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Material Safety Data Sheet

Diisopropyl Fluorophosphate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Diisopropyl Fluorophosphate

Catalog Codes: SLD3136

CAS#: 55-91-4

RTECS: TE5075000

TSCA: TSCA 8(b) inventory: Diisopropyl Fluorophosphate

CI#: Not available.

Synonym: DFP, Diflupyl, Difluorophate, Dyflos, Floropryl, Fluostigmine, Isofluorophate, Isofluorophate, Neoglucit; Diisopropoxyphosphoryl fluoride; Diisopropyl fluorophosphoate; Diisopropyl phosphofluoridate; Diisopropylfluorophosphoric acid ester; Fluophosphoric acid, diisopropyl ester; Flurodiisopropyl phosphate; Isopropyl fluophosphate; Isopropyl phosphorofluoridate; O,O'-Diisopropyl phosphoryl fluoride; O,O'-Diisopropyl fluorophosphate.

Chemical Name: Phosphoropfluoridic acid, bis(1-methylethyl) ester

Chemical Formula: C6-H14-F-O3-P

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Diisopropyl Fluorophosphate	55-91-4	100

Toxicological Data on Ingredients: Diisopropyl Fluorophosphate: ORAL (LD50): Acute: 5 mg/kg [Rat]. 2 mg/kg [Mouse]. 4 mg/kg [Rabbit]. DERMAL (LD50): Acute: >117 mg/kg [Rabbit]. 72 mg/kg [Mouse]. VAPOR (LC50): Acute: 440 mg/m 0.167 hours [Mouse]. 360 mg/m 0.167 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (permeator), of ingestion, of inhalation. Hazardous in case of skin contact (irritant), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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. Get medical attention.

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.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

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.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO₂), halogenated compounds.

Fire Hazards in Presence of Various Substances:

Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. **LARGE FIRE:** Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits toxic fumes of Fluoride and Phosphorous Oxide.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Poisonous liquid. Stop leak if without risk. 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. Eliminate all ignition sources. Call for assistance on disposal.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/ spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, alkalis.

Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 6°C (42.8°F). Refrigerate

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Fruity. (Slight.)

Taste: Not available.

Molecular Weight: 184.15 g/mole

Color: Colorless to light yellow. Clear

pH (1% soln/water): Not available.

Boiling Point: 62°C (143.6°F) @ 9 mm Hg

Melting Point: -82°C (-115.6°F)

Critical Temperature: Not available.

Specific Gravity: 1.055 (Water = 1)

Vapor Pressure: 0.1 kPa (@ 20°C)

Vapor Density: 6.4 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 0.9

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:

Soluble in diethyl ether. Partially soluble in cold water. Soluble in alcohol, vegetable oils, organic solvents, fuel, and lubricants. Not very soluble in mineral oils. Solubility in water: 1.54% (wt/wt) @ 25 deg. C

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat (temperatures above 30 deg. C), moisture, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, alkalis.

Corrosivity: Not available.

Special Remarks on Reactivity:

Forms hydrogen fluoride in presence of moisture. Decomposes in water at a pH of about 2.5. It yields phosphate as a result of decomposition with sulfuric acid.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2 mg/kg [Mouse]. Acute dermal toxicity (LD50): 72 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 360 mg/m 0.167 hours [Rat]. 3

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (permeator), of ingestion, of inhalation. Hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May cause adverse reproductive effects based on animal test data

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: This substance is a neurotoxin, a cholinesterase inhibitor. Skin: Causes skin irritation. It can be absorbed through the skin in harmful amounts. systemic effects Eyes: Causes eye irritation. May also produce miscellaneous ocular side effects such as headache, brow/ocular pain, blurred vision, Phacodinesis, congestive iritis, pericorneal injection, and rarely retinal detachment. Inhalation: Harmful if inhaled. Causes respiratory tract and mucous membrane irritation. May cause effects similar to those described for ingestion. Affects respiration (dyspnea, bronchospasm, pulmonary edema, difficulty breathing, tightness in chest, and other symptoms similar to that of ingestion), and eyes (myosis, excessive tearing, ocular pain) Ingestion. May be fatal if swallowed. Causes gastrointestinal tract irritation with nausea, vomiting,

abdominal cramps, hypermotility, diarrhea, excessive salivation and respiratory mucous. Causes delayed neurotoxicity. The clinical picture is that of a severe polyneuritis that begins several days after exposure to a sufficient single or cumulative amount of the toxic compound. It is manifested initially by mild sensory disturbances, random jerky movements, ataxia, fatigue, weakness, headache, giddiness, vertigo, weakness of the legs, accompanied by reduced tendon reflexes & muscle twitching and fasciculation (particularly of the tongue and eyelids). Other symptoms may include slurring of speech, mental confusion, drowsiness, disorientation, convulsions, incontinence, renal tubular dysfunction, hypertension, hypotension, cardiac arrhythmias, tachycardia, bradycardia, tenderness to palpation, cyanosis, coma. In severe cases, the weakness may progress eventually to complete flaccid paralysis that, over the course of weeks or months, is often succeeded by a spastic paralysis with a concomitant exaggeration of reflexes. It may also cause damage/degenerative changes to spinal cord lumbar, and may affect respiration (respiratory insufficiency, hyperventilation, hypoventilation, pneumonitis, rhonchi or

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Toxic Liquid, organic, n.o.s. (Diisopropyl Fluorophosphate) UNNA: 2810 PG: I

Special Provisions for Transport: Inhalation Hazard Zone A

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Diisopropyl Fluorophosphate Illinois chemical safety act: Diisopropyl Fluorophosphate New York release reporting list: Diisopropyl Fluorophosphate Pennsylvania RTK: Diisopropyl Fluorophosphate Massachusetts RTK: Diisopropyl Fluorophosphate Massachusetts spill list: Diisopropyl Fluorophosphate New Jersey: Diisopropyl Fluorophosphate New Jersey spill list: Diisopropyl Fluorophosphate Louisiana RTK reporting list: Diisopropyl Fluorophosphate Louisiana spill reporting: Diisopropyl Fluorophosphate TSCA 8(b) inventory: Diisopropyl Fluorophosphate SARA 302/304/311/312 extremely hazardous substances: Diisopropyl Fluorophosphate CERCLA: Hazardous substances.: Diisopropyl Fluorophosphate: 100 lbs. (45.36 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).

DSCL (EEC):

R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. S23- Do not breathe gas/fumes/vapour/spray
S24/25- Avoid contact with skin and eyes. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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