

## SAFETY DATA SHEET

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### Section 1, Identification

- **Catalog Number:** S-4L-DMF, S-4X4L-DMF
- **Product Name:** Dimethylformamide (DMF)
- **Alternate Name:** N,N-Dimethylformamide
- **Chemical Family:** Amide
- **Recommended Use:** Peptide Synthesis
- **Restrictions on Use:**

### Section 2, Hazard(s) Identification



- **Emergency Overview**
  - Danger!
  - Flammable liquid and vapor
  - Vapor may cause flash fire
  - Harmful if inhaled, absorbed through skin or swallowed
  - Causes respiratory tract, eye and skin irritation
  - Possible birth defect hazard
  - Contains material, which may cause birth defects based on animal data. Laboratory tests indicate material may be carcinogenic
  - Contains material which, causes damage to the following organs: kidneys, liver, respiratory tract, skin, eyes, lens or cornea
- **Route of Entry**
  - Absorbed through skin
  - Dermal contact
  - Eye contact
  - Inhalation
  - Ingestion
- **Potential Acute Health Effects**
  - **Eyes:** No known acute effects of this product resulting from eye contact
  - **Skin:** Hazardous in case of skin contact (permeator, irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally blistering
  - **Inhalation:** Hazardous in case of inhalation (lung irritant)
  - **Ingestion:** Hazardous in case of ingestion
- **Potential Chronic Health Effects:**
  - Carcinogenic Effects: Classified 3 by IARC

### Section 3, Composition/Information on Ingredients

Components	CAS #	Chemical Formula	Molecular Weight
Dimethylformamide	68-12-2	CHON(CH <sub>3</sub> ) <sub>2</sub>	73.1 g/mol

### Section 4, First-Aid Measures

- **Eye Contact**
  - Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
  - Cold water may be used.
  - Do not apply neutralizing agents.
  - Get medical attention immediately.
- **Skin Contact**
  - In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient.
  - Cold water may be used.
  - Wash clothing before reuse. Thoroughly clean shoes before reuse.
  - Get medical attention immediately.
- **Inhalation**
  - If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
  - Get medical attention immediately.
- **Ingestion**
  - If swallowed, do not induce vomiting unless directed to do so by medical personnel.
  - Never give anything by mouth to an unconscious person.
  - Loosen tight clothing such as a collar, tie, belt or waistband.
  - Get medical attention immediately.

### Section 5, Fire-Fighting Measures

- **Suitable extinguishing media:**
  - Water spray
  - Alcohol-resistant foam
  - Dry chemical
  - Carbon dioxide
- **Unsuitable Extinguishing Media:**
  - Solid water jet ineffective as extinguishing medium
- **Special exposure hazards:**
  - Gas/Vapor spreads at floor level: ignition hazard
  - Gas/Vapor flammable with air within explosion limits
  - On Heating: release of highly flammable gases/vapors: Dimethylamine
- **Instructions:**
  - Cool tanks/drums with water spray/remove them into safety
  - Dilute toxic gases with water spray
  - Take account of toxic firefighting water
  - Use firefighting water moderately and contain it

- **Special protection equipment for firefighters:**
  - Compressed air/oxygen apparatus gas-tight suit

### Section 6, Accidental Release Measures

- **Small Spill and Leak**
  - Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
  - Observe precautions in the Protective Equipment section
- **Large Spill and Leak**
  - Keep away from heat.
  - Keep away from sources of ignition.
  - Stop leak if without risk.
  - Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed.
  - Call for assistance on disposal.
  - Be careful that the product is not present at a concentration level above TLV.
  - Check TLV on the MSDS and with local authorities.

### Section 7, Handling and Storage

- **Handling:** Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.
- **Storage:** Keep container in a dry, well-ventilated area and upright
- **Materials for Packaging:** Glass
- **Materials to Not Pack in:** Aluminum, iron, copper, synthetic material

### Section 8, Exposure Controls/Personal Protection

- **Recommended Engineering Controls:** Measure the concentration in the air regularly work under local exhaust/ventilation
- **Exposure Controls:** Work under local exhaust/ventilation
- **Exposure Limits:**

### Section 9, Physical and Chemical Properties

- **Physical Appearance:** Colorless liquid
- **Odor:** Amine Like
- **Boiling Point:** 307°C
- **Melting Point:** -61°C
- **Specific Gravity:** 0.515
- **Vapor Pressure (kpa/25°C):** 0.515
- **Vapor Density (Air = 1):** 2.51
- **Specific Gravity:** 0.951
- **pH Value:** 6.7
- **Flashpoint:** 58°C
- **Auto-ignition Point:** N.D.

- **Explosion Limits:** 2.2%(V) / 15.2%(V)
- **Water Solubility:** Soluble
- **Viscosity:** 0.8 mPa.s

## Section 10, Stability and Reactivity

- **Stability:**
  - Stable under recommended storage conditions
- **Reactivity/Hazardous Decomposition Products:**
- E.g.: with (strong) oxidizers, with (some) halogens
- **On Heating:** Release of highly flammable gases/vapors dimethylamine
- **On Heating/Burning:** Release of toxic and corrosive gases/vapors (nitrous vapors)
- **Conditions/Materials to Avoid:** Keep away from: heat sources, ignition sources, combustible materials, oxidizing agents, reducing agents, acids, metals and halogens
  - Keep away from: aluminum, iron, copper, synthetic material

## Section 11, Toxicological Information

- **Acute toxicity:**
  - LD50 oral rat: 2800 mg/kg
  - LD50 dermal rabbit: 4720 mg/kg
  - LC50 inhalation rat: >5.9 mg/1L/4 h
- **Chronic Toxicity:**
  - EC repr. Cat: 2
  - Carcinogenicity (TLV): A4
  - Teratogenicity (MAK): B
  - IARC Classification: 2B
- **Routes of Exposure:**
  - Ingestion, inhalation, eyes and skin. Substance is absorbed through the skin
- **Acute Effects/Symptoms:**
  - **After Inhalation:** Dry/sore throat coughing, nausea

**Exposure to High Concentrations:**

Dizziness  
Headache  
Vomiting  
Corrosion of the upper respiratory tract  
Respiratory difficulties  
Risk of lung edema

**After Ingestion:**

Risk of aspiration pneumonia  
Burns to the gastric/intestinal mucosa  
Symptoms similar to those listed under inhalation

**After Skin Contact:**

Blisters  
Caustic burns/corrosion of the skin  
Destruction of tissue  
Symptoms similar to those listed under inhalation

**After Eye Contact:**

Corrosion of the eye tissue  
Visual disturbances

**Chronic Effects:** Contains substance with uncertain carcinogenic properties  
Probably hazardous to the fetus

**Continuous/Repeated Exposure/Contact:** Gastrointestinal complaints  
Enlargement/affection of the liver  
Affection of the renal tissue Possible premature birth

**Section 12, Ecological Information\***

BOD5 and COD: N/A

**Section 13, Disposal Considerations\***

- **EPA Waste Number:** N/A
- **Treatment:** material does not have and EPA Waste Number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished. Always contract a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

**Section 14, Transport Information\***

- **Proper Shipping Name:** N,N-Dimethylformamide, UN 2265,
- **Transport by Road/Rail (ADR/RID):** Class 3 Packing Group III

**Section 15, Regulatory Information\***

- **SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
- **SARA 313 Components:** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
- **SARA 311/312 Hazards:** Fire Hazard, Acute Health Hazard
- **California Prop. 65 Component:** This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

**Section 16, Other Information**

**NFPA**

Health	Flammability	Instability	Physical Hazard
2	2	0	N/A

The information accumulated herein is believed to be accurate but is not warranted to be whether origination with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Gyros Protein Technologies.

\*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15(29 CFR 1910.1200(g)(2)).