








Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	<p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>Combustible material; avoid heat and sources of ignition.</p> <p>Environmental hazard.</p> <p>This material is toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</p> <p>Irritating to skin, eyes, and the respiratory system.</p> <p>Stench -- do not inhale, use under a fume hood.</p> <p>Moisture sensitive.</p>	   

Section I. Chemical Product and Company Identification

Chemical Name	Phosphonic Acid Dimethyl Ester		
Catalog Number	D0786	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	C ₂ H ₇ O ₃ P		
CAS Number	868-85-9	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Phosphonic Acid Dimethyl Ester	868-85-9	Min. 98.0 (T)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (inhalation) >20 gm/m ³ /4H Rabbit LD ₅₀ (dermal) 681 mg/kg Guinea Pig LD ₅₀ (oral) 900 mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.</p> <p>This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic effects.</p> <p>Rat TDLo (Oral) 103 gm/kg/2 years intermittent</p> <p>Toxic effects:</p> <p>Tumorigenic- Carcinogenic by RTECS criteria.</p> <p>Lung, Thorax, or Respiration- Tumors</p> <p>Rat TDLo (Oral) 144200 mg/kg/103 weeks continuous</p> <p>Toxic effects:</p> <p>Tumorigenic- Carcinogenic by RTECS criteria.</p> <p>Lung, Thorax, or Respiration- Tumors</p> <p>Gastrointestinal- Tumors</p> <p>Rat TDLo (Oral) 72100 mg/kg/103 weeks continuous</p> <p>Toxic effects:</p> <p>Tumorigenic- Equivocal tumorigenic by RTECS criteria.</p> <p>Lung, Thorax, or Respiration- Tumors</p> <p>DEVELOPMENTAL TOXICITY: Not available.</p> <p>Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

Section IV. 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. 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. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Continued on Next Page

Emergency phone number (800) 424-9300

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	237 °C (458.6 °F)
Flash Points	70 °C (158 °F).	Flammable Limits	LOWER: 5.8% UPPER: 38.1%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂), phosphates		
Fire Hazards	Not available.		
Explosion Hazards	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. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	Toxic material. Carcinogenic material. Combustible material. Environmentally hazardous material. Irritating material. Stench producing material. Moisture sensitive material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: DO NOT get water inside container. Absorb with an inert material and put the spilled material in an appropriate waste disposal. DO NOT touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.		
----------------------------	---	--	--

Section VII. Handling and Storage

Handling and Storage Information	TOXIC. CARCINOGENIC. COMBUSTIBLE. ENVIRONMENTAL HAZARD. IRRITANT. STENCH. MOISTURE SENSITIVE. Keep locked up. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, alkalis (bases).		
----------------------------------	---	--	--

Section VIII. 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 station and safety shower is proximal to the work-station location.		
Personal Protection	Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.		
			
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.		

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear. Colorless, very pale yellow.)	Solubility	Soluble in water. Miscible with most organic solvents.
Specific Gravity	1.20 (water=1)		
Molecular Weight	110.05	Partition Coefficient	LOG P _{ow} -0.6
Boiling Point	171 °C (339.8 °F)	Vapor Pressure	0.14 kPa (@ 20 °C)
Melting Point	29 °C (84.2 °F)	Vapor Density	1.2 g/ml (Air = 1) @ 25 °C (77 °F)
Refractive Index	1.40	Volatility	Not available.
Critical Temperature	Not available.	Odor	mild, unpleasant
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)		
Conditions of Instability	Avoid excessive heat and light.		
Incompatibilities	Reactive with oxidizing agents, alkalis (bases), acid chlorides.		

Section XI. Toxicological Information

RTECS Number	SZ7710000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD ₅₀ (inhalation) >20 gm/m ³ /4H Rabbit LD ₅₀ (dermal) 681 mg/kg Guinea Pig LD ₅₀ (oral) 900 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Rat TDLo (Oral) 103 gm/kg/2 years intermittent Toxic effects: Tumorigenic- Carcinogenic by RTECS criteria. Lung, Thorax, or Respiration- Tumors Rat TDLo (Oral) 144200 mg/kg/103 weeks continuous Toxic effects: Tumorigenic- Carcinogenic by RTECS criteria. Lung, Thorax, or Respiration- Tumors Gastrointestinal- Tumors Rat TDLo (Oral) 72100 mg/kg/103 weeks continuous Toxic effects: Tumorigenic- Equivocal tumorigenic by RTECS criteria. Lung, Thorax, or Respiration- Tumors DEVELOPMENTAL TOXICITY : Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. This material produces an irritating stench. Do not inhale and always use under a fume hood. Inhalation can result in inflammation of the respiratory system, headaches, nausea, and vomiting. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.


Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Not available.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
----------------	---

Section XIV. Transport Information

DOT Classification	DOT CLASS 6.1: Toxic material.
PIN Number	UN3278
Proper Shipping Name	Organophosphorus compound, toxic, liquid, n.o.s.
Packing Group (PG)	III
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). On NDSL.
EINECS Number (EEC)	212-783-8
EEC Risk Statements	R51- Toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin.
Japanese Regulatory Data	ENCS no.: 2-2001; 2-1961

Section XVI. Other Information**Version 1.0****Validated on 11/15/2010.****Printed 11/15/2010.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.

Printed 11/15/2010.