

# SAFETY DATA SHEET

**1. Identification**

**Product identifier:** DIMETHYLFORMAMIDE

**Other means of identification**

**Synonyms:** N,N-Dimethylformamide; Formyldimethylamine; DMF  
**Product No.:** 9213, 5362, 9344, 4929, 9222, 9221, 9220

**Recommended use and restriction on use**

**Recommended use:** Not determined.  
**Restrictions on use:** Not determined.

**Details of the supplier of the safety data sheet**

	Avantor Performance Materials, LLC.
	3477 Corporate Parkway
	Center Valley, PA 18034
Telephone:	
	Customer Service: 855-282-6867
Fax:	610-573-2610
Contact Person:	Environmental Health & Safety
E-mail:	info@avantormaterials.com

**Emergency telephone number:**  
 CHEMTREC: 1-800-424-9300 within US and Canada

**2. Hazard(s) identification**

**Hazard Classification**

**Physical Hazards**

Flammable liquids	Category 3
-------------------	------------

**Health Hazards**

Acute toxicity (Oral)	Category 4
Acute toxicity (Dermal)	Category 4
Acute toxicity (Inhalation - vapor)	Category 4
Serious Eye Damage/Eye Irritation	Category 2A
Toxic to reproduction	Category 1B

**Unknown toxicity - Health**

Acute toxicity, inhalation, vapor	100 %
Acute toxicity, inhalation, dust or mist	100 %

**Unknown toxicity - Environment**

Acute hazards to the aquatic environment	0 %
--	-----

Chronic hazards to the aquatic environment 100 %

**Label Elements**

**Hazard Symbol:**



**Signal Word:** Danger

**Hazard Statement:** Flammable liquid and vapor.  
Harmful if swallowed.  
Harmful in contact with skin.  
Harmful if inhaled.  
Causes serious eye irritation.  
May damage fertility or the unborn child.

**Precautionary Statements**

**Prevention:** Keep away from heat/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. Wash thoroughly after handling. Avoid breathing dust/mist/vapors/spray. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

**Response:** IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Call a POISON CENTER/doctor if you feel unwell. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention. In case of fire: Use water spray, foam, dry powder or carbon dioxide for extinction.

**Storage:** Store in a well-ventilated place. Keep cool. Store locked up.

**Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**Other hazards which do not result in GHS classification:** None.

**3. Composition/information on ingredients**

## Substances

Chemical name	Common name and synonyms	CAS number	Content in percent (%)*
DIMETHYLFORMAMIDE		68-12-2	98 - 100%

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First-aid measures

<b>General information:</b>	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
<b>Ingestion:</b>	Rinse mouth. Call a POISON CENTER/doctor if you feel unwell.
<b>Inhalation:</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
<b>Skin Contact:</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. If skin irritation occurs: Get medical advice/attention.
<b>Eye contact:</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

### Most important symptoms/effects, acute and delayed

<b>Symptoms:</b>	Harmful if swallowed. Harmful if inhaled. Irritating to eyes, respiratory system and skin.
<b>Hazards:</b>	Irritant.

### Indication of immediate medical attention and special treatment needed

<b>Treatment:</b>	Treat symptomatically. Symptoms may be delayed.
-------------------	---

## 5. Fire-fighting measures

<b>General Fire Hazards:</b>	Flammable liquid and vapor.
------------------------------	-----------------------------

### Suitable (and unsuitable) extinguishing media

<b>Suitable extinguishing media:</b>	Water spray, foam, dry powder or carbon dioxide.
<b>Unsuitable extinguishing media:</b>	Avoid water in straight hose stream; will scatter and spread fire.

<b>Specific hazards arising from the chemical:</b>	Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Heat may cause the containers to explode.
--	--

### Special protective equipment and precautions for firefighters

<b>Special fire fighting procedures:</b>	Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.
--	--

**Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures:** ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment.

**Methods and material for containment and cleaning up:** In case of leakage, eliminate all ignition sources. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

**Notification Procedures:** Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

**Environmental Precautions:** Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

**7. Handling and storage**

**Precautions for safe handling:** DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash hands thoroughly after handling.

**Conditions for safe storage, including any incompatibilities:** Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

**8. Exposure controls/personal protection**

**Control Parameters**

**Occupational Exposure Limits**

Chemical Identity	Type	Exposure Limit Values	Source
-------------------	------	-----------------------	--------

DIMETHYLFORMAMIDE	TWA	10 ppm 30 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
DIMETHYLFORMAMIDE	TWA	10 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
DIMETHYLFORMAMIDE	TWA	10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
DIMETHYLFORMAMIDE	TWA	10 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
DIMETHYLFORMAMIDE	8 HR ACL	10 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
DIMETHYLFORMAMIDE	TWA	10 ppm 30 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
DIMETHYLFORMAMIDE	TWA	10 ppm	US. ACGIH Threshold Limit Values (2011)

**Appropriate Engineering Controls**

No data available.

**Individual protection measures, such as personal protective equipment**

- General information:** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
- Eye/face protection:** Wear safety glasses with side shields (or goggles).
- Skin Protection**
- Hand Protection:** Wear protective gloves.
- Other:** Wear suitable protective clothing.
- Respiratory Protection:** In case of inadequate ventilation use suitable respirator.
- Hygiene measures:** Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**9. Physical and chemical properties**
**Appearance**

- Physical state:** Liquid
- Form:** Liquid
- Color:** Colorless
- Odor:** Pungent
- Odor threshold:** No data available.
- pH:** 6,7 0.5 molar aqueous solution
- Melting point/freezing point:** -61 °C
- Initial boiling point and boiling range:** 153 °C (101,3 kPa)
- Flash Point:** 58 °C (Closed Cup)
- Evaporation rate:** No data available.
- Flammability (solid, gas):** Class II Combustible Liquid

**Upper/lower limit on flammability or explosive limits**

<b>Flammability limit - upper (%):</b>	15,2 %(V)
<b>Flammability limit - lower (%):</b>	2,2 %(V)
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	0,50 kPa (25 °C)
<b>Vapor density:</b>	2,51 (Air=1)
<b>Density:</b>	0,95 g/ml (20 °C)
<b>Relative density:</b>	0,9445 (25 °C)
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	Miscible with water.
<b>Solubility (other):</b>	acetone: SolubleSoluble benzene: SolubleSoluble
<b>Partition coefficient (n-octanol/water):</b>	-1,01
<b>Auto-ignition temperature:</b>	445 °C
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	No data available.
<b>Other information</b>	
<b>Molecular weight:</b>	73,09 g/mol (C3H7NO)

<b>10. Stability and reactivity</b>
-------------------------------------

<b>Reactivity:</b>	No dangerous reaction known under conditions of normal use.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions:</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid:</b>	Heat, sparks, flames.
<b>Incompatible Materials:</b>	Strong acids. Strong alkalis. Strong oxidizing agents. Aluminum. Nitrates. Halogens. Phosphorus. Isocyanates.
<b>Hazardous Decomposition Products:</b>	Thermal decomposition may produce oxides of carbon and nitrogen. Amines.

<b>11. Toxicological information</b>
--------------------------------------

**Information on likely routes of exposure**

<b>Inhalation:</b>	Harmful if inhaled. May cause irritation to the respiratory system.
<b>Skin Contact:</b>	May cause irritation.
<b>Eye contact:</b>	Causes serious eye irritation.
<b>Ingestion:</b>	Harmful if swallowed. May cause irritation of the gastrointestinal tract.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

<b>Oral</b>	
<b>Product:</b>	LD 50 (Rat): 2.800 mg/kg

	LD 50 (Rabbit): > 5.000 mg/kg
<b>Dermal</b>	
<b>Product:</b>	LD 50 (Rabbit): 4.720 mg/kg LD 50 (Mouse): > 5.000 mg/kg
<b>Inhalation</b>	
<b>Product:</b>	LC 50 (Mouse): 9,4 mg/l
<b>Repeated dose toxicity</b>	
<b>Product:</b>	No data available.
<b>Skin Corrosion/Irritation</b>	
<b>Product:</b>	May cause skin irritation.
<b>Serious Eye Damage/Eye Irritation</b>	
<b>Product:</b>	Causes serious eye irritation.
<b>Respiratory or Skin Sensitization</b>	
<b>Product:</b>	Not a skin sensitizer.
<b>Carcinogenicity</b>	
<b>Product:</b>	This substance has no evidence of carcinogenic properties.
<b>IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:</b>	
	No carcinogenic components identified
<b>US. National Toxicology Program (NTP) Report on Carcinogens:</b>	
	No carcinogenic components identified
<b>ACGIH Carcinogen List:</b>	
	No carcinogenic components identified
<b>Germ Cell Mutagenicity</b>	
<b>In vitro</b>	
<b>Product:</b>	No mutagenic components identified
<b>In vivo</b>	
<b>Product:</b>	No mutagenic components identified
<b>Reproductive toxicity</b>	
<b>Product:</b>	May damage fertility or the unborn child.
<b>Specific Target Organ Toxicity - Single Exposure</b>	
<b>Product:</b>	None known.
<b>Specific Target Organ Toxicity - Repeated Exposure</b>	
<b>Product:</b>	None known.
<b>Aspiration Hazard</b>	
<b>Product:</b>	Not classified
<b>Other effects:</b>	None known.

**12. Ecological information**

**Ecotoxicity:**

**Acute hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Aquatic Invertebrates**

**Product:** No data available.

**Chronic hazards to the aquatic environment:**

**Fish**

**Product:** No data available.

**Aquatic Invertebrates**

**Product:** No data available.

**Toxicity to Aquatic Plants**

**Product:** No data available.

**Persistence and Degradability**

**Biodegradation**

**Product:** The product is expected to be biodegradable.

**BOD/COD Ratio**

**Product:** No data available.

**Bioaccumulative potential**

**Bioconcentration Factor (BCF)**

**Product:** No data available on bioaccumulation.

**Partition Coefficient n-octanol / water (log Kow)**

**Product:** Log Kow: -1,01

**Mobility in soil:**

The product is partly soluble in water. May spread in the aquatic environment.

**Other adverse effects:**

It is expected to have a low potential to affect aquatic organisms.

**13. Disposal considerations**

**General information:**

This product is highly flammable. Don't use fire to cut empty container after use.

**Disposal instructions:**

Discharge, treatment, or disposal may be subject to national, state, or local laws. Since emptied containers retain product residue, follow label warnings even after container is emptied.

**Contaminated Packaging:**

Since emptied containers retain product residue, follow label warnings even after container is emptied.



## 14. Transport information

### TDG

UN Number:	UN 2265
UN Proper Shipping Name:	N,N-DIMETHYLFORMAMIDE
Transport Hazard Class(es)	
Class:	3
Label(s):	3
Packing Group:	III
Marine Pollutant:	No
Special precautions for user:	Not determined.

### IMDG

UN Number:	UN 2265
UN Proper Shipping Name:	N,N-DIMETHYLFORMAMIDE
Transport Hazard Class(es)	
Class:	3
Label(s):	3
EmS No.:	F-E, S-D
Packing Group:	III
Marine Pollutant:	No
Special precautions for user:	Not determined.

### IATA

UN Number:	UN 2265
UN Proper Shipping Name:	N,N-Dimethylformamide
Transport Hazard Class(es):	
Class:	3
Label(s):	3
Packing Group:	III
Marine Pollutant:	No
Special precautions for user:	Not determined.
Cargo aircraft only:	Allowed.

Transport in bulk according to Annex II of MARPOL and the IBC Code: Not applicable

## 15. Regulatory information

### Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Export Control List (CEPA 1999, Schedule 3)

National Pollutant Release Inventory (NPRI)

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

Precursor Control Regulations

### International regulations

Montreal protocol

Not applicable

Stockholm convention

SDS\_CA - SDS000001382

Not applicable

**Rotterdam convention**

Not applicable

**Kyoto protocol**

Not applicable

<b>16. Other information, including date of preparation or last revision</b>
--

**Revision Date:** 17.05.2018

**Version #:** 2.1

**Further Information:** No data available.

**Disclaimer:** The information provided in this Safety Data Sheet (SDS) was prepared based on data believed to be accurate as of the date of this SDS. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR PERFORMANCE MATERIALS ("AVANTOR") EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES REGARDING THE INFORMATION CONTAINED HEREIN INCLUDING, WITHOUT LIMITATION, AS TO ACCURACY, COMPLETENESS, FITNESS FOR PURPOSE OR USE, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY AND STABILITY. This SDS is intended as a guide to the appropriate use, handling, storage and disposal of the product to which it relates by properly trained personnel, and is not intended to be comprehensive. Users of Avantor's products are advised to perform their own tests and to exercise their own judgment to determine the safety, suitability and appropriate use, handling, storage and disposal of each product and product combination for their own purposes and uses. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR DISCLAIMS LIABILITY FOR, AND BY USING AVANTOR'S PRODUCTS PURCHASER AGREES THAT UNDER NO CIRCUMSTANCES SHALL AVANTOR BE LIABLE FOR, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR KIND, INCLUDING WITHOUT LIMITATION, FOR LOSS OF PROFITS, REPUTATIONAL DAMAGE, PRODUCT RECALL OR BUSINESS INTERRUPTION.