SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Name of the substance	1-methyl-2-pyrrolidone mix
Identification number	606-021-00-7 (Index number)
Synonyms	None.
Document number	1TE
Materion Code	1TE
Issue date	20-May-2016
Version number	02
Revision date	12-January-2018
Supersedes date	20-May-2016

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Not available.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name	Materion Advanced Chemicals Inc.
Address	407 N. 13th Street 1316 W. St. Paul Avenue Milwaukee, WI 53233 United States
Division	Milwaukee
Telephone	414.212.0257
e-mail	advancedmaterials@materion.com
Contact person	Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classificatior applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.
Reproductive toxicity (the unborn child)	Category 1B	H360D - May damage the unborn child.
Specific target organ toxicity - single exposure	Category 3 respiratory tract irritation	H335 - May cause respiratory irritation.

Hazard summary Causes serious eye irritation. Causes skin irritation. May cause irritation to the respiratory system. May cause reproductive effects. Occupational exposure to the substance or mixture may cause adverse health effects. The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: RM 1-methyl-2-pyrrolidone

Hazard pictograms

Signal word Danger

Hazard statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H360D	May damage the unborn child.

Precautionary statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTRE/doctor if you feel unwell.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information For further information, please contact the Product Stewardship Department at +1.800.862.4118.

2.3. Other hazards None known.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
RM 1-methyl-2-pyrrolidone		872-50-4 212-828-1	-	606-021-00-7	#
Classification:	Skin Irrit. 2;H315, Eye Irrit. 2;H319, STOT SE 3;H335, Repr. 1B;H360D				

List of abbreviations and symbols that may be used above

M: M-factor
vPvB: very persistent and very bioaccumulative substance.
PBT: persistent, bioaccumulative and toxic substance.
#: This substance has been assigned Community workplace exposure limit(s).

Composition comments The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

4.1. Description of first aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell.

Skin contact Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.
4.3. Indication of any immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards	No unusual fire or explosion hazards noted.
5.1. Extinguishing media	
Suitable extinguishing media	Powder. Alcohol resistant foam. Water spray. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
5.2. Special hazards arising from the substance or mixture	During fire, gases hazardous to health may be formed.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures	Use water spray to cool unopened containers.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
6.3. Methods and material for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide adequate ventilation. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
7.2. Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Material	Type	Value	Form
1-methyl-2-pyrrolidone mix	MAK	40 mg/m3	Vapor.
		10 ppm	Vapor.
	STEL	80 mg/m3	Vapor.
		20 ppm	Vapor.

Components	Type	Value	Form
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	MAK	40 mg/m3	Vapor.
		10 ppm	Vapor.
	STEL	80 mg/m3	Vapor.
		20 ppm	Vapor.

Belgium. Exposure Limit Values.

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Material	Type	Value
1-methyl-2-pyrrolidone mix	MAC	40 mg/m3
		10 ppm
	STEL	80 mg/m3
		20 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	MAC	40 mg/m3
		10 ppm
	STEL	80 mg/m3
		20 ppm

Czech Republic. OELs. Government Decree 361

Material	Type	Value
1-methyl-2-pyrrolidone mix	Ceiling	80 mg/m3
	TWA	40 mg/m3

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	Ceiling	80 mg/m3
	TWA	40 mg/m3

Denmark. Exposure Limit Values

Material	Type	Value
1-methyl-2-pyrrolidone mix	TLV	20 mg/m3 5 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	TLV	20 mg/m3 5 ppm

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Finland. Workplace Exposure Limits

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Material	Type	Value
1-methyl-2-pyrrolidone mix	VLE	80 mg/m3 20 ppm
	VME	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	VLE	80 mg/m3 20 ppm
	VME	40 mg/m3 10 ppm

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Material	Type	Value	Form
1-methyl-2-pyrrolidone mix	TWA	82 mg/m3	Vapor and aerosol.
		20 ppm	Vapor and aerosol.

Components	Type	Value	Form
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	82 mg/m3	Vapor and aerosol.
		20 ppm	Vapor and aerosol.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Material	Type	Value	Form
1-methyl-2-pyrrolidone mix	AGW	82 mg/m3	Vapor.
		20 ppm	Vapor.

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value	Form
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	AGW	82 mg/m3	Vapor.
		20 ppm	Vapor.

Greece. OELs (Decree No. 90/1999, as amended)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
	TWA	40 mg/m3

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
	TWA	40 mg/m3

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Ireland. Occupational Exposure Limits

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Italy. Occupational Exposure Limits

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm

Italy. Occupational Exposure Limits

Components	Type	Value
	TWA	40 mg/m3
		10 ppm

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Netherlands. OELs (binding)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
	TWA	40 mg/m3

Netherlands. OELs (binding)

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
	TWA	40 mg/m3

Norway. Administrative Norms for Contaminants in the Workplace

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TLV	20 mg/m3 5 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TLV	20 mg/m3 5 ppm

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
	TWA	40 mg/m3

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
	TWA	40 mg/m3

Portugal. OELs. Decree-Law n. 290/2001 (Journal of the Republic - 1 Series A, n.266)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Components	Type	Value
		20 ppm
	TWA	40 mg/m3
		10 ppm

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Material	Type	Value	Form
1-methyl-2-pyrrolidone mix	TWA	40 mg/m3	Vapor.
		10 ppm	Vapor.

Components	Type	Value	Form
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	TWA	40 mg/m3	Vapor.
		10 ppm	Vapor.

Spain. Occupational Exposure Limits

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	300 mg/m3
		75 ppm
	TWA	200 mg/m3
		50 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	Ceiling	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	160 mg/m3
		40 ppm
	TWA	80 mg/m3
		20 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	160 mg/m3
		40 ppm
	TWA	80 mg/m3
		20 ppm

UK. EH40 Workplace Exposure Limits (WELs)

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3
		20 ppm
	TWA	40 mg/m3
		10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
	TWA	20 ppm 40 mg/m3 10 ppm

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Material	Type	Value
1-methyl-2-pyrrolidone mix	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Components	Type	Value
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	STEL	80 mg/m3 20 ppm
	TWA	40 mg/m3 10 ppm

Biological limit values

Germany. TRGS 903, BAT List (Biological Limit Values)

Material	Value	Determinant	Specimen	Sampling time
1-methyl-2-pyrrolidone mix	150 mg/l	5-Hydroxy-N-methyl-2-pyrrolidon	Urine	*

Components	Value	Determinant	Specimen	Sampling time
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	150 mg/l	5-Hydroxy-N-methyl-2-pyrrolidon	Urine	*

* - For sampling details, please see the source document.

Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

Components	Value	Determinant	Specimen	Sampling time
RM 1-methyl-2-pyrrolidone (CAS 872-50-4)	70 mg/g	5-hidroxi-N-metil-2-pirrolidona	Creatinine in urine	*
	20 mg/g	2-hidroxi-N-metilsuccinimida	Creatinine in urine	*

* - For sampling details, please see the source document.

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs) Not available.

Predicted no effect concentrations (PNECs) Not available.

Exposure guidelines

EU Exposure Limit Values: Skin designation

RM 1-methyl-2-pyrrolidone (CAS 872-50-4) Can be absorbed through the skin.

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

RM 1-methyl-2-pyrrolidone (CAS 872-50-4) Can be absorbed through the skin.

8.2. Exposure controls

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

General information Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

- Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
- Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
Environmental exposure controls	Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Physical state	Liquid.
Form	Liquid.
Colour	Colourless. Amber. Grey
Odour	Not available.
Odour threshold	Not available.
pH	7,7 - 8
Melting point/freezing point	-25 °C (-13 °F)
Initial boiling point and boiling range	202 °C (395,6 °F) 101,325 kPa
Flash point	95,6 °C (204,0 °F) Open cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	0,05 kPa at 25 °C
Vapour density	3,4
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	-0,54
Auto-ignition temperature	346,11 °C (655 °F)
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2. Other information

Density	1,03 g/cm3 estimated at 25 °C
Dynamic viscosity	1,65 mPa.s
Kinematic viscosity	1,607 mm²/s estimated
Molecular formula	C5-H9-N-O
Molecular weight	99,13 g/mol
Specific gravity	1,03 at 25 °C

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid Avoid temperatures exceeding the flash point. Contact with incompatible materials.

10.5. Incompatible materials Peroxides. Phenols.

10.6. Hazardous decomposition products No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation May cause irritation to the respiratory system. Prolonged inhalation may be harmful.

Skin contact Causes skin irritation.

Eye contact Causes serious eye irritation.

Ingestion May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

11.1. Information on toxicological effects

Acute toxicity May cause respiratory irritation.

Product	Species	Test results
1-methyl-2-pyrrolidone mix		
Acute		
Dermal		
LD50	Rabbit	8000 mg/kg
Oral		
LD50	Mouse	5130 mg/kg
	Rat	3914 mg/kg
		4,2 ml/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory sensitisation Due to partial or complete lack of data the classification is not possible.

Skin sensitisation Due to partial or complete lack of data the classification is not possible.

Germ cell mutagenicity Due to partial or complete lack of data the classification is not possible.

Carcinogenicity Due to partial or complete lack of data the classification is not possible.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

Reproductive toxicity May damage the unborn child.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Due to partial or complete lack of data the classification is not possible.

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information No information available.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.2. Persistence and degradability No data is available on the degradability of this product.

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water (log Kow)	
1-methyl-2-pyrrolidone mix	-0,54
RM 1-methyl-2-pyrrolidone	-0,54
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	Not available.
12.6. Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

ADN

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

RM 1-methyl-2-pyrrolidone (CAS 872-50-4)

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

RM 1-methyl-2-pyrrolidone (CAS 872-50-4)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations The product is classified and labelled in accordance with EC directives or respective national laws Pregnant women should not work with the product, if there is the least risk of exposure. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations Follow national regulation for work with chemical agents. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended.

15.2. Chemical safety assessment No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations Not available.

Information on evaluation method leading to the classification of mixture Not applicable.

Disclaimer Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.
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