Technical Data

N-Methyl-2-Pyrrolidone

(NMP-EL)
Electronic Grade

General

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 ppb
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®[1] and Kalrez®[1] have been shown to be suitable gasket materials. Please review MSDS prior to handling.

1 Teflon and Kalrez are registered trademarks of DuPont.

Houston, Texas, USA l Tel: +1 713 309 7200 or toll-free within USA +1 888 777 0232
Rotterdam, The Netherlands l Tel: +31 10 275 5500
Hong Kong, China l Tel: +852 2882 2668

www.lyondellbasell.com

2593-V2-0511
Supersedes 2593-V2-0104