Material Safety Data Sheet
N,N-Dimethylformamide, DNase, RNase, Protease free

ACC# 00302

Section 1 - Chemical Product and Company Identification

MSDS Name: N,N-Dimethylformamide, DNase, RNase, Protease free
Catalog Numbers: AC327170000, AC327175000
Synonyms: N,N-Dimethylmethanamide; DMF; DMFA
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
68-12-2	N,N-Dimethylformamide, DNase, RNase, Protease free	99.8%	200-679-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Not available.
Target Organs: Kidneys, liver, gastrointestinal system, cardiovascular system, eyes, skin.

Potential Health Effects
Eye: Causes eye irritation.
Skin: Causes skin irritation. Harmful if absorbed through the skin. Substance is rapidly absorbed through the skin.
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause liver damage. Causes stomach pain, epigastric cramps, and colic. May produce symtoms similiar to antabuse in the presence of ethyl
Inhalation: Harmful if inhaled. May cause respiratory tract irritation. May cause effects similar to those described for ingestion.
Chronic: Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause dermatitis.

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 immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
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: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
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. Will burn if involved in a fire. Combustible liquid.
Extinguishing Media: Use water spray to cool fire-exposed containers. Use foam, dry chemical, or carbon dioxide.
Flash Point: 58 deg C (136.40 deg F)
Autoignition Temperature: 445 deg C (833.00 deg F)
Explosion Limits, Lower:2.20 vol %
Upper: 16.00 vol %
NFPA Rating: 2 - health, 2 - flammability, 0 - instability

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. Remove all sources of ignition.

Section 7 - Handling and Storage

Handling: Use only in a well-ventilated area. Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Use only in a chemical fume hood.
Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: 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, DNase, RNase, Protease free	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, DNase, RNase, Protease free: 10 ppm TWA; 30 mg/m3 TWA
Personal Protective Equipment
Eyes: Not available.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: 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.

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid
Appearance: APHA: 5 max
Odor: Not available.
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: 0.8 mPas 20 deg C
Boiling Point: 153 deg C @ 760.00m
Freezing/Melting Point:-61 deg C
Decomposition Temperature:> 350 deg C
Solubility: halogenated hydrocarbons)
Specific Gravity/Density:.9450g/cm3
Molecular Formula: Not available.
Molecular Weight:73.09

Section 10 - Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: High temperatures, incompatible materials, ignition sources.
Incompatibilities with Other Materials: Oxidizing agents, reducing agents, acids, halogenated agents, nitrates, chloroformates.
Hazardous Decomposition Products: Carbon monoxide, oxides of nitrogen, carbon dioxide.
Hazardous Polymerization: Not available.

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: A cohort study of 2530 employees potentially exposed to DMF at a fiber-producing plant showed a significant excess in incidences for buccal cavity and pharynx cancer and malignant melanoma. A significant excess of prostate cancer was observed among workers exposed to DMF and acrylonitrile.
Teratogenicity: No data available.
Reproductive Effects: Dimethylformamide may be lethal to the embryo of pregnant rats and mice but only at doses which may be lethal to the parent female.
Mutagenicity: Reported non-mutagenic in a large number of assays using whole animals, cultured mammalian cells, yeast and bacteria; including dominant lethal test in rats, micronucleus test and sperm abnormality test.
Neurotoxicity: No data available.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. Damage to fish: Gold oland test: 18 hrs LC50: 500 mg/l
Environmental: DMF is expected to biodegrade rapidly in the environment and should be highly mobile in soil. In aquatic systems, DMF is not expected to partition from the water column to organic matter contained in sediments and suspended solids or bioconcentrate in aquatic organisms.
Physical: The vapor-phase reaction with photochemically produced hydroxyl radicals (half-life of 2 hours) is likely to be an important fate process.
Other: 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	No information available.
Hazard Class:	3	
UN Number:	UN2265	
Packing Group:	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: acute, flammable.
Section 313
This material contains N,N-Dimethylformamide, DNase, (CAS# 68-12-2, 99.8%),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

WHMIS: Not available.

Canadian Ingredient Disclosure List

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

Section 16 - Additional Information

MSDS Creation Date: 1/08/1999
Revision #3 Date: 12/03/2002