

Safety Data Sheet

Dimethylformamide, (N,N-) Purified

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Dimethylformamide, (N,N-) Purified

Synonyms/Generic Names: DMF, Dimethyl Formamide

Product Number: 1903

Product Use: Industrial, Manufacturing or Laboratory use

Manufacturer: Columbus Chemical Industries, Inc.
N4335 Temkin Rd.
Columbus, WI. 53925

For More Information: 920-623-2140 (Monday-Friday 8:00-4:30)
www.columbuschemical.com

In Case of Emergency Call: CHEMTREC - 800-424-9300 or 703-527-3887 (24 Hours/Day, 7 Days/Week)

2. HAZARDS IDENTIFICATION

OSHA Hazards: Flammable liquid, Harmful by skin absorption, Irritant, Teratogen, Target organ effect

Target Organs: Liver, Kidneys, Central nervous system, Cardiovascular system, Blood

Other Hazards: Rapidly absorbed through skin.

Signal Words: Danger

Pictograms:



GHS Classification:

Flammable liquids	Category 3
Acute toxicity, Inhalation	Category 4
Acute toxicity, Dermal	Category 4
Eye irritation	Category 2A
Reproductive toxicity	Category 1B

GHS Label Elements, including precautionary statements:

Hazard Statements:

H226	Flammable liquid and vapor.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H360	May damage fertility or the unborn child.

Precautionary Statements:

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/Bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P271	Use in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep 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.
P370+P378	In case of fire: Use appropriate media to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

Potential Health Effects

Eyes	Causes eye irritation.
Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	Causes skin irritation.
Ingestion	May be harmful if swallowed.

NFPA Ratings

Health	1
Flammability	2
Reactivity	0
Specific hazard	Not Available

HMIS Ratings

Health	2
Fire	2
Reactivity	0
Personal	Not Available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	CAS #	EINECS# / ELINCS#	Formula	Molecular Weight
N,N-Dimethylformamide	>99	68-12-2	200-679-5	C ₃ H ₇ NO	73.09 g/mol

4. FIRST-AID MEASURES

Eyes	Rinse with plenty of water for at least 15 minutes and seek medical attention.
Inhalation	Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin	Flush with plenty of water for at least 15 minutes and wash using soap. Get medical attention.
Ingestion	Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media	Product is flammable. Use dry chemical, alcohol foam or carbon dioxide on fires involving this product. Use appropriate media for adjacent fire. Cool unopened containers with water.
Special protective equipment and precautions for firefighters	Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.
Specific hazards arising from the chemical	Emits toxic fumes (carbon oxides, nitrogen oxides) under fire conditions. (See also Stability and Reactivity section).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	See section 8 for recommendations on the use of personal protective equipment.
Environmental precautions	Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.
Methods and materials for containment and cleaning up	Neutralize spill with sodium bicarbonate or lime. Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area. Hygroscopic material. Keep away from incompatible materials (see section 10 for incompatibilities).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure controls:

Component	Exposure Limits	Basis	Entity
N,N-Dimethylformamide	10 ppm 30 mg/m ³	TLV	ACGIH
	10 ppm 30 mg/m ³	PEL	OSHA
	10 ppm 30 mg/m ³	REL	NIOSH

TWA: Time Weighted Average over 8 hours of work.

TLV: Threshold Limit Value over 8 hours of work.

REL: Recommended Exposure Limit

PEL: Permissible Exposure Limit

STEL: Short Term Exposure Limit during x minutes.

IDLH: Immediately Dangerous to Life or Health

WEEL: Workplace Environmental Exposure Levels

CEIL: Ceiling

Personal Protection

Eyes	Wear chemical safety glasses or goggles.
Inhalation	Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.
Skin	Wear nitrile or rubber gloves, apron or lab coat. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Other	Not Available

Other Recommendations

Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Colorless to light yellow, clear liquid.
Odor	Amine-like.
Odor threshold	100 ppm
pH	6.7
Melting point/freezing point	-61°C (-78°F)
Initial boiling point and boiling range	153°C (307.4°F)
Flash point	CLOSED CUP: 57.778°C (136°F) OPEN CUP: 67°C (152.6°F)
Evaporation rate	Not Available
Flammability (solid, gas)	Flammable.
Upper/lower flammability or explosive limit	LOWER: 2.2% UPPER: 15.2%
Vapor pressure	3.60 hPa (2.70 mmHg) at 20°C (68°F) 5.16 hPa (3.87 mmHg) at 25°C (77°F)
Vapor density	2.51 (air=1)
Specific gravity	0.944 (water=1)
Solubility (ies)	Soluble in water, diethyl ether, acetone, benzene, chloroform.
Partition coefficient: n-octanol/water	log Pow: -1.01
Auto-ignition temperature	445°C (833°F)
Decomposition temperature	Not Available

10. STABILITY AND REACTIVITY

Chemical Stability	Stable
Possibility of Hazardous Reactions	Will not occur.
Conditions to Avoid	Heat, flames, sparks.
Incompatible Materials	Strong oxidizing agents, halogenated hydrocarbons, inorganic nitrates.
Hazardous Decomposition Products	Carbon oxides, nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Skin	LD50 – Rabbit – 1,500 mg/kg
Eyes	Not Available
Respiratory	LC50 – Rat – 9-15 mg/kg
Ingestion	LD50 – Rat – 2,800 mg/kg

Carcinogenicity

IARC	3-Group 3: The agent is not classifiable as to its carcinogenicity to humans (N, N-dimethylformamide).
ACGIH	A4: Not classifiable as a human carcinogen (N, N-dimethylformamide).
NTP	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs & Symptoms of Exposure

Skin	Itching, burning, redness, swelling, rash.
Eyes	Tearing, pain, blurred vision.
Respiratory	Upper respiratory tract and mucous membrane irritation.
Ingestion	Heartburn, abdominal pain, nausea, vomiting, diarrhea.

Chronic Toxicity	Possible carcinogen.
Teratogenicity	Classified POSSIBLE for human.
Mutagenicity	Mutagenetic for mammalian somatic cells.
Embryotoxicity	Classified as reproductive system toxin for females.
Specific Target Organ Toxicity	Kidneys, liver, central nervous system, blood.
Reproductive Toxicity	Not Available
Respiratory/Skin Sensitization	Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic Vertebrate	LC50 - Oncorhynchus mykiss (rainbow trout) - 9,000 - 13,000 mg/l - 96 h LC50 - Lepomis macrochirus (Bluegill) - 6,700 - 7,500 mg/l - 96 h LC50 - Pimephales promelas (fathead minnow) - 10,400 - 10,800 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 9,800 mg/l - 96 h LC50 - Lepomis macrochirus (Bluegill) - 6,300 mg/l - 96 h LC50 - Pimephales promelas (fathead minnow) - 10,600 mg/l - 96 h
Aquatic Invertebrate	EC50 - Daphnia magna (Water flea) - 9,600 - 13,100 mg/l - 48 h
Terrestrial	LC50 - Desmodesmus subspicatus (green algae) - > 500 mg/l - 96 h

Persistence and Degradability	Result: > 90 % - Readily biodegradable
Bioaccumulative Potential	Not Available
Mobility in Soil	Not Available
PBT and vPvB Assessment	Not Available
Other Adverse Effects	Not Available

13. DISPOSAL CONSIDERATIONS

Waste Product or Residues	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product or residue.
Product Containers	Users should review their operations in terms of the applicable federal/national or local regulations and consult with appropriate regulatory agencies if necessary before disposing of waste product container.

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product may significantly change the characteristics of the material and alter the waste classification and proper disposal methods.

14. TRANSPORTATION INFORMATION

US DOT	UN2265, N,N-Dimethylformamide, 3, pg III
TDG	UN2265, N,N-DIMETHYLFORMAMIDE, 3, PG III
IMDG	UN2265, N,N-DIMETHYLFORMAMIDE, 3, PG III
Marine Pollutant	No
IATA/ICAO	UN2265, N,N-Dimethylformamide, 3, pg III

15. REGULATORY INFORMATION

TSCA Inventory Status	All ingredients are listed on the TSCA inventory.
DSCL (EEC)	All ingredients are listed on the DSCL inventory.
California Proposition 65	Listed: N,N-Dimethylformamide
SARA 302	Not Listed
SARA 304	Not Listed
SARA 311	Fire Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 312	Fire Hazard, Acute Health Hazard, Chronic Health Hazard
SARA 313	Listed: N,N-Dimethylformamide
WHMIS Canada	Class B-3: Flammable and combustible liquid- Combustible liquid Class D-2A: Poisonous and infectious material- Other effects- Very toxic

16. OTHER INFORMATION

Revision	Date
Revision 1	03/25/2013
Revision 2	10/04/2016
Revision 3	08/27/2018

Disclaimer: The information provided in this Safety Data Sheet ("SDS") is correct to the best of our knowledge, information and belief at the date of publication. The information in this SDS relates only to the specific Product identified under Section 1, and does not relate to its use in combination with other materials or products, or its use as to any particular process. Those handling, storing or using the Product should satisfy themselves that they have current information regarding the particular way the Product is handled, stored or used and that the same is done in accordance with federal, state and local law. WE DO NOT MAKE ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING (WITHOUT LIMITATION) WARRANTIES WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN OR WITH RESPECT TO FITNESS FOR ANY PARTICULAR USE. WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, INJURY, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT.