



GLENGARRY CHEMICALS LTD.

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MATERIAL SAFETY DATA SHEET

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W.H.M.I.S. CLASSIFICATION: B2, D1B, D2B, E

SECTION I PRODUCT INFORMATION

Product Name : NEUTRAMINE M
Product Use : Steam Boiler Treatment
Chemical Family : Secondary Amines
Chemical Formula : C₄H₉NO

SECTION II HAZARDOUS INGREDIENTS

COMPONENTS	Wt / Wt %	LD ₅₀ Oral-rat	HAZARD	CAS NO.
Morpholine	10 to 30	1450 mg/kg	Corrosive, Toxic, and Flammable	110-91-8

SECTION III PHYSICAL STATE

Appearance and Physical State : Clear and Colourless Liquid
Odour : Strong Amine Odour Boiling Point (°C) : Not Available
Specific Gravity (water = 1) : 1 Freezing Point (°C) : Not Available
Vapour Pressure (mm Hg) : 10 @ 20 °C (morpholine) % Volatile (by weight) : 60 - 100
Vapour Density (air = 1) : 3 (morpholine) pH Product : 9.5 - 10.5
Evaporation Rate : Not Available pH 1% Solution :
Solubility in Water : Miscible Coefficient of Water/Oil Distribution : Not Available

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flammability: Flammable
Upper Explosive Limit : 11.2% (Morpholine) Lower Explosive Limit : 2.0% (Morpholine)
Flash Point : 38 °C (morpholine)
Means of Extinction: Appropriate for surrounding materials.
Special Procedures : Self contained breathing apparatus and protective clothing should be worn in fighting all fires involving chemicals.

SECTION V HEALTH HAZARD DATA

A - EFFECTS OF ACUTE OVEREXPOSURE

EYES: Extremely corrosive. Liquid, vapor, or mist causes irritation, experienced as stinging, excess blinking and tear production, with excess redness of the conjunctiva. Causes chemical burns to the eye. Severe eye damage may cause blindness.

SKIN: Corrosive. Causes chemical burns with discomfort or pain, severe excess redness and swelling, tissue destruction, fissures, ulceration, and possibly bleeding into the inflamed area. Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material.

INHALATION: High vapor concentrations may produce nausea, vomiting, headache, dizziness, and irregular eye movements. Extremely destructive to tissues of the mucous membranes and upper respiratory tract.

INGESTION: Causes severe irritation or chemical burns of the mouth, throat, esophagus, and stomach, with pain or discomfort in the mouth, throat, chest, and abdomen. May cause nausea, vomiting, diarrhea, dizziness, drowsiness, thirst, faintness, weakness, circulatory collapse, and coma.

B - EFFECTS OF CHRONIC OVEREXPOSURE

May cause liver and kidney damage. Repeated exposure may cause damage to the spleen. Chronic inhalation can cause pneumoconiosis. Adverse reproductive effects have been reported in animals. Laboratory experiments have resulted in mutagenic effects. Chronic exposure may cause blood effects. Exposure to high concentrations may cause central nervous system depression. Animal studies have reported the development of tumors.

SECTION VI EMERGENCY AND FIRST AID

- EYES:** Wash with copious amount of cold water for at least 20 minutes keeping eyelids open. If irritation persists, repeat flushing. Obtain medical attention immediately.
- SKIN:** Immediately wash the affected areas with plenty of water. If irritation, redness or burning sensation develops obtain medical advice.
- INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.
- INGESTION:** Do not attempt to give anything by mouth to an unconscious person. If person is alert and not convulsing rinse mouth out and give 1-2 glasses of water to dilute material and seek medical attention immediately. Do not induce vomiting unless directed to do so by medical personnel.

SECTION VII TOXICOLOGICAL DATA

- Exposure Limits:** OSHA & ACGIH TLV: 20 mg/m³ (morpholine)
- Carcinogenicity:** The ingredients of this product are not classified as carcinogens by ACGIH or IARC, not regulated as carcinogen by OSHA, and not listed as carcinogen by NTP.
- Reproductive Effects:** See Section V(B)
- Mutagenic Effects:** See Section V(B)
- Teratogenic Effects:** See Section V(B)
- Sensitization:** No information is available.
- Routes of Entry:** Ingestion, Inhalation, Skin and eye absorption.

SECTION VIII SPILL OR LEAK PROCEDURES

Steps To Be Taken In Case Material Is Spilled Or Released:

Extinguish or turn off all ignition sources. Ventilate the space involved. Wear appropriate personal protection equipment. Contain spill with inert materials. Collect with non-sparking tools to a suitable container. Prevent waterway contamination. Absorb liquid onto inert absorbent and collect for disposal.

Disposal Procedures:

Follow your local, provincial, and federal government chemical disposal regulations.

SECTION IX PROTECTION INFORMATION

- Engineering Controls:** If practical, use local mechanical exhaust ventilation.
- Respiratory Protection:** NIOSH/MSHA approved respirator for amines.
- Protective Clothing:** Chemical resistant Gloves, apron or impervious protective clothing.
- Eye Protection:** Chemical safety goggles.
- Other Protective Equipment:** Eye Wash Station and Safety Shower.

SECTION X REACTIVITY DATA

- Stability:** Stable.
- Conditions to Avoid:** High temperatures, Flames, Sparks and other sources of ignition
- Hazardous Polymerization:** Will Not Occur.
- Incompatibility to Other Substances:** Acids. Oxidizers. Do not mix this product with nitrites or other nitrosating agents because nitrosamine may be formed. Nitrosamines may cause cancer.
- Hazardous Combustion Products:** Thermal decomposition products are toxic and may include oxides of carbon, ammonia, oxides of nitrogen, formaldehyde, acetaldehyde.

SECTION XI HANDLING AND STORAGE PRECAUTIONS

Use normal "good" industrial hygiene and housekeeping practices, and wear safety equipment when handling this material. Keep containers closed when not in use. Store in a cool dry, well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity and away from incompatible materials.

SECTION XII FURTHER INFORMATION

TDG CLASSIFICATION:

Shipping Name: MORPHOLINE
UN Number: UN2054 **Class:** 8 **Packing Group:** II

Preparation Information:

Prepared By: Regulatory Department
Revision Date: 1-Oct-14 **Preparation Date:** 21-Apr-97

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