



## SAFETY DATA SHEET

### DIMETHYLFORMAMIDE

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

Product name: 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.) Causes skin irritation.
- 2.) May be fatal if swallowed and enters airways.
- 3.) May cause drowsiness or dizziness.
- 4.) Toxic to aquatic life with long lasting effects.
- 5.) May damage the unborn child. Suspected of damaging fertility.

##### Precautionary statement(s)

- 1.) Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- 2.) Avoid release to the environment.
- 3.) IF SWALLOWED: call a doctor/physician. Do NOT induce vomiting.



4.) IF IN EYES: Rinse cautiously with water for 15 minutes.

5.) IF ON SKIN Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonym:** Formic acid dimethylamide, N, N-Dimethylformamide, N,N-Dimethylmethanamide, N-Formyldimethylamine, DMF

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

### 4. FIRST AID MEASURES

**General advice:**

Show this safety data sheet to the doctor in attendance.

**Inhalation:**

Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus.

**Skin contact:**

Remove contaminated clothing and wash affected skin with soap and water. Obtain medical attention. If signs of poisoning appear, treat as for inhalation. Wash contaminated clothing before re-use.

**Eye contact:**

If the substance has got into the eyes, immediately wash out with plenty of water at least 15 minutes. Obtain medical attention.

**Ingestion:**

Rinse mouth. **Do not induce vomiting.** Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media:**

Extinguish with carbon dioxide, dry chemical, foam. In the event of fire, cool tanks with water spray.

**Unsuitable Extinguishing Media:**

Do not use a solid water stream as it may scatter and spread fire.



### **Specific hazards arising from Chemicals:**

Vapors may form explosive mixture with air. Flash back possible over considerable distance.

### **Special protective equipment for fire-fighters:**

Wear self-contained breathing apparatus and protective suit.

## **6. ACCIDENTAL RELEASE MEASURES**

### **Personal precautions:**

Evacuate personnel to safe areas. Do not breathe vapors or spray mist. Wear a positive pressure supplied air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak.

### **Environmental precautions:**

Contain or absorb leaking liquid with sand or earth, consults an expert. Prevent liquid entering sewers, basements and work pits. If substance has entered a water course or sewer or contaminated soil or vegetation, advise police.

### **Methods and Material for Containment and Clean Up:**

Soak up with inert absorbent material (e.g. sand, silica gel). Prevent liquid entering sewers, basements and work pits; vapor may create explosive atmosphere. Transfer to covered steel drums. Dispose of promptly.

## **7. HANDING AND STORAGE**

### **Precautions for Safe Handling & Product Transfer:**

Keep container tightly closed. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only in area provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing.

### **Conditions for Safe Storage & Unsuitable Materials:**

Keep tightly closed at room temperature in a dry, cool and well ventilated place. Keep away from heat and sources of ignition. Keep out of direct sunlight and away from incompatible material. Store in original container. Electrical equipment should be protected to the appropriate standard.



## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Occupational Exposure Limits:** TWA 10 ppm (30 mg/m<sup>3</sup>), OEL 10 ppm (30 mg/m<sup>3</sup>), STEL 20 ppm (61 mg/m<sup>3</sup>)

**Appropriate Engineering Controls:** The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents or in hot melt applications.

### Individual Protection Measures

**Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment. Required when vapor/aerosols are generated filter A-(P2).

**Hand protection:** Handle with gloves. In case full contact wear gloves from butyl rubber material, in splash contact wear gloves from viton material. The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.

**Eye protection:** Tightly sealed goggles.

**Skin and body Protection:** Chemical resistant apron/flame retardant antistatic protective clothing, heavy duty work shoes.

**Hygiene measure:** Ventilation hoods and fans required when working with organic solvents or in hot melt applications. Keep working clothes separately. Keep away from food, drink and animal feeding stuffs.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Form, Color and Odor:</b> liquid, colourless, characteristic	<b>Evaporation rate:</b> N/A
<b>Melting Point:</b> -61 °C	<b>Specific gravity:</b> 0.949 g/cm <sup>3</sup> at 20 °C
<b>pH:</b> N/A	<b>Solubility in water:</b> Soluble
<b>Boiling point:</b> 152 °C	<b>Viscosity:</b> 0.86 mPa.sec
<b>Vapour pressure:</b> 0.377 mHg at 25 °C	<b>Vapour density:</b> 2.5 g/l
<b>Lower explosion limits:</b> 2.2 %Vol	<b>Upper explosive limit:</b> 15.2 %Vol
<b>Auto-ignition temperature:</b> 445 °C	<b>Flash point:</b> 58°C
<b>Odour threshold:</b> N/A	<b>Flammability (solid, gas):</b> N/A
<b>Decomposition temperature:</b> N/A	<b>Solubility in other solvents:</b> N/A
<b>n-octanol/water partition coefficient (log P<sub>ow</sub>):</b> -0.85	



## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable under recommended storage conditions.

**Reactions:** Hygroscopic. Explosible with air in a vaporous/gaseous state when heated.

**Possibility of Hazardous Reactions:** No data available

**Conditions to avoid** Strong heating.

**Materials to be avoided:** Alkali metals, halogens halides, reducing agents, triethylaluminium, nitrates, metallic oxides, nonmetallic oxides. Violent reactions possible with strong oxidizing agents, halogenated hydrocarbons.

**Hazardous Decomposition Products:** Nitrogen oxides, Carbon monoxides, Carbon dioxides

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:** LC<sub>50</sub> (inhalation, rat): 9-15 mg/l/4 h

LD<sub>50</sub> (dermal, rabbit): 1500 mg/kg

LD<sub>50</sub> (oral, rat): 2800 mg/kg

**Sensitization:** Danger of skin absorption. After eyes contact; irritations. After swallowing; symptoms in gastrointestinal tract.

**Chonic toxicity:** Noncarcinogenic in animal experiments. Based on clear evidence from animal experiments there is a high risk of teratogenic effects. Pregnant women must not be exposed to the product. Bacterial mutagenicity; Ames test is negative. No mutagenic properties suspected. Sensitization test (guinea pig) is negative.

**Further toxicological information:** The product should be handled with the care usual when dealing with chemicals

## 12. ECOLOGICAL INFORMATION

### Toxicity

Toxicity to fish: LC<sub>50</sub> - L.macrochirus - 6300 mg/l - 96h

LC<sub>50</sub> - Onchorhynchus mykiss - 9800 mg/l - 96h

LC<sub>50</sub> - P.promelas - 10600 mg/l - 96h

Toxicity to daphnia and other aquatic invertebrates:

EC<sub>50</sub> - Daphnia magna - 72.8 mg/l - 24h

Toxicity to algae: IC<sub>50</sub> - Desmodesmus subspicatus - 15700 mg/l - 48 h

IC<sub>5</sub> - Sc.quadricauda - 10 mg/l



Toxicity to bacteria:	EC <sub>50</sub> – Photobacterium phosphoreum – 2000 mg/l/ - 15 min
Biodegradability remark:	Biodegradation >90% /28d.
<b>Bioaccumulative potential:</b>	Distribution; log P(oct): -0.85 (experimental). No bioaccumulation is to be expected (log P o/w <1).
<b>Mobility:</b>	No data available
<b>Affected in any other way:</b>	No data available

### 13. DISPOSAL CONSIDERATIONS

<b>Material Disposal:</b>	There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding law and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste or burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.
<b>Container Disposal:</b>	Disposal in compliance with official regulations. Handle contaminated packaging as hazardous waste in the same way of the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

### 14. TRANSPORT INFORMATION

#### ADR/RID

UN-No: 2265	Class: 3	Packing group: III
Proper shipping name: N, N-DIMETHYLFORMAMIDE		

#### IMDG

UN-No: 2265	Class: 3	Packing group: III
Ems: F-E S-D		
Proper shipping name: N, N-DIMETHYLFORMAMIDE		

#### IATA

UN-No: 2265	Class: 3	Packing group: III
Proper shipping name: N, N-DIMETHYLFORMAMIDE		



## 15. REGULATORY INFORMATION

### GHS – Labelling:

#### Hazard statement(s)

H360D May damage the unborn child.

H332 Harmful if inhaled.

H312 Harmful in contact with skin.

H319 Causes serious eye irritation.

#### Precautionary statement(s)

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P261 Avoid breathing vapors.

P264 Wash hand thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

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

P281 Use personal protective equipment as required.

P363 Wash contaminated clothing before reuse.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.

P337 + P313 If eye irritation persists: Get medical advice/attention.

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

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

P405: Store locked up.

#### Hazard symbol(s)

F Flammable liquid

X<sub>i</sub> Irritant



**R - phrase(s)**

R20/21 Also harmful by inhalation and in contact with skin.

R36 Irritating to eyes.

R61 May cause harm to the unborn child.

**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).

**16. OTHER INFORMATION**

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