N-Methyl-2-Pyrrolidone (NMP) is a powerful, aprotic solvent with high solvency, and low volatility. This colorless, high boiling, high flash point and low vapor pressure liquid carries a mild amine-like odor. NMP has high chemical and thermal stability and is completely miscible with water at all temperatures.

**Applicator**

NMP-EL is an ideal solvent for the electronics industry and can be used in a wide range of ever growing applications. Some areas where NMP-EL is frequently used include:

- photoresist stripper for precision etching
- edge bead removal
- wafer cleaning
- removal of photoresist and etchant residue
- semi-aqueous defluxing
- degreasing
- coatings (polyamide-imide, epoxy, and polyurethane)

NMP can serve as a cosolvent with water, alcohols, glycol ethers, ketones, and aromatic/chlorinated hydrocarbons. NMP is both recyclable by distillation and readily biodegradable. NMP is not found on the Hazardous Air Pollutants (HAPs) list of the 1990 Clean Air Act Amendments.

**Typical Properties**

- Specific Gravity (25°C) 1.028
- Refractive Index (25°C) 1.469
- Boiling Point (760 mm Hg) 202°C
- Flash Point (SETA) 199°F
- Freeze Point -25°C
- Vapor Pressure (20°C) <0.3 mm Hg
- CAS Number 872-50-4

**Product Quality**

As the semiconductor industry continually reduces chip architecture, Lyondell Chemical Company has maintained high purity wet process chemicals to support the emerging technology. With high purity and metal levels below 10 ppb, NMP-EL material is well suited for electronics applications.

**Typical Purity Levels**

- Purity, min 99.85 wt.%
- Water, max 300 ppm
- Color, APHA, max 30
- Total Amines, max 35 ppm
- Chlorides, Cl, max 500 ppm
- Silver, Ag, max 10 ppb
- Aluminum, Al, max 10 ppb
- Gold, Au, max 10 ppb
- Calcium, Ca, max 10 ppb
- Cadmium, Cd, max 10 ppb
- Chromium, Cr, max 10 ppb
- Copper, Cu, max 10 ppb
- Iron, Fe, max 10 ppb
- Mercury, Hg, max 10 ppb
- Potassium, K, max 10 ppb
- Magnesium, Mg, max 10 ppb
- Manganese, Mn, max 10 ppb
- Sodium, Na, max 10 ppb
- Nickel, Ni, max 10 ppb
- Lead, Pb, max 10 ppb
- Zinc, Zn, max 10 ppb

Commitment

In the U.S. and Canada, please contact Customer Service for the most up-to-date specifications at 1-888-777-0232.

Lyondell Chemical Company is committed to quality and customer service. With production and shipment facilities world wide, order fulfillment is but a phone call away. In addition, our customer service and technical staff are always available to provide you assistance.

Storage and Handling

NMP is hygroscopic (picks up moisture) but stable under normal conditions. It will violently react with strong oxidizers such as hydrogen peroxide, nitric acid, sulfuric acid, etc. The primary decomposition products produce carbon monoxide and nitrogen oxide fumes. Excessive exposure or spillage should be avoided as a matter of good practice. Lyondell Chemical Company recommends wearing butyl gloves when using NMP. NMP should be stored in clean, phenolic-lined mild steel or alloy drums. Teflon® and Kalrez® have been shown to be suitable gasket materials. Please review MSDS prior to handling.

1 Teflon and Kalrez are registered trademarks of DuPont.

Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally.

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This product(s) may not be used in:
(i) any U.S. FDA Class I, Health Canada Class I, and/or European Union Class I medical devices, without prior notification to Seller for each specific product and application; or
(ii) the manufacture of any of the following, without prior written approval by Seller for each specific product and application: U.S. FDA Class II Medical Devices; Health Canada Class II or Class III Medical Devices; European Union Class II Medical Devices; film, overlap and/or product packaging that is considered a part or component of one of the aforementioned medical devices; packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration; tobacco related products and applications, electronic cigarettes and similar devices, and pressure pipe or fittings that are considered a part or component of a nuclear reactor. Additionally, the product(s) may not be used in: (i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices; (ii) applications involving permanent implantation into the body; (iii) life-sustaining medical applications; and (iv) lead, asbestos or MTBE related applications. All references to U.S. FDA, Health Canada, and European Union regulations include another country’s equivalent regulatory classification.

Users should review the applicable Safety Data Sheet before handling the product.

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