SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 10, 2017

Revision Date: Aug 10, 2017

1.Identification

1.1GHS Product identifier

Product name	N-methylformamide

1.2Other means of identification

Product number	-
Other names	N-Methylformamid

1.3Recommended use of the chemical and restrictions on use

Identified uses	For industry use only. Intermediates
Uses advised against	no data available

2.Hazard identification

2.1Classification of the substance or mixture

Acute toxicity - Dermal, Category 4

Reproductive toxicity, Category 1B

2.2GHS label elements, including precautionary statements

Pictogram(s)	
Signal word	Danger
Hazard	H312 Harmful in contact with skin

statement(s)	
Precautionary statement(s)	
Prevention	P280 Wear protective gloves/protective clothing/eye protection/face protection. P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood.
Response	P302+P352 IF ON SKIN: Wash with plenty of water/... P312 Call a POISON CENTER/doctor/…if you feel unwell. P321 Specific treatment (see ... on this label). P362+P364 Take off contaminated clothing and wash it before reuse. P308+P313 IF exposed or concerned: Get medical advice/ attention.
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.3Other hazards which do not result in classification

none

3.Composition/information on ingredients

3.1Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
N-methylformamide	N-methylformamide	123-39-7	none	100%

4.First-aid measures

4.1Description of necessary first-aid measures

General advice

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

If inhaled

Fresh air, rest. Refer for medical attention.

In case of skin contact

Rinse skin with plenty of water or shower.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Rest. Refer for medical attention .

4.2Most important symptoms/effects, acute and delayed

SYMPTOMS: Symptoms of exposure to this compound include irritation of the mucous membranes and upper respiratory tract. Other symptoms include liver damage, eye irritation with discomfort, tearing or blurring of vision, skin irritation with discomfort or rash, abnormalities of liver function with jaundice, temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, incoordination and loss of consciousness. ACUTE/CHRONIC HAZARDS: This compound may be absorbed through the skin and cause skin irritation. It may also irritate the eyes, mucous membranes and upper respiratory tract. When heated to decomposition it emits toxic fumes of carbon monoxide, carbon dioxide and nitrogen oxides.

4.3Indication of immediate medical attention and special treatment needed, if necessary

Absorption, Distribution and Excretion

8 healthy male subjects were exposed to dimethylformamide vapor at a concn of 8.79 + or - 0.33 ppm for 6 hr/day for 5 consecutive days. All urine voided by the subjects was collected from the beginning of the first exposure to 24 hr past the end of the last exposure & each sample was analyzed for monomethylformamide. Monomethylformamide was rapidly eliminated from the body with urine values peaking within a few hr following the end of each exposure period. The mean for the 7 hr (end of exposure) sample was 4.74 ug/ml urine or 736.8 ug.

5.Fire-fighting measures

5.1Extinguishing media

Suitable extinguishing media

Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. A water spray may also be used.

5.2Specific hazards arising from the chemical

This chemical is combustible.

5.3Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures

6.1Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2Environmental precautions

Personal protection: chemical protection suit including self-contained breathing apparatus. Collect leaking liquid in covered containers.

6.3Methods and materials for containment and cleaning up

Pick up and arrange disposal. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7.Handling and storage

7.1Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2Conditions for safe storage, including any incompatibilities

Separated from oxidants.

8.Exposure controls/personal protection

8.1Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3Individual protection measures, such as personal protective equipment (PPE)

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

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

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9.Physical and chemical properties

Physical state	clear, colorless liquid.

Colour	no data available
Odour	no data available
Melting point/ freezing point	-5° C(lit.)
Boiling point or initial boiling point and boiling range	183° C(lit.)
Flammability	Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	98° C(lit.)
Auto-ignition temperature	322.78° C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	1.99 mN/s/m @ 15° C; 1.65 mN/s/m @ 25° C
Solubility	In water:miscible
Partition coefficient n-octanol/water (log value)	log Kow = -0.97
Vapour pressure	0.808mmHg at 25° C
Density and/or	1.011

relative density	
Relative vapour density	(air = 1): 2.04
Particle characteristics	no data available

10.Stability and reactivity

10.1Reactivity

no data available

10.2Chemical stability

Solution: A 25% aqueous solution is stable at room temperature for at least one week (NMR).

10.3Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat or flame.N-METHYLFORMAMIDE is incompatible with benzene sulfonyl chloride. It is also incompatible with strong oxidizing agents, acids, bases and acid chlorides. It may react with chlorine, bromine, nitrates, nitric acid, triethylaluminum, potassium permanganate, chromic acid, chromic anhydride, chromium trioxide, borohydrides, hydrides, thionyl chloride, metallic sodium, phosphorus trioxide, diborane, (octafluoroisobutyrate + sodium nitrite) and (perchloryl fluoride + potassium methyl 4,4-dinitrobutyrate).

10.4Conditions to avoid

no data available

10.5Incompatible materials

VIOLENT REACTION WITH BENZENE SULFONYL CHLORIDE.

10.6Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

11.Toxicological information

Acute toxicity

- Oral: LD50 BALB/C Mouse oral 2.6 g/kg
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12.Ecological information

12.1Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2Persistence and degradability

AEROBIC: N-Methylformamide, present at 400 mg/l, reached 4%, 98%, and 100% of its theoretical BOD in 3 hrs, 3 days, and 7 days, respectively, using an industrial activated sludge inoculum and the Zahn-Wellens test(1). Using the BOD test, N-methylformamide achieved 2% of its theoretical BOD after 5 days(1). N-Methylformamide has also been shown to biodegrade by microorgansism obtained through soil enrichment(2). Therefore, N-methylformamide may biodegrade in the environment(SRC).

12.3Bioaccumulative potential

An estimated BCF of 3 was calculated for N-methylformamide(SRC), using a log Kow of -0.97(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4Mobility in soil

The Koc of N-methylformamide is estimated as 7(SRC), using a log Kow of -0.97(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that N-methylformamide is expected to have very high mobility in soil(SRC).

12.5Other adverse effects

no data available

13.Disposal considerations

13.1Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14.Transport information

14.1UN Number

ADR/RID: UN2924	IMDG: UN2924	IATA: UN2924

14.2UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, CORROSIVE, N.O.S.
IMDG: FLAMMABLE LIQUID, CORROSIVE, N.O.S.
IATA: FLAMMABLE LIQUID, CORROSIVE, N.O.S.

14.3Transport hazard class(es)

ADR/RID: 3	IMDG: 3	IATA: 3

14.4Packing group, if applicable

ADR/RID: II	IMDG: II	IATA: II

14.5Environmental hazards

ADR/RID: no	IMDG: no	IATA: no

14.6Special precautions for user

no data available

14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15.Regulatory information

15.1Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number

N-methylformamide	N-methylformamide	123-39-7	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

16.Other information

Information on revision

Creation Date	Aug 10, 2017
Revision Date	Aug 10, 2017

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.