

**N,N-Dimethylformamide****SECTION 1. IDENTIFICATION**

<b>Product Identifier</b>	N,N-Dimethylformamide
<b>Other Means of Identification</b>	DMF, N-Formyldimethylamine
<b>Product Code(s)</b>	DI4510
<b>Product Family</b>	Organic solution
<b>Recommended Use</b>	Laboratory and industrial use.
<b>Restrictions on Use</b>	None known.
<b>Supplier Identifier</b>	Alphachem Limited, 2485 Milltower Court, Mississauga, Ontario, L5N 5Z6, (905) 821-2995
<b>Emergency Phone No.</b>	CANUTEC CANADA, 613-996-6666, 24 Hours
<b>SDS No.</b>	0416
<b>Date of Preparation</b>	March 07, 2016

**SECTION 2. HAZARD IDENTIFICATION**

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

**Classification**

Flammable liquid - Category 3; Acute toxicity (Oral) - Category 4; Acute toxicity (Dermal) - Category 4; Acute toxicity (Inhalation) - Category 4; Eye irritation - Category 2A; Reproductive toxicity - Category 1B; Specific target organ toxicity (single exposure) - Category 3; Specific target organ toxicity (repeated exposure) - Category 2

**Label Elements**

Signal Word:  
Danger

**Hazard Statement(s):**

Flammable liquid and vapour.  
Harmful in contact with skin or if inhaled.  
Causes serious eye irritation.  
Causes damage to organs through prolonged or repeated exposure.  
May damage the unborn child.

**Precautionary Statement(s):**

Prevention:  
Obtain special instructions before use.  
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.  
Avoid breathing dust/fume/gas/mist/vapours/spray.  
Wash hands thoroughly after handling.

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Use only outdoors or in a well-ventilated area.  
Wear protective gloves/protective clothing/eye protection/face protection.

#### Other Hazards

May be a health and fire hazard in a confined space.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance:

Chemical Name	CAS No.	%	Other Identifiers
N,N-Dimethylformamide	68-12-2	> 99	DMF, N-Formyldimethylamine

### SECTION 4. FIRST-AID MEASURES

#### First-aid Measures

##### Inhalation

Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. Avoid mouth-to-mouth contact by using a barrier device. Get immediate medical advice or attention.

##### Skin Contact

Immediately rinse with lukewarm, gently flowing water for 15-20 minutes.

##### Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice or attention.

##### Ingestion

Do not induce vomiting. Immediately call a Poison Centre or doctor.

##### First-aid Comments

All first aid procedures should be periodically reviewed by a doctor familiar with the material and its condition of use in the workplace.

#### Most Important Symptoms and Effects, Acute and Delayed

If in eyes: may cause serious eye damage. May irritate or burn the eyes. Permanent damage including blindness may result. If swallowed: can cause a laxative effect. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

#### Immediate Medical Attention and Special Treatment

##### Special Instructions

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

### SECTION 5. FIRE-FIGHTING MEASURES

#### Extinguishing Media

##### Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Special "alcohol resistant fire-fighting foams".

##### Unsuitable Extinguishing Media

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

#### Specific Hazards Arising from the Product

Heating increases the release of toxic vapour. Closed containers may rupture violently when heated releasing contents. Vapours may form explosive mixtures with air. May travel a considerable distance to a source of ignition and flash back to a leak or open container.

In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; corrosive, oxidizing nitrogen oxides.

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### Special Protective Equipment and Precautions for Fire-fighters

Fight fire from a safe distance or a protected location. Approach fire from upwind to avoid hazardous vapours or gases. Use water spray to dilute spills to non-flammable mixtures. Use water spray to flush spills away from ignition sources. Do NOT apply water directly to spill. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles. Dike and recover contaminated water for appropriate disposal. Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment, and Emergency Procedures

Emergency responders: use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Eliminate all ignition sources if safe to do so. Remove or isolate incompatible materials as well as other hazardous materials.

### Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

### Methods and Materials for Containment and Cleaning Up

Use non-combustible absorbent materials such as vermiculite, earth or sand to contain spilled product. Place used absorbent into suitable, covered, labelled containers for disposal.

## SECTION 7. HANDLING AND STORAGE

### Precautions for Safe Handling

Do not get in eyes, on skin or on clothing. Do not breathe in this product. Wear personal protective equipment to avoid direct contact with this chemical. Prevent accidental contact with incompatible chemicals. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use non-sparking tools. Keep containers tightly closed when not in use or empty.

### Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated. Protect from conditions listed in Conditions to Avoid in Section 10 (Stability and Reactivity). Store in the original, labelled, shipping container. Comply with all applicable health and safety regulations, fire and building codes.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
N,N-Dimethylformamide	10 A4		Not established			

### Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Provide eyewash and safety shower if contact or splash hazard exists.

### Individual Protection Measures

#### Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

#### Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Suitable materials are: butyl rubber, Barrier® (PE/PA/PE), Silver Shield/4H® (PE/EVAL/PE), Trelchem® HPS, Trelchem® VPS, Tychem® Responder, Tychem® TK.

The following materials should NOT be used: natural rubber, neoprene rubber, nitrile rubber, polyvinyl alcohol, polyvinyl chloride, Viton®.

#### Respiratory Protection

Wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### Basic Physical and Chemical Properties

<b>Appearance</b>	Colourless yellow liquid. Lachrymator (causes tearing of the eyes).
<b>Odour</b>	Ammonia-like
<b>Odour Threshold</b>	0.046 ppm
<b>pH</b>	6.5 - 8.5 (20% solution)
<b>Melting Point/Freezing Point</b>	-61 °C (-78 °F) (melting); -61 °C (-78 °F) (freezing)
<b>Initial Boiling Point/Range</b>	153 °C (307 °F)
<b>Flash Point</b>	58 °C (136 °F) (open cup)
<b>Evaporation Rate</b>	0.17 (n-butyl acetate = 1)
<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper/Lower Flammability or Explosive Limit</b>	15.2% (upper); 2.2% (lower)
<b>Vapour Pressure</b>	2.7 mm Hg
<b>Vapour Density (air = 1)</b>	2.51
<b>Relative Density (water = 1)</b>	0.95
<b>Solubility</b>	Soluble in all proportions in water; Soluble in all proportions in alcohols (e.g. ethanol).
<b>Partition Coefficient, n-Octanol/Water (Log Kow)</b>	-0.85
<b>Auto-ignition Temperature</b>	445 °C (833 °F)
<b>Decomposition Temperature</b>	> 350 °C (662 °F)
<b>Viscosity</b>	Not available (kinematic); 0.802 mPa.s (dynamic)
<b>Other Information</b>	
<b>Physical State</b>	Liquid

## SECTION 10. STABILITY AND REACTIVITY

### Reactivity

Not reactive under normal conditions of use.

### Chemical Stability

Normally stable.

### Possibility of Hazardous Reactions

None expected under normal conditions of storage and use. Vapours may form explosive mixture with air.

### Conditions to Avoid

Open flames, sparks, static discharge, heat and other ignition sources.

### Incompatible Materials

Strong oxidizing agents (e.g. perchloric acid), halogens (e.g. chlorine), strong acids (e.g. hydrochloric acid).

### Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; corrosive, flammable ammonia.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

### Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
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N,N-Dimethylformamide	15 mg/L (rat) (4-hour exposure)	3010 mg/kg (male rat)	1500 mg/kg (rabbit)
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**Skin Corrosion/Irritation**

May cause moderate or severe irritation based on information for closely related materials.

**Serious Eye Damage/Irritation**

May cause serious eye irritation based on information for closely related materials.

**STOT (Specific Target Organ Toxicity) - Single Exposure**

**Inhalation**

May cause harmful effects on the kidneys, harmful effects on the liver.

**Ingestion**

May cause harmful effects on the kidneys, harmful effects on the liver.

**Aspiration Hazard**

No information was located.

**STOT (Specific Target Organ Toxicity) - Repeated Exposure**

Effects on the central nervous system. May cause harmful effects on the kidneys, harmful effects on the liver.

**Respiratory and/or Skin Sensitization**

No information was located.

**Carcinogenicity**

Chemical Name	IARC	ACGIH®	NTP	OSHA
N,N-Dimethylformamide	Group 3	A4		

**Key to Abbreviations**

IARC = International Agency for Research on Cancer. Group 3 = Not classifiable as to its carcinogenicity to humans. ACGIH® = American Conference of Governmental Industrial Hygienists. A4 = Not classifiable as a human carcinogen.

**Reproductive Toxicity**

**Development of Offspring**

May harm the unborn child. Animal studies show effects on the offspring.

**Sexual Function and Fertility**

May cause effects on sexual function and/or fertility. Animal studies show effects on sexual function and/or fertility.

**Effects on or via Lactation**

No information was located.

**Germ Cell Mutagenicity**

No information was located.

**Interactive Effects**

No information was located.

**SECTION 12. ECOLOGICAL INFORMATION**

This section is not required by WHMIS. This section is not required by OSHA HCS 2012.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**Disposal Methods**

Dispose of contents and container in accordance with local, regional, national and international regulations.

**SECTION 14. TRANSPORT INFORMATION**

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group

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Canadian TDG	UN2265	N,N-DIMETHYLFORMAMIDE	3	III
US DOT	UN2265	N,N-DIMETHYLFORMAMIDE	3	III
IATA (Air)	UN2265	N,N-Dimethylformamide	3	III
IMO (Marine)	UN2265	N,N-Dimethylformamide	3	III

**Special Precautions** Not applicable

**Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable

## SECTION 15. REGULATORY INFORMATION

### Safety, Health and Environmental Regulations

#### Canada

##### Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

Listed on the DSL.

#### USA

##### Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

## SECTION 16. OTHER INFORMATION

**NFPA Rating**            **Health - 2**    **Flammability - 2**    **Instability - 0**

**SDS Prepared By**    Alphachem Limited

**Phone No.**            (905)-821-2995

**Date of Preparation**    March 07, 2016

**Date of Last Revision**    March 07, 2016

**References**            CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).

**Disclaimer**            This document is offered only as a guide in the safe handling of the above product, and has been prepared from the best information currently available. It is not intended to be all-inclusive and the conditions of use may involve other additional considerations. Since Alphachem Limited cannot anticipate or control the conditions under which the product may be used, it will not be liable for any claims, damages or losses which may result from the use or reliance on any information herein.