SAFETY DATA SHEET

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

1.1 Product identifiers

Product name	N,N-Dimethylformamide
CAS number	68-12-2
Synonyms	DMF

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

Identified uses	Laboratory chemicals.

1.3 Details of the supplier of the safety data sheet

Company	Lab Alley, LLC 12501 Pauls Valley Road Austin, Texas 78737 U.S.A.
Telephone	512-668-9918
Fax	512-886-4008

1.4 Emergency telephone

Emergency Phone #	US & Canada: 1-800-535-5053	INFOTRAC
	International 1-352-323-3500	INFOTRAC

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable Liquids	Category 3
Acute Dermal Toxicity	Category 4
Acute Inhalation Toxicity	Category 4
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 1B
Reproductive Toxicity	Category 1B

Specific Target Organ Toxicity (single exposure) Category 3
Target Organ(s) - Respiratory system, Central nervous system (CNS)

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word: Danger

Hazard statements:
Flammable liquid and vapor.
Causes serious eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May damage the unborn child.
May cause cancer.
Harmful in contact with skin or if inhaled.

Precautionary statements:

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Use only outdoors or in a well-ventilated area. Wash face, hands, and any exposed skin thoroughly after handling. Do not breathe dust/fume/gas/mist/vapors/spray. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep cool. Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF exposed or concerned, get medical attention/advice.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a POISON CENTER or doctor/physician if you feel unwell. Wash contaminated clothing before reuse.

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.

Fire: In case of fire, use CO2, dry chemical, or foam for extinction.

Storage: Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Disposal: Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Lachrymator (substance which increases the flow of tears).
WARNING: Cancer.

SECTION 3: Composition/information on ingredients

3.1 Components

Chemical name	Common name and synonyms	CAS number	Concentration
Dimethylformamide	DMF	68-12-2	<=100%

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

If inhaled Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.

In case of skin contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

In case of eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

If swallowed Do NOT induce vomiting. Get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Irritating to eyes. Difficulty in breathing. May be harmful if absorbed through skin. Gastrointestinal discomfort. Symptoms of overexposure may include headache, dizziness, tiredness, nausea, and vomiting.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist maybe used to cool closed containers.

Unsuitable extinguishing media No information available.

5.2 Specific hazards arising from the substance or mixture

Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Thermal decomposition can lead to release of irritating gases and vapors.
Hazardous Combustion Products: Carbon monoxide (CO). Carbon dioxide (CO2). Nitrogen oxides (NOx).

5.3 Special protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

5.4 Further information

Flash Point 136.0 °F (57.8 °C) Closed Cup

Autoignition Temperature 833 °F (445 °C)

Explosion limits

Upper 15.20%
Lower 2.20%

Sensitivity to Mechanical Impact No information available.
Sensitivity to Static Discharge No information available.

NFPA

Health	Flammability	Instability	Physical hazards
2	2	0	N/A

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

6.2 Environmental precautions

Should not be released into the environment. See Section 12 for additional Ecological Information.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

6.4 Reference to other sections

See Section 2 for full list of hazard and precaution statements.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions on safe handling

Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Do not breathe mist/vapors/spray. Keep away from open flames, hot surfaces, and sources of ignition. Use only non-sparking tools. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from heat, sparks, and flame.

Incompatibilities

Strong oxidizing agents. Halogens. Halogenated compounds. Reducing agents.

SECTION 8: Exposure controls/personal protection

8.1 Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Component	Type	Value	
Dimethylformamide	(Vacated) TWA	10 ppm	30 mg/m3
	TWA	10 ppm	30 mg/m3

US. ACGIH Threshold Limit Values

Component	Type	Value
Dimethylformamide	TWA	5 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Component	Type	Value	
Dimethylformamide	IDLH	500 ppm	
	TWA	10 ppm	30 mg/m3

Biological occupational exposure limits
No information available.

8.2 Exposure controls

Appropriate engineering controls
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment.

Personal protective equipment

Eye/face protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Body Protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended Filter type: Type A. Organic gases and vapours filter. Brown. Conforming to EN14387.

Control of environmental exposure
Avoid discharge into drains, water courses, or onto the ground.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	No information available
Odor Threshold	No information available
pH	6.7
Melting Point/Range	-77.8 °F (-61 °C)
Boiling Point/Range	307.4 °F (153 °C)

Evaporation Rate	No information available
Flammability (solid)	Not applicable
Flammability or explosive limit	
Upper	15.20%
Lower	2.20%
Vapor Pressure	3.6 hPa (68 °F (20 °C))
Vapor Density	2.52
Density	0.948 g/cm3 (77 °F (25 °C))
Solubility	Miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temp	833 °F (445 °C)
Decomposition Temp	No information available
Viscosity	No information available
Molecular Formula	C3 H7 N O
Molecular Weight	73.09 g/mol
VOC Content(%)	No information available
Oxidizing properties	Not oxidizing

9.2 Other safety information
No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No information available.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
None under normal processing.

10.4 Conditions to avoid
Incompatible products. Heat, flames and sparks. Keep away fromopen flames, hot surfaces, and sources of ignition.

10.5 Incompatible materials
Strong oxidizing agents, Halogens, Halogenated compounds, Reducing agents.

10.6 Hazardous decomposition products
Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx).

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Product Information, Component Information

Acute toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Dimethylformamide	3040 mg/kg (Rat)	1500 mg/kg (Rabbit) 3.2 g/kg (Rat)	>5.58 mg/L/4h (Rat)

Skin corrosion/irritation
No information available.

Serious eye damage/eye irritation
Irritating to eyes.

Respiratory or skin sensitization
No information available.

Germ cell mutagenicity
No information available.

Carcinogenicity

Component	CAS	IARC	NTP	ACGIH	OSHA	Mexico
Dimethylformamide	68-12-2	Group 2A	Not listed	A3	X	Not listed

Specific target organ toxicity - single exposure
Respiratory system, Central nervous system (CNS).

Specific target organ toxicity - repeated exposure
None known.

Reproductive toxicity
Experiments have shown reproductive toxicity effects on laboratory animals. May cause harm to the unborn child. Developmental effects have occurred in experimental animals. Teratogenic effects have occurred in experimental animals.

Chronic effects
May be harmful if absorbed through skin. Gastrointestinal discomfort. Symptoms of overexposure may include headache, dizziness, tiredness, nausea, and vomiting.

11.2 Additional Information

The toxicological properties have not been fully investigated.

SECTION 12: Ecological information

12.1 Toxicity

Product		Species	Test Results

Dimethylformamide	EC50	Freshwater Algae	7500 mg/L/96h
	LC50	Pimephales promelas	10.6 g/L/96h
	LC50	Onchorhynchus mykiss	9.8 g/L/96h
	LC50	Lepomis macrochirus	6.3 g/L/96h
	EC50	Microtox	2000 mg/L/ 5 min 570 mg/L/240h
	EC50	Water Flea	7500 mg/L/48h

12.2 Persistence and degradability
Persistence is unlikely.

12.3 Bio accumulative potential
No information available.

12.4 Mobility in soil
Will likely be mobile in the environment due to its water solubility but will likely degrade over time. Will likely be mobile in the environment due to its water solubility

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Endocrine disrupting properties
Listed as a Group III Chemical on the EU Endocrine Disrupters Candidate List.

12.7 Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1 Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

DOT (US)

UN-no	UN2265
Proper Shipping Name	N,N-DIMETHYLFORMAMIDE
Hazard Class	3
Packing Group	III

IMDG

UN-no	UN2265
Proper Shipping Name	N,N-DIMETHYLFORMAMIDE
Hazard Class	3

Packing Group	III

IATA

UN-no	UN2265
Proper Shipping Name	N,N-DIMETHYLFORMAMIDE
Hazard Class	3
Packing Group	III

SECTION 15: Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not applicable.

CERCLA Hazardous Substance List (40 CFR 302.4)

Listed, Dimethylformamide (CAS #68-12-2), RQ: 100 lb.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous

See Section 2 for more information.

SARA 313 (TRI reporting)

Listed, Dimethylformamide (CAS #68-12-2).

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Listed, Dimethylformamide (CAS #68-12-2).

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act

Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Not listed.

US state regulations

US. Massachusetts RTK - Substance List

Listed, Dimethylformamide (CAS #68-12-2).

US. New Jersey Worker and Community Right-to-Know Act

Listed, Dimethylformamide (CAS #68-12-2).

US. Pennsylvania Worker and Community Right-to-Know Law

Listed, Dimethylformamide (CAS #68-12-2).

California Proposition 65

Listed, Dimethylformamide (CAS #68-12-2).

SECTION 16: Other information

Issue date: 08/22/2018
Revision 1: 10/27/2023
Revision 2: 11/12/2024

SECTION 17: Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.