



SAFETY DATA SHEET

N,N - DIMETHYLFORMAMIDE

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Product name: N,N - DIMETHYLFORMAMIDE
Recommended use: Chemical for industry
Manufacturer/Supplier: **MODERN CHEMICAL Co.Ltd.**
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2. HAZARDS IDENTIFICATION

Label elements

Pictogram



Signal word

Danger

Hazard statement(s):

- 1.) Flammable liquid and vapor.
- 2.) Harmful in contact with skin or if inhaled.
- 3.) Causes serious eye irritation.
- 4.) May damage fertility or the unborn child.

Precautionary statement(s):

- 1.) Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- 2.) Keep container tightly closed.
- 3.) Ground/bond container and receiving equipment.
- 4.) Use explosion-proof electrical/ventilating/lighting/equipment.
- 5.) Use non-sparking tools.
- 6.) Take precautionary measures against static discharge.



- 7.) Wear protective gloves/protective clothing/eye protection/face protection.
- 8.) Do not breathe dust/fume/gas/mist/vapours/spray.
- 9.) Use only outdoors or in a well-ventilated area.
- 10.) Wash thoroughly after handling.
- 11.) Obtain special instructions before use.
- 12.) Do not handle until all safety precautions have been read and understood.
- 13.) IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower.
- 14.) Call a POISON CENTER or doctor/physician if you feel unwell.
- 15.) In case of fire: Use alcohol stable foam, dry chemical powder, carbon dioxide, water spray or fog to extinguish.
- 16.) IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- 17.) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- 18.) If eye irritation persists. Get medical advice/attention.
- 19.) IF exposed or concerned: Get medical advice/attention.
- 20.) Store in a well-ventilated place. Keep cool.
- 21.) Store locked up.
- 22.) Dispose of contents/container to relevant regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonym: Formic acid dimethylamide; N,N-Dimethylmethanamide; N-Formyldimethylamine; DMF;

Dimethylformamide.

Ingredients	% (w/w)	CAS NO.
N,N - DIMETHYLFORMAMIDE	100	68-12-2

4. FIRST AID MEASURES

General advice:

Remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

Inhalation:

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



- Skin contact:** Take off immediately all contaminated clothing. Wash off with soap and plenty of water. Consult a physician.
- Eye contact:** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- Ingestion:** **Do not induce vomiting.** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

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

Unsuitable Extinguishing Media:

Do not use halogenated fire extinguishing agent. Dry chemical extinguishers to control fires involving nitromethane or nitroethane.

Specific hazards arising from Chemicals:

On combustion, may emit toxic fumes of carbon dioxide, carbon monoxide, nitrogen oxides, and other pyrolysis products typical of burning organic material. Combustible liquid. This product is a moderate fire and explosion hazard. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. At elevated temperature, containers may rupture and in extreme cases, explode. Decomposition and combustion product may be hazardous.

Special protective equipment for fire-fighters:

Wear self-contained breathing apparatus for firefighting if necessary. Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulation to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and Material for Containment and Clean 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.



7. HANDING AND STORAGE

Precautions for Safe Handling & Product Transfer:

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition-No smoking. Take measures to prevent the buildup of electrostatic charge.

Conditions for Safe Storage & Unsuitable Materials:

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed are kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits: TWA 10 ppm

Appropriate Engineering Controls: For flammable liquids and flammable gases, local exhaust ventilation or a process enclosure ventilation system may be required. Ventilation equipment should be explosion-resistant.

Individual Protection Measures

Respiratory protection: If the exposure limit is exceeded, wear a supplied air, full-face piece respirator, air lined hood, or full-face piece self-contained breathing apparatus.

Hand protection: Wear protective gloves.

Eye protection: Safety glasses with side shields. Chemical goggles.

Skin and body Protection: Wear impervious protective clothing. Wear safety footwear or safety gumboots.

Hygiene measure: Avoid contact with the skin, eyes and clothing. Under no circumstances should the product come into contact with the skin of pregnant women or be inhaled by them. Provide clean work clothes daily to workers who regularly use this material. Direct workers to shower before changing into street clothes. No smoking in working place.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form, Color and Odor: liquid, colourless, amine-like	Evaporation rate : 0.17 (BuAc = 1)
Melting Point: -61 °C	Specific gravity : 0.950
pH: 6.5 – 8.5	Solubility in water : Soluble
Boiling point : 152 – 153 °C	Viscosity : 0.802 - 0.860 mPa.sec at 20 °C
Vapour pressure: 3.77 mbar or 0.38 kPa at 20°C	Vapour density: 2.51 – 2.52 (air=1)



Lower explosion limits: 2.2% Vol	Upper explosive limit: 15.2 – 16.0 % Vol
Auto-ignition temperature: 410 - 445 °C	Flash point: 57.5 – 58.0 °C
Odour threshold: 100 ppm	Flammability (solid, gas): N/A
Decomposition temperature: N/A	Solubility in other solvents: N/A
n-octanol/water partition coefficient (log P_{ow}): (-1.01) – (-0.85)	

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable under recommended storage and handling conditions.
Reactions:	No data available.
Possibility of Hazardous Reactions:	Reacts with strong oxidizing agents. Reacts with halogenated. Polymerization will not occur.
Conditions to avoid:	Excessive heat, ignition sources, sunlight and incompatible materials.
Materials to be avoided:	Oxidizing agents, chlorine bleaches, strong acids, nitrates, carbon tetrachloride other halogenated compounds, alkyl aluminums, strong oxidizing agents and methylene diisocyanate.
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, diethylamine, ammonia, nitrogen oxides and other volatile organic fragments.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:	LC50 (Inhalation, mouse): 9400 mg/m ³ - 2h LD50 (Dermal, rabbit): 1100 - 4720 mg/kg LD50 (Oral, rat): 2800 - 4000 mg/kg
Sensitization:	Eye contact: may cause irritation and conjunctivitis with redness, pain and blurred vision. Skin contact: may cause skin irritation. Prolonged or repeated exposure to the liquid or vapor may defat the skin and cause dermatitis. Inhalation: may cause irritation of mucous membrane, respiratory and upper respiratory tract. Higher concentrations may cause central nervous system depression with symptoms of dizziness, headache, nausea, vomiting, and abdominal pain. Ingestion: may cause gastrointestinal irritation with abdominal pain, nausea, vomiting dizziness and fatigue. Fatal dose estimated at 10 grams.



Chonic toxicity: Carcinogenicity: None of the components is listed as a carcinogen or suspect carcinogen by NTP, IARC or OSHA.

Further toxicological information: No data available.

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish: LC50 - Lepomis macrochirus: 6300 mg/l -96h

LC50 - Rainbow Trout: 12000 mg/l -96h

LC50 - Fathead Minnow: 78.2 mg/l -96h

Toxicity to daphnia and other aquatic invertebrates:

EC50 - Daphnia magna: >100 mg/l -48h

Toxicity to algae: EC50 - Scenedesmus subspicatus: >500 mg/l -96 h

Toxicity to bacteria: EC10 - Pseudomonas putida: 2210 mg/l/ -24h

Biodegradability remark: Readily biodegrade in the environment.

Bioaccumulative potential: Bioaccumulative potential is low ($\log P_{o/w} = -1.01$). Dose not accumulate in organisms.

Mobility: High.

Affected in any other way: Do not release untreated into natural waters.

13. DISPOSAL CONSIDERATIONS

Material Disposal: Must be dumped or incinerated in accordance with local regulations. Offer surplus and non-recyclable solutions to a licensed disposal company.

Container Disposal: Uncleaned empties should be disposed of in the same manner as the contents.

14. TRANSPORT INFORMATION

ADR/RID

UN-No: 2265

Class: 3.3

Packing group: III

Proper shipping name: N, N-DIMETHYLFORMAMIDE

IMDG

UN-No: 2265

Class: 3

Packing group: III

Marine pollutant: No

Proper shipping name: N, N-DIMETHYLFORMAMIDE

**IATA**

UN-No: 2265

Class: 3

Packing group: III

Proper shipping name: N, N-DIMETHYLFORMAMIDE

15. REGULATORY INFORMATION**Regulations:**

N,N-DIMETHYLFORMAMIDE(68-12-2) is found on the following regulatory list: "China Classification and Labeling of Dangerous Chemical Substances", "China Dangerous Chemicals Names List"

This safety data sheet is in compliance with the following national standards: GB16483-2008, GB13690-2009, GB18218-2009, GB15258-2009, GB6944-2012, GB190-2009, GB191-2009, GB12268-2008, GA57-1993, GB/T 15098-2008, GBZ 2-2007 as well as the following national regulations: Dangerous Goods Transport Administrative Regulation, Dangerous Chemicals Safety Administrative Regulation, United Nations Regulations on the Transport of Dangerous Goods (UN RTDG).

OSHA HAZARD CLASSIFICATION: Irritant, toxic, target organ effects, combustible liquid.

EPA SARA 311 HAZARD CLASSIFICATION: Acute health, chronic health, fire hazard

SARA TITLE 111 SECTION 313 INFORMATION: The following chemical is regulated under SARA Title III, Section 313

COMPONENT	CAS #	WT %
N,N-Dimethylformamide	68-12-2	99.9

CERCLA HAZARDOUS SUBSTANCE: Dimethyl formamide

REPORTABLE QUANTITY: 100 lbs

STATE R-T-K COMPOSITION INFORMATION

COMPONENT	CAS #	WT %	PA	NJ
Dimethyl formamide	68-12-2	100	Y	Y

CALIFORNIA PROPOSITION 65 INFORMATION: This product contains no California Proposition 65 regulated chemicals.

EPA TSCA INVENTORY STATUS: All chemical components are listed on TSCA inventory.

WHMIS CLASSIFICATION: Class B- Division 3 (Combustible Liquid), Class D- Division 2 - Subdivision A (Very toxic material causing other toxic effects)



CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the components of this product are listed on the Canadian Domestic Substances List (DSL).

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES: All of the components of this product are listed on the AICS inventory.

EUROPEAN INVENTORY OF COMMERCIAL CHEMICAL SUBSTANCES: All of the components of this product are listed on the EINECS inventory.

JAN METI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

KOREAN EXISTING CHEMICAL LIST: All of the components of this product are listed on the KECL.

PHILIPPINE INVENTORY OF CHEMICAL AND CHEMICALS AND CHEMICAL SUBSTANCES: All of the component are listed on the PICCS.

Regulations of the European union (Labeling)/National legislation/Regulations

EC-Number: 200-679-5

as in Directive 67/548/EEC

Hazard symbol(s)

T Toxic.

R-phrase(s)

R61 May cause harm to the unborn child.

R20/21 Harmful by inhalation and in contact with skin.

R36 Irritating to eyes.

S-phrase(s)

S53 Avoid exposure-obtain special instructions before use.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Hazard determinant component(s) for labeling: DIMETHYLFORMAMIDE

Other regulations

RE2 - Category 2: Substances which should be regarded as if they cause developmental toxicity to humans



Regulation of chemicals safety management in China

Safety management ordinance of chemicals dangerous goods (No. 344 order of the State Council)

The classification and sign of common dangerous chemicals (GB13690-1992)

The classification and number of dangerous goods (GB6944-86):

Belong to class 3,3 high flash point flammable liquid

The classification and number of dangerous goods (GB6944-86)

DG No.: 33627

The packing sign of dangerous goods (GB190-1990)

Package sign: 7 (flammable liquid)

The principle of classification of transport packing groups of dangerous goods (GB/T 15089-94)

Belong to packing group III

The Management Regulation of Transportation of Dangerous Goods Roads (No.9 Order of MOC, 2005)

Rule of Transportation of Dangerous goods Canalage (No.10 order of MOC, 1996)

Rule of Transportation of Dangerous goods Railway (MOR, 1995)

The selecting rule of work protect equipments (GB 11651-89)

16. OTHER INFORMATION

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