



# NORTH METAL & CHEMICAL COMPANY

World Class Molybdenum & Tungsten Compounds  
Since 1921

## Technical Bulletin

# MORPHOLINE

### About us.....

- Founded in York, PA in 1921, NM&C remains a financially stable, family owned producer of *World Class* Molybdenum & Tungsten compounds serving the Metal Finishing, Agriculture, Water Treatment, Pigment, and Antifreeze markets worldwide.
- NM&C maintains over \$2 million inventory of finished goods and ore concentrates to guarantee our customers a stable and secure source of molybdate in the event of a crisis or shortage.
- All orders for one drum to truckload quantities are shipped the next business day or as requested.
- NM&C molybdates are American Made and backed by full 'Cradle-to-Grave' product liability.
- NM&C is unrivaled in customer service and technical support.
- Strict Quality Assurance programs and ISO 9002 practices assure products of the highest quality and consistency.



### Description:

Morpholine is a colorless, hygroscopic liquid free of suspended matter. It is miscible with water and almost all common organic solvents, slightly soluble in aliphatic hydrocarbons.

### Technical Specifications: $C_4H_9NO$ (CAS No. 110-91-8)

Odor	Characteristic amine-like odor
Empirical Formula	$C_4H_9NO$
Molecular Weight	87.1
Freezing point, °C	-5°C; 23°F
Density @ 20°C g/cm <sup>3</sup>	1.003
Flash point, °C	31°C; 88°F
Boiling point range, °C	IBP: 126°C min. DP: 130°C max.
Weight/gallon, lbs.	8.4
Morpholine, wt. %	99.0 min.
Water, % m	0.03 max.
Color, PT-Co	15 max.

**Applications:** A chemical intermediate used in corrosion inhibitors in steam boiler systems; pharmaceuticals; textiles, rubber, catalysts, plasticizers, dyes, agricultural and photographic chemicals,

**Packaging:** Available in 460 lb. non-returnable steel drums.

**Shelf Life:** At least one year when properly stored in unopened container.

**Safety:** Morpholine is corrosive to the skin and eyes. Inhalation of vapors may irritate the respiratory tract. Flammable. Refer to MSDS for additional precautions.



NORTH METAL & CHEMICAL CO.  
P.O. Box 1904, 609 E. King St.  
York, PA 17402

Phone: (717) 845-8646

FAX: (717) 846-7350

Email: north@nmc-nic.com

Web: www.nmc-nic.com