

SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended 2015/830.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name:	Dimethylformamide
Product No.	9453, 7032, 5362, 6785
Synonyms, Trade Names:	N,N-Dimethylformamide; Formyldimethylamine; DMF
Additional identification	
Chemical name:	DIMETHYLFORMAMIDE
Chemical formula:	C ₃ H ₇ NO
INDEX No.	616-001-00-X
CAS-No.	68-12-2
EC No.	200-679-5
REACH Registration No.	01-2119475605-32-XXXX

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: For Laboratory, Research or Manufacturing Use.

Uses advised against: Not determined.

1.3 Details of the supplier of the safety data sheet

Avantor Performance Materials Poland S.A.
Sowinskiego 11str., 44-101 Gliwice,
Poland

Telephone: 48 32 239-20-00
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Contact person: Product Information Compliance
E-mail: export@avantormaterials.com

E-mail address of person responsible for this SDS: SDS@avantormaterials.com

1.4 Emergency telephone number: CHEMTREC: (44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Classification according to Regulation (EC) No 1272/2008 as amended.

Physical Hazards

Flammable liquids	Category 3	H226: Flammable liquid and vapour.
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Health Hazards

Acute toxicity (Dermal)	Category 4	H312: Harmful in contact with skin.
Acute toxicity (Inhalation - vapour)	Category 4	H332: Harmful if inhaled.
Serious eye irritation	Category 2	H319: Causes serious eye irritation.
Toxic to reproduction	Category 1B	H360D: May damage the unborn child.

2.2 Label Elements

Contains:

DIMETHYLFORMAMIDE



Signal Word:

Danger

Hazard Statement(s):

H226: Flammable liquid and vapour.
H332: Harmful if inhaled.
H319: Causes serious eye irritation.
H360D: May damage the unborn child.
H312: Harmful in contact with skin.

Precautionary Statements

Prevention:

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P264: Wash thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P337+P313: If eye irritation persists: Get medical advice/attention.
P308+P313: IF exposed or concerned: Get medical advice/attention.

2.3 Other hazards

No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Concentration	CAS-No.	EC No.	REACH Registration No.	M-Factor:	Notes
DIMETHYLFOR MAMIDE	50 - <100%	68-12-2	200-679-5	01- 2119475605- 32-XXXX	No data available.	#

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

This substance has workplace exposure limit(s).

SECTION 4: First Aid Measures

General:

Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

4.1 Description of first aid measures

Inhalation:

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Skin Contact:	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.
Eye contact:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion:	Rinse mouth. Call a POISON CENTRE/doctor if you feel unwell.
4.2 Most important symptoms and effects, both acute and delayed:	Harmful if swallowed. Harmful if inhaled. Irritating to eyes, respiratory system and skin.
4.3 Indication of any immediate medical attention and special treatment needed	
Hazards:	Irritant.
Treatment:	Treat symptomatically. Symptoms may be delayed.

SECTION 5: Firefighting Measures

General Fire Hazards:	Flammable liquid and vapour.
5.1 Extinguishing media	
Suitable extinguishing media:	Water spray, foam, dry powder or carbon dioxide.
Unsuitable extinguishing media:	Avoid water in straight hose stream; will scatter and spread fire.
5.2 Special hazards arising from the substance or mixture:	Vapours may cause a flash fire or ignite explosively. Vapours may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapours or gases to explosive concentrations. Heat may cause the containers to explode.
5.3 Advice for firefighters	
Special fire fighting procedures:	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 firefighters:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorised 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.
6.2 Environmental Precautions:	Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.
6.3 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. Dyke far ahead of larger spill for later recovery and disposal.

6.4 Reference to other sections: No data available.

SECTION 7: Handling and Storage:

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities: Store in cool, dry place.

7.3 Specific end use(s): No data available.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters Occupational Exposure Limits

Chemical name	Type	Exposure Limit Values		Source
DIMETHYLFORMAMIDE	STEL	10 ppm	30 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	5 ppm	15 mg/m3	UK. EH40 Workplace Exposure Limits (WELs) (12 2011)
	TWA	5 ppm	15 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)
	STEL	10 ppm	30 mg/m3	EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU (12 2009)

8.2 Exposure controls
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: Material: 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.

Environmental Controls: No data available.

SECTION 9: Physical And Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Colour:	Colourless
Odour:	Pungent
Odour Threshold:	No data available.
pH:	6,7
Freezing point:	-61 °C
Boiling Point:	153 °C (101,3 kPa)
Flash Point:	58 °C (Closed Cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	Class II Combustible Liquid
Flammability limit - upper (%)	15,2 %(V)
Flammability limit - lower (%)	2,2 %(V)
Vapour pressure:	0,50 kPa (25 °C)
Vapour density (air=1):	2,51 Air=1
Density:	0,95 g/ml (20 °C)
Relative density:	0,9445 (25 °C)
Solubility(ies)	
Solubility in Water:	Miscible with water.
Solubility (other):	acetone: solublesoluble benzene: solublesoluble
Partition coefficient (n-octanol/water):	-1,01
Autoignition Temperature:	445 °C
Decomposition Temperature:	No data available.
Viscosity:	No data available.
Explosive properties:	No data available.
Oxidising Properties:	No data available.

9.2 Other information

Molecular weight:	73,09 g/mol (C ₃ H ₇ NO)
VOC content:	EC Directive 2004/42: 950 g/l ~100 % (calculated)

SECTION 10: Stability and Reactivity

10.1 Reactivity:	No dangerous reaction known under conditions of normal use.
10.2 Chemical Stability:	Material is stable under normal conditions.
10.3 Possibility of Hazardous Reactions:	Hazardous polymerization does not occur.
10.4 Conditions to Avoid:	Heat, sparks, flames.

10.5 Incompatible Materials:	Strong acids. Strong alkalis. Strong oxidising agents. Aluminium. Nitrates. Halogens. Phosphorus. Isocyanates
10.6 Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon and nitrogen. Amines.

SECTION 11: Toxicological Information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled. May cause irritation to the respiratory system.
Skin Contact:	May cause irritation.
Eye contact:	Causes serious eye irritation.
Ingestion:	None known or expected under normal use.

11.1 Information on toxicological effects

Acute toxicity

Oral

Product:	LD 50 (Rat): 2.800 mg/kg LD 50 (Rabbit): > 5.000 mg/kg
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Dermal

Product:	LD 50 (Rabbit) 4.720 mg/kg LD 50 (Mouse) > 5.000 mg/kg
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Inhalation

Product:	LC 50 (Mouse, 2 h): 9,4 mg/l
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Repeated dose toxicity

Product:	No data available.
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Skin Corrosion/Irritation:

Product:	May cause skin irritation.
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Serious Eye Damage/Eye Irritation:

Product:	Causes serious eye irritation.
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Respiratory or Skin Sensitisation:

Product:	Not a skin sensitiser.
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Germ Cell Mutagenicity

In vitro

Product:	No mutagenic components identified
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In vivo

Product:	No mutagenic components identified
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Carcinogenicity

Product:	This substance has no evidence of carcinogenic properties.
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Reproductive toxicity

Product:	May damage fertility or the unborn child.
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Specific Target Organ Toxicity - Single Exposure

Product: None known.

Specific Target Organ Toxicity - Repeated Exposure

Product: None known.

Aspiration Hazard

Product: Not classified

Other Adverse Effects: None known.

SECTION 12: Ecological Information

12.1 Toxicity

Acute toxicity

Fish

Product: No data available.

Specified substance(s)

DIMETHYLFORMAMIDE LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 5.714 - 18.967 mg/l (Flow through) Mortality
LC 50 (Bluegill (*Lepomis macrochirus*), 96 h): 6.700 - 7.500 mg/l (Flow through) Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s)

DIMETHYLFORMAMIDE EC 50 (Water flea (*Daphnia magna*), 21 d): 3.721 mg/l (Renewal) Intoxication
LC 50 (Common shrimp, sand shrimp (*Crangon crangon*), 48 h): > 100 mg/l (Renewal) Mortality
EC 50 (Water flea (*Daphnia magna*), 48 h): 12,5 - 14,4 mg/l (Static) Intoxication
LC 50 (Water flea (*Daphnia magna*), 48 h): 13.260 - 15.920 mg/l (Static) Mortality

Chronic toxicity

Fish

Product: No data available.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

Aquatic Invertebrates

Product: No data available.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

Toxicity to aquatic plants

Product: No data available.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

12.2 Persistence and Degradability

Biodegradation

Product: The product is expected to be biodegradable.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

BOD/COD Ratio

Product No data available.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

12.3 Bioaccumulative Potential

Product: No data available on bioaccumulation.

Specified substance(s)

DIMETHYLFORMAMIDE No data available.

12.4 Mobility in Soil:

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

Known or predicted distribution to environmental compartments

DIMETHYLFORMAMIDE No data available.

12.5 Results of PBT and vPvB assessment:

DIMETHYLFORMAMIDE Not available.
No data available.

12.6 Other Adverse Effects:

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

12.7 Additional Information:

No data available.

SECTION 13: Disposal Considerations
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13.1 Waste treatment methods
General information:

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

Disposal methods:

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.

SECTION 14: Transport Information
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ADR

- | | |
|---------------------------------|-----------------------|
| 14.1 UN Number: | UN 2265 |
| 14.2 UN Proper Shipping Name: | N,N-DIMETHYLFORMAMIDE |
| 14.3 Transport Hazard Class(es) | |
| Class: | 3 |
| Label(s): | 3 |
| Hazard No. (ADR): | 30 |
| Tunnel restriction code: | (D/E) |
| 14.4 Packing Group: | III |
| 14.5 Environmental Hazards: | No |

14.6 Special precautions for user: Not determined.

RID

14.1 UN Number: UN 2265
14.2 UN Proper Shipping Name: N,N-DIMETHYLFORMAMIDE
14.3 Transport Hazard Class(es)
Class: 3
Label(s): 3
14.4 Packing Group: III
14.5 Environmental Hazards: No
14.6 Special precautions for user: Not determined.

IMDG

14.1 UN Number: UN 2265
14.2 UN Proper Shipping Name: N,N-DIMETHYLFORMAMIDE
14.3 Transport Hazard Class(es)
Class: 3
Label(s): 3
EmS No.: F-E, S-D
14.4 Packing Group: III
14.5 Environmental Hazards: No
14.6 Special precautions for user: Not determined.

IATA

14.1 UN Number: UN 2265
14.2 Proper Shipping Name: N,N-Dimethylformamide
14.3 Transport Hazard Class(es)
Class: 3
Label(s): 3
14.4 Packing Group: III
14.5 Environmental Hazards: No
14.6 Special precautions for user: Not determined.

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

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

EU Regulations

Regulation (EC) No. 2037/2000 Substances that deplete the ozone layer: none

Regulation (EC) No. 850/2004 on persistent organic pollutants: none

Regulation (EC) No. 689/2008 Import and export of dangerous chemicals: none

Regulation (EC) No. 1907/2006 REACH Annex XIV Substance subject to authorisation, as amended:
none

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

Chemical name	CAS-No.	Concentration
DIMETHYLFORMAMIDE	68-12-2	100%

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work.: none

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.:

Chemical name	CAS-No.	Concentration
DIMETHYLFORMAMIDE	68-12-2	100%

Directive 96/82/EC (Seveso III): on the control of major accident hazards involving dangerous substances:

Chemical name	CAS-No.	Concentration
DIMETHYLFORMAMIDE	68-12-2	100%

EU. Regulation No. 166/2006 PRTR (Pollutant Release and Transfer Registry), Annex II: Pollutants: none

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work:

Chemical name	CAS-No.	Concentration
DIMETHYLFORMAMIDE	68-12-2	100%

15.2 Chemical safety assessment:

No Chemical Safety Assessment has been carried out.

SECTION 16: Other Information

Revision Information:

Not relevant.

References

PBT

PBT: persistent, bioaccumulative and toxic substance.

vPvB

vPvB: very persistent and very bioaccumulative substance.

Key literature references and sources for data:

No data available.

Wording of the H-statements in sections 2 and 3

H226

Flammable liquid and vapour.

H312

Harmful in contact with skin.

H319

Causes serious eye irritation.

H332

Harmful if inhaled.

H360D

May damage the unborn child.

Training information:

No data available.

Issue Date:

24.09.2018

SDS No.:

Disclaimer:

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