Material Safety Data Sheet
N,N-Dimethylformamide

ACC# 07860

Section 1 - Chemical Product and Company Identification

MSDS Name: N,N-Dimethylformamide
Catalog Numbers: AC116220000, AC116220010, AC116220025, AC116220050, AC116220250, AC167790000, AC167790025, AC167795000, AC210580000, AC210580010, AC210580025, AC210580250, AC210585000, AC279600000, AC279600010, AC279600025, AC279600040, AC326870000, AC326870010, AC326870025, AC326871000, AC326872500, AC327170000, AC327175000, AC348430000, AC348430010, AC348430025, AC348431000, AC354830000, AC354830025, AC408310000, AC408311000, AC408320000, AC408325000, AC423640000, AC423640010, AC423640250, AC423645000, AC610320010, AC61032019, AC61032019, AC61032050, AC61032050, AC610321000, AC61032115, AC61032115, AC61032200, AC610530190, AC610530500, AC610531150, AC610532000, AC610730190, AC610730500, AC610731150, AC610732000, AC610941000, S79999SPEC, BP1160-4, BP1160-500, BP1160N219, BP1160POP20, BP1160POP50, BP1160RS115, BP1160RS19, BP1160RS200, BP1160RS28, BP1160RS50, BP1160SS-50, D119-1, D119-20, D119-200, D119-4, D119-500, D11920LC, D119FB115, D119FB19, D119FB200, D119FB50, D119J4, D119POP19, D119RB115, D119RB19, D119RB200, D119RB50, D119RS115, D119RS200, D119RS28, D119RS50, D119S-4, D119SS115, D119SS200, D119SS28, D119SS50, D131-1, D131-4, D131RS19, D131RS200, D1321, D132RS19, D132RS50, NC9969829, PS03494
Synonyms: N,N-Dimethylmethanamide; DMF; Dimethylformamide.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
68-12-2	N,N-Dimethylformamide	99-100	200-679-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 57 deg C.
Warning! Flammable liquid and vapor. May cause harm to the unborn child. Causes eye, skin, and respiratory tract irritation. May be harmful if swallowed, inhaled, or absorbed through the skin. May cause liver damage.
Target Organs: Liver, respiratory system, eyes, skin.

Potential Health Effects

Eye: Causes eye irritation.
Skin: Causes skin irritation.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver damage.
Inhalation: Causes respiratory tract irritation.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Chronic exposure may cause liver damage. May cause fetal effects based on animal studies.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water

spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Use agent most appropriate to extinguish fire. Do NOT use straight streams of water.
Flash Point: 57 deg C (134.60 deg F)
Autoignition Temperature: 445 deg C (833.00 deg F)
Explosion Limits, Lower:2.2
Upper: 15.2
NFPA Rating: (estimated) Health: 2; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Do not flush into a sewer. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Use with adequate ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Avoid breathing vapor or mist.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
N,N-Dimethylformamide	10 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous r oute	10 ppm TWA; 30 mg/m3 TWA 500 ppm IDLH	10 ppm TWA; 30 mg/m3 TWA

OSHA Vacated PELs: N,N-Dimethylformamide: 10 ppm TWA; 30 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: Faint, amine odor.
pH: 6 - 8 @ 20% aq.sol.
Vapor Pressure: 4.9 mbar @ 20 C
Vapor Density: 2.5 (air=1)
Evaporation Rate:0.17 (butylacetate=1)
Viscosity: 0.8 mPas @ 20 C
Boiling Point: 153 deg C
Freezing/Melting Point:-61 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density:0.94
Molecular Formula:C3H7NO
Molecular Weight:73.09

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Ignition sources, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, ammonia, anhydrides, iron, phenols, isocyanates, acids (mineral, non-oxidizing, e.g. hydrochloric acid, hydrofluoric acid, muriatic acid, phosphoric acid), acids (mineral, oxidizing, e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), metals (alkali and alkaline, e.g. cesium, potassium, sodium), metals and metal compounds (toxic, e.g. beryllium, lead acetate, nickel carbonyl, tetraethyl lead), reducing agents (strong, e.g. aluminum carbide, chlorosilane, hydrogen phosphide, lithium hydride), carbontetrachloride, chlorinated hydrocarbons, organic materials.
Hazardous Decomposition Products: Carbon monoxide, oxides of nitrogen, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 68-12-2: LQ2100000
LD50/LC50:
CAS# 68-12-2:
Inhalation, mouse: LC50 = 9400 mg/m3/2H;
Inhalation, rat: LC50 = 3421 ppm/1H;
Inhalation, rat: LC50 = 3421 ppm/3H;
Inhalation, rat: LC50 = 1948 ppm/4H;
Oral, mouse: LD50 = 2900 mg/kg;
Oral, rabbit: LD50 = 5 gm/kg;
Oral, rat: LD50 = 2800 mg/kg;
Skin, rabbit: LD50 = 4720 mg/kg;
Skin, rat: LD50 = >3.2 gm/kg;
.

Carcinogenicity:
CAS# 68-12-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	N,N-DIMETHYLFORMAMIDE	N,N-DIMETHYLFORMAMIDE
Hazard Class:	3	3
UN Number:	UN2265	UN2265
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 68-12-2 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 68-12-2: Effective 4/13/89, Sunset 12/19/95
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 68-12-2: 100 lb final RQ; 45.4 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 68-12-2: immediate, fire.
Section 313
This material contains N,N-Dimethylformamide (CAS# 68-12-2, 99-100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40
Clean Air Act:
CAS# 68-12-2 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 68-12-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T

Risk Phrases:

R 20/21 Harmful by inhalation and in contact with skin.
R 36 Irritating to eyes.
R 61 May cause harm to the unborn child.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.

WGK (Water Danger/Protection)

CAS# 68-12-2: 1

Canada - DSL/NDSL

CAS# 68-12-2 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2A, D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 68-12-2 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 5/25/1999
Revision #5 Date: 6/03/2005