

SAFETY DATA SHEET

Gyros Protein Technologies
4675 South Coach Drive
Tucson, AZ 85714

Main office: (520) 629-9626
Toll Free: (800) 477-6834
Fax: (520) 629-9806

Section 1, Identification

- Catalog Number: PS3-PPR-L
- Product Name: 20% Piperidine/DMF (DEP)
- Alternate Name: 20% Piperidine in Dimethylformamide
- Chemical family: Amide
- Recommended Use: Peptide Synthesis
- Restrictions on Use: N/A

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
- **Routes 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#	% by Volume	Chemical Formula	Molecular Weight
Dimethylformamide	68-12-2	80%	CHON(CH ₃) ₂	73.1 g/mol
Piperidine	110-89-4	20%	C ₅ H ₁₀ NH	85.15 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
 - Polyvalent foam
 - BC powder
 - Carbon dioxide
- **Unsuitable Extinguishing Media**
 - Solid water jet ineffective as extinguishing medium
- **Special Exposure**
 - Gas/Vapor spreads at floor level: ignition hazard
- **Hazards**
 - 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
- 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:**
 - Use spark/explosion-proof appliances and lighting system
 - Keep away from heat, sparks and flame
 - Handle unclean empty containers as full ones
 - Do not discharge the waste into the drain
 - Remove contaminated clothing immediately
 - Avoid breathing vapors and spray mists
- **Storage:**
 - Keep container in a cool, well-ventilated area
- **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 Limits:**
 - Dimethylformamide
 - TLV-TQA: 10 ppm
 - TLV-STEL: -
 - OES-LTEL: 30 mg/m³, 10 ppm
 - OES-STEL: 30 mg/m³, 20 ppm
 - MAK: 30 mg/m³, 10 ppm
 - MAC-TGG 8h: 15 mg/m³
 - VME-8h: VME: 30 mg/m³, 10 ppm
 - 15 min: GWBB: -
 - 8h: GWK – 15: 30 mg/m³, 10 ppm
 - Min: -

- Piperidine
 - OES-LTEL: 3.5 mg/m³, 1 ppm
 - OES-STEL: -
 - Personal Protection:
 - Eye Protection: Gloves
 - Skin Protection: Head/neck protection
 - Corrosion proof clothing
 - Respiratory Protection:
 - Gas mask with filter type A
 - High vapor concentration: compressed air/oxygen apparatus

Section 9, Physical and Chemical Properties

- **Physical Appearance:** Colorless Liquid
- **Odor:** Strong Odor
- **Color:** Colorless
- **Boiling Point:** >223°F, >106°C
- **Melting Point:** 9°F, -13°C
- **Vapor Pressure (mmHg/70 F):** N.D.
- **Vapor Density (Air = 1):** 2.94
- **Specific Gravity:** 0.861
- **pH Value:** N.D.
- **Flashpoint:** 20°C
- **Auto-Ignition Point:** >320°C
- **Explosion Limits:** N.D.
- **Water Solubility:** Soluble
- **Soluble In:** Ethanol, ether, acetone, chloroform
- **Viscosity:** N.D.

Section 10, Stability and Reactivity

- **Stability:** Hygroscopic
- **Reactivity/Hazardous:** Violent to explosive reaction with many compounds 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, acids, metals, and halogens. Keep away from: aluminum, iron, copper, synthetic material

Section 11, Toxicological Information

- **Acute toxicity:**
- **Dimethylformamide:**
 - LD50 oral rat: 2800 mg/kg
 - LD50 dermal rabbit: N.D. mg/kg
 - LC50 inhalation at: >5.9 mg/1L/4 h
 - LC50 inhalation rat: N.D. ppm/4 h
- **Piperidine**
 - LC50 inhalation rat: 1.5/3 mg/1L/4 h
 - LD50 oral rat: 400 mg/kg
 - LD50 dermal rabbit: 276 mg/kg

- LC50 inhalation rat: 2000/4000 ppm/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 an EPA Waste Number and is not a listed waste; however, consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

Section 14, Transport Information*

- **Proper shipping name:** UN 2924, Flammable liquid, corrosive, n.o.s.
- **Transport by Road/Rail (ADR/RID):** Class 3, 26a
- **Danger Code:** 338
- **Danger Labels on Tanks:** 3+8
- **Danger Labels on Packages:** 3+8
- **Packing Identification:** I
- **Maritime Transport (IMDG code):** class 3.2
- **EMS:** 3-02
- **MFAG:** 760 4.3
- **Marine Pollutant:** -
- **Air Freight (ICAO):** Class 3

Section 15, Regulatory Information*

- **Highly Flammable Toxic Flammable Contains:**
 - Dimethylformamide; piperidine
- **R11:** highly flammable
- **R61:** May cause harm to the unborn child
- **R23/24:** Also toxic by inhalation and in contact with skin
- **R34:** Causes burns
- **S53:** Avoid exposure – obtain special instructions before use
- **S16:** Keep away from sources of ignition - No smoking
- **S26:** In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- **S27:** Take off all contaminated clothing immediately

Section 16, Other Information

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)).