

MATERIAL SAFETY DATA SHEET

Version 2.0

Revision Date: 07/16/2019

1. CHEMICAL PRODUCT & COMPANY INFORMATION

Product name	N-Methylformamid
Company Information:	Green Chemicals Co., Ltd
location:	No.6, DingLan Road, AoYang Industrial Park, FuNing,YanCheng, P.R.China
Phone Number:	+86-51-87883661
Email:	market@greenchem-china.com
Website:	www.greenchem-china.com/
Use:	For industrial use only

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Acute toxicity - Dermal, Category 4

Reproductive toxicity, Category 1B

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H312 Harmful in contact with skin

Precautionary statement(s)

Prevention:

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P201 Obtain special instructions before use.



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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 ...

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

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

4. First-aid measures

4.1 Description 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 .

4.2 Most important symptoms/effects, acute and delayed



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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.

4.3 Indication 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

5.1 Extinguishing 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.

5.2 Specific hazards arising from the chemical This chemical is combustible.

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal 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.

6.2 Environmental precautions

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

6.3 Methods 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



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7.1 Precautions 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.

7.2 Conditions for safe storage, including any incompatibilities

Separated from oxidants.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values:

no data available

Biological limit values:

no data available

8.2 Appropriate engineering controls

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

8.3 Individual 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.)



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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 temperature	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 relative density	1.011
Relative vapour density	(air = 1): 2.04
Particle characteristics	no data available

10. Stability and reactivity

10.1 Reactivity no data available

10.2 Chemical stability

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

10.3 Possibility 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).

10.4 Conditions to avoid no data available

10.5 Incompatible materials

VIOLENT REACTION WITH BENZENE SULFONYL CHLORIDE.

10.6 Hazardous decomposition products

11. Toxicological information

11.1 Acute toxicity

Oral: LD50 BALB/C Mouse oral 2.6 g/kg

Inhalation: no data available

Dermal: no data available

11.2 Skin corrosion/irritation no data available



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11.3 Serious eye damage/irritation	no data available
11.4 Respiratory or skin sensitization	no data available
11.5 Germ cell mutagenicity	no data available
11.6 Carcinogenicity	no data available
11.7 Reproductive toxicity	no data available
11.8 STOT-single exposure	no data available
11.9 STOT-repeated exposure	no data available
11.10 Aspiration hazard	no data available

12. Ecological information

12.1 Toxicity

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

12.2 Persistence 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 microorganism obtained through soil enrichment(2). Therefore, N-methylformamide may biodegrade in the environment(SRC).

12.3 Bioaccumulative 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).

12.4 Mobility 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).

12.5 Other adverse effects	no data available
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13. Disposal considerations

13.1 Disposal 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



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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

14.1 UN Number

ADR/RID: UN2924
IMDG: UN2924
IATA: UN2924

14.2 UN 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.

14.3 Transport hazard class(es)

ADR/RID: 3
IMDG: 3
IATA: 3

14.4 Packing group, if applicable

ADR/RID: II
IMDG: II
IATA: II

14.5 Environmental hazards

ADR/RID: no
IMDG: no
IATA: no

14.6 Special precautions for user no data available

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

no data available

15. Regulatory information

15.1 Safety, 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.



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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

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. Yancheng Green Chemicals Co.,Ltd shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.