

Material Safety Data Sheet

1-Methyl-2-pyrrolidinone, 99%

ACC# 95214

Section 1 - Chemical Product and Company Identification

MSDS Name: 1-Methyl-2-pyrrolidinone, 99%

Catalog Numbers: AC610411000

Synonyms: 2-Pyrrolidinone, 1-methyl-; N-Methylpyrrolidinone; N-Methyl-2-pyrrolidinone; 1-Methyl-5-pyrrolidinone; N-Methylpyrrolidone; N-Methyl-alpha-pyrrolidone; N-Methyl-2-pyrrolidone; 1-Methyl-2-pyrrolidone; M-Pyrol; NMP.

Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
872-50-4	1-Methyl-2-pyrrolidinone	99	212-828-1

Hazard Symbols: XI

Risk Phrases: 36/38

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 91 deg C. Hygroscopic (absorbs moisture from the air). **Warning!** Causes eye and skin irritation. Causes respiratory tract irritation. Light sensitive. Combustible liquid and vapor.

Target Organs: Spleen, bone marrow, thymus, lymphatic system.

Potential Health Effects

Eye: Causes moderate eye irritation. May cause temporary corneal clouding.

Skin: Causes skin irritation. May be absorbed through the skin. Repeated or prolonged exposure may cause drying and cracking of the skin.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: Causes respiratory tract irritation. May cause abdominal pain, nausea, vomiting, and inflammation of the gums and mouth. Inhalation of vapors in confined spaces or when hot may cause drowsiness, dizziness, headache, nausea, or lung irritation.

Chronic: Prolonged or repeated skin contact may cause dermatitis. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Combustible Liquid. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated. Toxic oxides of nitrogen may be generated by thermal decomposition or combustion.

Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use extinguishing media most appropriate for the surrounding fire. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: 91 deg C (195.80 deg F)

Autoignition Temperature: 346 deg C (654.80 deg F)

Explosion Limits, Lower: 1.3%

Upper: 9.5%

NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Store protected from light. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture. Store protected from light.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1-Methyl-2-pyrrolidinone	none listed	none listed	none listed

OSHA Vacated PELs: 1-Methyl-2-pyrrolidinone: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear chemical goggles.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Appearance: clear, colorless

Odor: mild odor, amine-like

pH: 7.7-8.0 (100g/l aq.)

Vapor Pressure: 0.3 mm Hg @ 20C

Vapor Density: 3.4 (air=1)

Evaporation Rate:0.03 (butyl acetate=1)

Viscosity: 1.65 cp @ 25 C

Boiling Point: 202 deg C @ 760 mmHg

Freezing/Melting Point:-24 deg C

Decomposition Temperature:Not available.

Solubility: Miscible.

Specific Gravity/Density:1.028

Molecular Formula:C5H9NO

Molecular Weight:99.13

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Light sensitive.

Conditions to Avoid: Light, ignition sources, excess heat, exposure to moist air or water.

Incompatibilities with Other Materials: Chlorinating agents, sulfur, carbon disulfide, strong acids, strong oxidizing agents.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 872-50-4: UY5790000

LD50/LC50:

CAS# 872-50-4:

Draize test, rabbit, eye: 100 mg Moderate;

Oral, mouse: LD50 = 5130 mg/kg;

Oral, rat: LD50 = 3914 mg/kg;

Skin, rabbit: LD50 = 8 gm/kg;

Carcinogenicity:

CAS# 872-50-4: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: Rats exposed to 1-methyl-2-pyrrolidinone at concentrations of 1 mg/L as an aerosol for 10 days showed depletion of

hematopoietic cells in the bone marrow and atrophy of the lymphoid tissues of the thymus, spleen, and lymph nodes.

Teratogenicity: Oral, rat: TDLo = 9700 mg/kg (female 6-15 day(s) after conception) Effects on Embryo or Fetus - fetal death and Specific Developmental Abnormalities - other developmental abnormalities.; Inhalation, rat: TCLo = 150 ppm/6H (female 7-20 day(s) after conception) Effects on Newborn - growth statistics (e.g.%, reduced weight gain) and Effects on Newborn - delayed effects.; Inhalation, rat: TDLo = 116 ppm/6H (multigenerations) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).; Intraperitoneal, rat: TDLo = 166 mg/kg (female 9 day(s) after conception) Specific Developmenta

Reproductive Effects: Administration onto the skin, rat: TDLo = 7500 mg/kg (female 6-15 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants) Fertility - litter size (e.g. # fetuses per litter; measured before birth).; Intraperitoneal, mouse: TDLo = 7625 mg/kg (female 11-15 day(s) after conception) Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants). Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus)

Neurotoxicity: No information available.

Mutagenicity: Sex Chromosome Loss and Nondisjunction: Saccharomyces cerevisiae = 154 mmol/L.

Other Studies: Standard Draize Test: Administration into the eye (rabbit) = 100 mg (Moderate).

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 5104 mg/L; 96 Hr; Unspecified Fathead Minnow: LC50 = 4518.27 mg/L; 96 Hr; Unspecified Bluegill/Sunfish: LC50 = 5656 mg/L; 96 Hr; Unspecified flea Daphnia: LC50 = 3135 mg/L; 96 Hr; Unspecified 1-Methyl-2-pyrrolidinone is expected to show very high soil mobility and slowly volatilize from dry soil to the atmosphere, but it is not expected to significantly volatilize from moist soil. This product will biodegrade in water under aerobic conditions after a short lag period. Estimated BCF value = 0.16. This value suggests that this substance is not expected to significantly bioconcentrate in fish and aquatic organisms nor is it expected to significantly adsorb to sediment or suspended organic matter in water.

Environmental: 1-Methyl-2-pyrrolidinone is not expected to significantly volatilize from water to the atmosphere (estimated half-life from a model river = 2335 days). This product is expected to undergo gas-phase reaction with photochemically-produced hydroxyl radicals with a half-life of 5.2 hours. It may also undergo atmospheric removal by wet deposition processes.

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	No information available.				No information available.
Hazard Class:					
UN Number:					
Packing Group:					

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 872-50-4 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

CAS# 872-50-4: 4/12b

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 872-50-4: acute, flammable.

Section 313

This material contains 1-Methyl-2-pyrrolidinone (CAS# 872-50-4, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed

as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 872-50-4 can be found on the following state right to know lists: Pennsylvania, Minnesota, Massachusetts.

WARNING: This product contains 1-Methyl-2-pyrrolidinone, a chemical known to the state of California to cause birth defects or other reproductive harm. California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XI

Risk Phrases:

R 36/38 Irritating to eyes and skin.

Safety Phrases:

S 41 In case of fire and/or explosion do not breathe fumes.

WGK (Water Danger/Protection)

CAS# 872-50-4: 1

Canada - DSL/NDSL

CAS# 872-50-4 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2A.

Canadian Ingredient Disclosure List

Exposure Limits

CAS# 872-50-4: OEL-DENMARK:TWA 100 ppm (400 mg/m³) OEL-GERMANY:TWA 100 ppm (400 mg/m³) OEL-THE NETHERLANDS:TWA 100 ppm (400 mg/m³) OEL-RUSSIA:STEL 100 mg/m³ OEL-SWITZERLAND:TWA 200 ppm (400 mg/m³) OEL-UNITED KINGDOM:TWA 100 ppm (400 mg/m³)

Section 16 - Additional Information

MSDS Creation Date: 5/13/1999

Revision #3 Date: 10/24/2001

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.