

SAFETY DATA SHEET

According to Regulation (EC) No 453/2010

SDS-NMP-0001

Version 1.2

Revision Date: 01.10.2018

Printing Date: 01.10.2018

www.eamaterials.com

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name : **1-Methyl-2-pyrrolidinone**
Included product code : NMP012-2.5, NMP012-4.0, NMP011-25M,
NMP011-200M

1.2 Relevant identified uses of the substance or mixture

Identified uses : For R&D use only. Not for pharmaceutical,
household or other uses.
Uses advised against : Not applicable

1.3 Details of the supplier of the safety data sheet

Company : Elite Advanced Materials Sdn Bhd
No 1, Jalan KPK 1/2, Kawasan Perindustrian
Kundang, 48020 Rawang, Selangor, Malaysia
E-mail address : enquiry@eamaterials.com

1.4 Emergency telephone number

Emergency phone : +60 3-6034 3766 (Local business hours only)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Reproductive toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3

2.2 Label elements

Labeling in compliance to Regulation (EC) No. 1272/2008 [CLP/GHS]

Hazard pictograms



GHS08



GHS07

Signal word

Danger

Hazard statements

H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H360	May damage fertility or the unborn child

Precautionary statements

P201	Obtain special instructions before use.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P280	Wear eye protection/face protection.
P280	Wear protective gloves.
P281	Use personal protective equipment as required.

Response

P308 + P313	IF exposed or concerned: Get medical advice/attention.
-------------	--

2.3 Other hazards

None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Synonyms:	N-Methyl-2-pyrrolidone, 1-Methyl-2-pyrrolidone
Formula:	C ₅ H ₉ NO
Molecular Weight:	99.13 g/mol

Component	Identity	Classification Code	H-Code	Concentration (by volume)
N-methyl-2-pyrrolidone	CAS-No.: 872-50-4	Repr. Cat. 2; R61 Xi, Irritant; R36/37/38	H315, H319, H335, H360	<= 100%

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathe in, move the person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water for at least 15 minutes. Take victim to a hospital immediately. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and delayed symptoms and effects

Prolonged or repeated exposure can cause vomiting, diarrhoea, abdominal pain. Rats exposed to 1-methyl-2-pyrrolidinone at a concentration 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.

4.3 Indication of any immediate medical attention and special treatment

No data available.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide (CO₂).

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, Nitrogen oxides (NO_x)

5.3 Advice for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Evacuate the danger area, observe emergency procedures and consult an expert. Keep away from heat and sources of ignition.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see Section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precaution for safe handling

Avoid exposure – obtain special instructions before use. Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Work under hood. Avoid generation of vapours/aerosols. Keep away from sources of ignition – No smoking. Take measures to prevent the build-up of electrostatic charge.

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Protected from light. Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep locked up or in an area accessible only to qualified or authorised persons.

Store under inert gas. Moisture sensitive.

7.3 Specific end use

No data available.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Permissible exposure limit

Contains no substances with occupational exposure limit values.

8.2 Exposure control

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Personal protection measures, such as personal protective equipment

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/ face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.

Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact*

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact*

Material: Natural latex/chloroprene

Minimum layer thickness: 0.6 mm

Break through time: 35 min

Material tested: Lapren® (KCL 706 / Aldrich Z677558, Size M)

*Source – Sigma Aldrich, 2016

If used in solution, or mixed with other substances, and under conditions which differ from EN374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Other protective equipment

Flame retardant antistatic protective clothing.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards

No data available.

Environmental exposure control

Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	:	Liquid
Color	:	Colorless
Ordor	:	Amine-like
Ordor threshold	:	No data available
pH - value	:	7.7 - 8
Melting point / Range	:	-24 °C – lit.
Initial boiling point / Range	:	202 °C – lit.
Flash point	:	91 °C closed cup
Evaporation rate	:	No data available
Flammability limit - LEL	:	1.3% (V)
Flammability limit - UEL	:	9.5% (V)
Vapour pressure	:	0.39 – 0.43 hPa at 20.0 °C 1.32 hPa at 40.0 °C
Vapour density (air = 1)	:	3.42 (Air = 1.0)
Density	:	1.09 g/cm ³ at 20.0 °C
Relative density	:	1.028 g/cm ³ at 25.0 °C
Water solubility	:	1,000 g/l at 25.0 °C
Partition coefficient: n-octanol/water:		log Pow: -0.46 (25.0 °C) OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	:	245 °C at 1.013 hPa Method: DIN 51794
Decomposition temperature	:	No data available
Viscosity	:	1.80 mPa.s at 20.0 °C
Explosive properties	:	Not classified as explosive.
Oxidising properties	:	No data available
Surface Tension	:	No data available
Conductivity	:	0.2 – 0.4 µS/cm

9.2 Other information

Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with: Oxidizing agents
Violet reactions possible with: Strong acids, Strong bases

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

Strong acids, Strong oxidizing agents, Strong reducing agents

10.6 Hazardous decomposition products

In the event of fire: See Section 5.

SECTION 11: TOXICOLOGY INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1-Methyl-2-pyrrolidinone	3.914 mg/kg (rat)	8.000 mg/kg (rabbit)	5100 ppm (rat) 4 h

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Eyes – Rabbit – Eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

Damage to fetus possible.

Specific target organ toxicity - single exposure

Inhalation – May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Potential health effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion May be harmful if swallowed.

Skin May be harmful if absorbed through skin. Causes skin irritation.

Eyes Causes serious eye irritation.

Signs and Symptoms of Exposure

Prolonged or repeated exposure can cause: Vomiting, Diarrhoea, Abdominal pain. Rats exposed to 1-methyl-2-pyrrolidinone at a concentration 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.

Additional Information

RTECS: UY5790000

SECTION 12: ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Toxicity to fish	LC50 - other fish - 4.000 mg/l - 96 h LC50 - Leuciscus idus (Golden orfe)- 500 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1.000 mg/l - 24 h
Toxicity to bacteria	LC50 - Bacteria - 9.000 mg/l

12.2 Persistence and degradability

Biodegradability Result: 90% - Readily biodegradable

12.3 Bioaccumulative potential

Bioaccumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment method

Product

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR/RID: -

IMDG: -

IATA-DGR: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA-DGR: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA-DGR: -

14.4 Packaging group

ADR/RID: -

IMDG: -

IATA-DGR: -

The information contained in this Safety Data Sheet comes from sources believed to be accurate or otherwise technically correct. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. The users are advised to carry out their own evaluation of the material to determine suitability in their application. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

