Material Safety Data Sheet
N,N-Dimethylformamide

Section 1 - Chemical Product and Company Identification

MSDS Name: N,N-Dimethylformamide

Synonyms: DMF

Company Identification:
Acros Organics BVBA
Janssen Pharmaceuticaalana 3a
2440 Geel, Belgium

Company Identification: (USA)
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11
Emergency Number, Europe: +32 14 57 52 99
Emergency Number US: 201-796-7100
CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS# Chemical Name: % EINECS#
68-12-2 N,N-Dimethylformamide 200-679-5

Hazard Symbols: T

Risk Phrases: 61 20/21 36

Section 3 - Hazards Identification
EMERGENCY OVERVIEW

Harmful by inhalation and in contact with skin. Irritating to eyes. May cause harm to the unborn child.

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.
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: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash mouth out with water.
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:

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.

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:
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits
CAS# 68-12-2:
- United Kingdom, WEL - TWA: 10 ppm TWA; 30 mg/m3 TWA
- United Kingdom, WEL - STEL: 20 ppm STEL; 61 mg/m3 STEL
- United States OSHA: 10 ppm TWA; 30 mg/m3 TWA
- Belgium - TWA: 10 ppm VLE; 30 mg/m3 VLE
- France - VME: 10 ppm VME; 30 mg/m3 VME
- Germany: 10 ppm TWA; 30 mg/m3 TWA Germany: skin notation
- Japan: 10 ppm OEL; 30 mg/m3 OEL
- Malaysia: 10 ppm TWA; 30 mg/m3 TWA
- Netherlands: 5 ppm MAC; 15 mg/m3 MAC
- Spain: 10 ppm VLA-ED; 30 mg/m3 VLA-ED

Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.

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

Respirators: 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
Color: APHA: 20 max
Odor: amine-like
pH: 6-8 (20% aq.sol.)
Vapor Pressure: 4.9mbar @20 deg C
Viscosity: 0.8 mPa.s @20 deg C
Boiling Point: 153 deg C @760mmHg (307.40°F)
Freezing/Melting Point: -61 deg C (-77.80°F)
Autoignition Temperature: 445 deg C (833.00 deg F)
Flash Point: 58 deg C (136.40 deg F)
Explosion Limits: Lower: 2.2 Vol %
Explosion Limits: Upper: 16 Vol %
Decomposition Temperature:
Solubility in water: Soluble
Specific Gravity/Density: 0.945
Molecular Formula: C3H7NO
Molecular Weight: 73.09

Section 10 - Stability and Reactivity
Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: High temperatures, high temperatures, incompatible materials, ignition sources.
Incompatibilities with Other Materials
Oxidizing agents, reducing agents, acids, alkali metals, halogenated agents, nitrates, metal oxides, chloroformates.

Hazardous Decomposition Products
Carbon monoxide, oxides of nitrogen, carbon dioxide.

Hazardous Polymerization Will not occur.

Section 11 - Toxicological Information
RTECS:
CAS# 68-12-2: LQ2100000

RTECS:
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: N,N-Dimethylformamide - IARC: Group 3 (not classifiable)

Other: See actual entry in RTECS for complete information. Teratogen.

Section 12 - Ecological Information
Ecotoxicity:
Daphnia: Daphnia: EC50: 15700 mg/L; 48h;
Fish: Bluegill/Sunfish: LC50: 6300 mg/L; 96h;
Fish: Rainbow trout: LC50: 9800 mg/L; 96h;
Fish: Fathead Minnow: LC50: 10600 mg/L; 96h;
Bacteria: Phytobacterium phosphoreum: EC50: 20100 ppm; 5 min.; 

Other: Readily biodegradable. Do not empty into drains. 
Log Pow: -1.01

Section 13 - Disposal Considerations
Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

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USA RQ: CAS# 68-12-2: 100 lb final RQ; 45.4 kg final RQ

Section 15 - Regulatory Information

European/International Regulations
European Labeling in Accordance with EC Directives

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

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

WGK (Water Danger/Protection)
CAS# 68-12-2: 1

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

US Federal
TSCA
CAS# 68-12-2 is listed on the TSCA Inventory.
Section 16 - Other Information

MSDS Creation Date: 11/23/2000
Revision #1 Date 5/10/2005
Revisions were made in Sections: General revision.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantibility or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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