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Material Safety Data Sheet

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N-Methyl-2-Pyrrolidone

Section 1: Chemical Product and Company Identification

Molecular formula: C₅H₉NO

CAS Nr: 872-50-4

EINECS: 212-828-1

Molecular weight: 99.1 g/mol

Synonyms: M-PYROL(R);N-METHYLPYRROLIDONE;N-METHYLPYRROLID-2-ONE;
N-METHYLPYRROLIDINONE;N-METHYLPYRROLIDNONE;N-METHYLPYRROLIDONE;NMP-T;

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	%By Weight
1-Methyl-2-pyrrolidinone	872-50-4	99-100

Toxicological Data on Ingredients: Not applicable.

Section 3: Hazards Identification

Emergency overview

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED. COMBUSTIBLE LIQUID AND VAPOR.

Health Rating: 1 - Slight

Flammability Rating: 2 - Moderate

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable).

Potential health effects

Inhalation:

Mild irritant if vapor or mist from heated solvent is inhaled. Coughing, possible breathing difficulties may be observed.

Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

Skin Contact:

Mild irritant, may cause some discomfort if in contact with the skin for several hours.

Eye Contact:

Causes irritation, redness, and pain. May possibly cause corneal clouding.

Chronic Exposure:

Minor skin irritation on repeated contact.

Aggravation of Pre-existing Conditions:

No information found.

Section 4: First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Section 5: Fire and Explosion Data

Fire:

Flash point: 93C (199F) CC

Autoignition temperature: 346C (655F)

Flammable limits in air % by volume:

l_{el}: 0.99; u_{el}: 3.9

Combustible.

Explosion:

Above the flash point, explosive vapor-air mixtures may be formed.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Section 6: Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

Section 7: Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage.

Store separately from reactive or combustible materials, and out of direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Section 8: Exposure Controls/Personal Protection

Airborne Exposure Limits:

AIHA Workplace Environmental Exposure Level (WEEL):10 ppm, 8-hour, TWA

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the substance is apparent and engineering controls are not feasible, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator.

WARNING: Air

purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Section 9: Physical and Chemical Properties

Appearance:	Clear, colorless liquid.
Boiling Point:	202C (396F)
Odor:	Slight amine odor.
Melting Point:	-24C (-11F)
Solubility:	Miscible in water.
Vapor Density (Air=1):	3.4
Specific Gravity:	1.03
Vapor Pressure (mm Hg):	0.5 @ 25C (77F)
PH:	7.7
Evaporation Rate (BuAc=1):	0.06
Volatiles by volume% @ 21C (70F):	100

Section 10: Stability and Reactivity Data

Stability:

Stable under ordinary conditions of use and storage. Hygroscopic and basic.

Hazardous Decomposition Products:

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidants and acids. Reacts with chlorinating agents to form the amide.

Reacts with sulfur or carbon disulfide at high temperatures and pressures.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

Section 11: Toxicological Information

1-Methyl-2-pyrrolidinone:

Oral rat LD50: 3914 mg/kg;

Skin rabbit LD50: 8 gm/kg;

Investigated as a mutagen, tumorigen and reproductive effector.

Investigated as a mutagen, reproductive effector.

Section 12: Ecological Information

Environmental Fate:

When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material may evaporate to a moderate extent. When released into water, this material is not expected to evaporate significantly. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

Environmental Toxicity:

The LC50/96-hour values for fish are over 100 mg/l.

Section 13: Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14: Transport Information

Not regulated.

Section 15: Other Regulatory Information

NFPA Ratings:

Health: 2

Flammability: 1

Reactivity: 0

Label Hazard Warning:

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED. COMBUSTIBLE LIQUID AND VAPOR.

Label Precautions:

Avoid contact with eyes, skin and clothing.

Avoid breathing vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Keep away from heat and flame.

Wash thoroughly after handling.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 12:10 AM

Last Updated: 05/21/2016 12:00 PM

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