL (mg/m3)	OSHA STEL (ppm)	OSHA TWA (mg/m3)	OSHA TWA (ppm)
CYCLOHEXANAMINE	82	20	41	10				

Chemical Name	OSHA Carcinogen	OSHA Tables (Z1, Z2, Z3)	OSHA Skin designation	ACGIH STEL (mg/m3)	ACGIH STEL (ppm)	ACGIH TWA (mg/m3)	ACGIH TWA (ppm)	ACGIH TLV Basis
CYCLOHEXANAMINE							10	URT & eye irr

Chemical Name	ACGIH Carcinogen	ACGIH Notations
CYCLOHEXANAMINE	A4	A4

A4 - Not Classifiable as a Human Carcinogen, irr - Irritation, URT - Upper respiratory tract

SECTION 9) PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Density	7.31 lb/gal
Specific Gravity	0.88

Appearance	clear, colourless-yellowish liquid
Odor Description	strong amine (fishy) odour
Odor Threshold	2.6 ppm
pH	11.8 – strongly alkaline
Melting Point	-18 °C
Low Boiling Point	134 °C
High Boiling Point	N/A
Flash Point	26.5
Vapor Pressure	11 mmHg
Vapor Density	3.42 (Air=1 @ 20°C)
Evaporation Rate	N/A
Upper Explosion Level	N/A
Lower Explosion Level	N/A
Water Solubility	Soluble in water
Coefficient Water/Oil	N/A
Viscosity	N/A

SECTION 10) STABILITY AND REACTIVITY

Reactivity

No data available.

Stability

Stable under normal storage and handling conditions.

Conditions to Avoid

No data available

Hazardous Reactions/Polymerization

Hazardous polymerization will not occur.

Incompatible Materials

Strong oxidizing agents

Hazardous Decomposition Products

No data available.

SECTION 11) TOXICOLOGICAL INFORMATION

Likely Route of Exposure

Inhalation, ingestion, skin absorption

Acute Toxicity

Toxic in contact with skin

Toxic if swallowed

0000108-91-8 CYCLOHEXANAMINE

Corrosive on ingestion. Inhalation can irritate the nose and throat. Exposure can cause headache, dizziness, lightheadedness, and passing out.

Aspiration Hazard

No data available.

Carcinogenicity

No data available.

Germ Cell Mutagenicity

No data available.

Reproductive Toxicity

Suspected of damaging fertility or the unborn child

0000108-91-8 CYCLOHEXANAMINE

May damage the devloping fetus.

Respiratory/Skin Sensitization

No data available.

Serious Eye Damage/Irritation

Causes serious eye damage

0000108-91-8 CYCLOHEXANAMINE

Substance is corrosive to the eyes.

Skin Corrosion/Irritation

Causes severe skin burns and eye damage

0000108-91-8 CYCLOHEXANAMINE

Substance is corrosive to the skin.

Specific Target Organ Toxicity - Repeated Exposure

0000108-91-8 CYCLOHEXANAMINE

Repeated exposure may damage the liver and kidneys.

Specific Target Organ Toxicity - Single Exposure

Causes damage to organs.

0000108-91-8 CYCLOHEXANAMINE

Substance is corrosive to the respiratory tract.The substance may cause effects on the central nervous system.

Likely Routes of Exposure

0000108-91-8 CYCLOHEXANAMINE

The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

0000108-91-8 CYCLOHEXANAMINE

LC50 (mouse): Less than or equal to 493 ppm (exposure duration not reported) (1); 264 ppm (exposure duration not reported).(2)
LC50 (rat): 1850 ppm (exposure duration not reported).(2)
Lethal concentration (rat): 8000 ppm (4-hr exposure); 6 of 6 animals

LD50 (oral, rat): 0.71 mL/kg (approx. 620 mg/kg) (undiluted) (3); 156-278 mg/kg body weight (10% cyclohexylamine in water) (4); 400-800 mg/kg body weight (5% cyclohexylamine in water).(5)
LD50 (oral, mouse): 200-400 mg/kg body weight (undiluted cyclohexylamine).(5)
LD50 (dermal, rabbit): 0.32 mL/kg (275 mg/kg) body weight (unspecified concentration).(3)
LD50 (dermal, guinea pig): approx. 860-4300 mg/kg body weight (24-hr exposure) (undiluted cyclohexylamine).(5)

SECTION 12) ECOLOGICAL INFORMATION

Toxicity

Harmful to aquatic life

0000108-91-8 CYCLOHEXANAMINE

The acute toxicity of cyclohexylamine to fish was tested according to OECD TG 204. Using un-buffered media, after 14 days an EC50 of 19 mg/L was observed (MITI, 1997). The acute toxicity of cyclohexylamine to aquatic invertebrates (Dapnia magna) was tested according to OECD TG 202. After 48 hours of exposure an EC50 of 36.3 mg/L was obtained (MITI, 1997). The long-term toxicity of cyclohexylamine to aquatic invertebrates (Dapnia magna) was assessed in a reproduction test, performed according the OECD Guideline 211. After 21 days of exposure a NOEC for reproduction of 1.6 mg/l was determined (MITI, 1997). Concerning the toxicity to algae, the fresh water algae Pseudokirchnerella subcapitata was exposed to cyclohexylamine for 72 hours. The experiment was conducted according to OECD Guideline 201 yielding a 72 -h NOEC of 10.3 mg/L and a 72-h EC50 of 29.3 mg/L having inhibition of growth as endpoint (MITI, 1997).

Mobility in Soil

No data available.

Bio-accumulative Potential

0000108-91-8 CYCLOHEXANAMINE

Substance has a low potential for bioaccumulation.

Persistence and Degradability

0000108-91-8 CYCLOHEXANAMINE

Readily biodegradeable.

Other Adverse Effects

No data available.

Results of the PBT and vPvB assessment

0000108-91-8 CYCLOHEXANAMINE

Not a PBT/vPvB substance.

SECTION 13) DISPOSAL CONSIDERATIONS

Waste Disposal

Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. It is the responsibility of the user of the product to determine at the time of disposal whether the product meets local criteria for hazardous waste. Waste management should be in full compliance with national, provincial and local laws.

SECTION 14) TRANSPORT INFORMATION

	Transport Canada Information	U.S. DOT Information
UN number:	UN2357	UN2357
Proper shipping name:	Cyclohexylamine	Cyclohexylamine
Hazard class:	8	
Hazard class:		8 (3)
Packaging group:	II	II
Hazardous substance (RQ):		No Data Available
Marine Pollutant:	No Data Available	No Data Available
Note / Special Provision:	Note / Special Provision	No Data Available
Toxic-Inhalation Hazard:		No Data Available
Transport in bulk (according to Annex II of MARPOL 73/78):	No Data Available	

SECTION 15) REGULATORY INFORMATION

CAS	Chemical Name	% By Weight	Regulation List
0000108-91-8	CYCLOHEXANAMINE	100% - 100%	DSL,TSCA,EU_EC_Inventory

SECTION 16) OTHER INFORMATION

Glossary

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDG- Canadian Transportation of Dangerous Goods; CANsmg or CANsppm - Canadian Short Term Exposure Level in mg/L or in ppm; CANtmg or CANtppm - Canadian Time Weighted Average in mg/L or in ppm; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center(US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self Contained Breathing Apparatus; STEL-Short Term Exposure Limit; TCEQ Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94-469; TWA Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

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