

# O,O-Diethyl thiophosphate potassium salt

sc-236223



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

O,O-Diethyl thiophosphate potassium salt

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Company: Santa Cruz Biotechnology, Inc.

Address:

2145 Delaware Ave

Santa Cruz, CA 95060

Telephone: 800.457.3801 or 831.457.3800

Emergency Tel: CHEMWATCH: From within the US and Canada:  
877-715-9305

Emergency Tel: From outside the US and Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### PRODUCT USE

Pesticide.

### SYNONYMS

C4-H10-K-O3-P-S, C4-H10-K-O3-P-S, (C2H5O)P(=S)O.K, "potassium diethyl thiophosphate", "phosphorothioic acid, O, O-diethyl ester, potassium salt", "phosphorothioic acid, O, O-diethyl ester, potassium salt", "ethyl potassium phosphorothioate", KDETP, "potassium O, O-diethylthiophosphate", "potassium O, O-diethylthiophosphate", "organophosphorus pesticide"

## Section 2 - HAZARDS IDENTIFICATION

### CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

#### RISK

#### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

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### SWALLOWED

■ Although ingestion is not thought to produce harmful effects, the material may still be damaging to the health of the individual following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality (death) rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

■ Considered an unlikely route of entry in commercial/industrial environments.

■ Ingestion may produce nausea, vomiting, depressed appetite, abdominal cramps, and diarrhea.

### EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

■ Direct eye contact can produce tears, eyelid twitches, pupil contraction, loss of focus, and blurred or dimmed vision. Dilation of the pupils occasionally occurs.

### SKIN

■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

■ The material is not thought to be a skin irritant (as classified using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

■ Toxic effects may result from skin absorption.

■ There may be sweating and muscle twitches at site of contact. Reaction may be delayed by hours.

### INHALED

■ The material is not thought to produce respiratory irritation (as classified using animal models). Nevertheless inhalation of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.

■ Poisoning due to cholinesterase inhibitors causes symptoms such as increased blood flow to the nose, watery discharge, chest discomfort, shortness of breath and wheezing. Other symptoms include increased production of tears, nausea and vomiting, diarrhea, stomach pain, involuntary passing of urine and stools, chest pain, breathing difficulty, low blood pressure, irregular heartbeat, loss of reflexes, twitching, visual disturbances, altered pupil size, convulsions, lung congestion, coma and heart failure. Nervous system effects include inco-ordination, slurred speech, tremors of the tongue and eyelids, and paralysis of the limbs and muscles of breathing, which can cause death, although death is also seen due to cardiac arrest.

### CHRONIC HEALTH EFFECTS

■ The material is considered to be harmful by all exposure routes.

Principal routes of exposure are usually by skin contact/eye contact with the material and inhalation of vapor/spray mist.

Repeated or prolonged exposures to cholinesterase inhibitors produce symptoms similar to acute effects. In addition workers exposed repeatedly to these substances may exhibit impaired memory and loss of concentration, severe depression and acute psychosis, irritability, confusion, apathy, emotional lability, speech difficulties, headache, spatial disorientation, delayed reaction times, sleepwalking, drowsiness or insomnia. An influenza-like condition with nausea, weakness, anorexia and malaise has been described. There is a growing body of evidence from epidemiological studies and from experimental laboratory studies that short-term exposure to some cholinesterase-inhibiting insecticides may produce behavioral or neuro-chemical changes lasting for days or months, presumably outlasting the cholinesterase inhibition. Although the number of adverse effects following human poisonings subside, there are still effects in some workers months after cholinesterase activity returns to normal. These long-lasting effects include blurred vision, headache, weakness, and anorexia. The neurochemistry of animals exposed to chlorpyrifos or fenthion is reported to be altered permanently after a single exposure. These effects may be more severe in developing animals where both acetyl- and butyrylcholinesterase may play an integral part in the development of the nervous system. Padilla S., The Neurotoxicity of Cholinesterase-Inhibiting Insecticides: Past and Present Evidence Demonstrating Persistent Effects. Inhalation Toxicology 7:903-907, 1995.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

### HAZARD RATINGS

	Min	Max	
Flammability:	1		
Toxicity:	2		
Body Contact:	2		Min/Nil=0 Low=1 Moderate=2
Reactivity:	2		High=3
Chronic:	2		Extreme=4

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NAME	CAS RN	%
O,O-diethyl phosphorothioate, potassium salt	5871-17-0	>98

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- If poisoning occurs, contact a doctor or Poisons Information Center. If swallowed:
  - Contact a Poisons Information Center or a doctor at once.
  - If swallowed, activated charcoal may be advised.
  - Give atropine if instructed.
  - REFER FOR MEDICAL ATTENTION WITHOUT DELAY.
  - In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
  - If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided.
  - Further action will be the responsibility of the medical specialist.
  - If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

### EYE

- If this product comes in contact with the eyes:
  - Immediately hold eyelids apart and flush the eye continuously with running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Continue flushing until advised to stop by the Poisons Information Center or a doctor, or for at least 15 minutes.
  - Transport to hospital or doctor without delay.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

### SKIN

- If product comes in contact with skin:
  - Contact a Poisons Information Center or a doctor.
  - DO NOT allow clothing wet with product to remain in contact with skin, strip all contaminated clothing including boots.
  - Quickly wash affected areas vigorously with soap and water.
  - DO NOT give anything by mouth to a patient showing signs of narcosis, i.e. losing consciousness.
  - Give atropine if instructed.
  - DO NOT delay, get to a doctor or hospital quickly.

### INHALED

- - If dust is inhaled, remove from contaminated area.
  - Encourage patient to blow nose to ensure clear passage of breathing.
  - If irritation or discomfort persists seek medical attention.
  - If spray mist, vapor are inhaled, remove from contaminated area.
  - Contact a Poisons Information Center or a doctor at once.
  - Lay patient down in a clean area and strip any clothing wet with spray.
  - Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
  - Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
  - DO NOT give anything by mouth to a patient showing signs of narcosis, i.e. losing consciousness.
  - Give atropine if instructed.
  - Get to doctor or hospital quickly.

### NOTES TO PHYSICIAN

- - Most organophosphate compounds are rapidly well absorbed from the skin, conjunctiva, gastro-intestinal tract and lungs.
  - They are detoxified by Cytochrome P450-mediated monooxygenases in the liver but some metabolites are more toxic than parent compounds.
  - Metabolites are usually detected 12-48 hours postexposure.
  - Organophosphates phosphorylate acetylcholinesterase with resultant accumulation of large amounts of acetylcholine causing initial stimulation, then exhaustion of cholinergic synapse.

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- gamma-aminobutyric acid (GABA)-ergic and dopaminergic pathways provide compensatory inhibition.
- The clinical manifestation of organophosphate toxicity results from muscarinic, nicotinic and CNS symptoms.
- A garlic-like odor emanating from the patient or involved container may aid the diagnosis.
- Immediate life-threatening symptoms usually are respiratory problems.
- Frequent suction and, if necessary, endotracheal intubation and assisted ventilation may be necessary to maintain adequate oxygenation.
- Theophylline compounds, to treat bronchospasm, should be used cautiously as they may lower the seizure threshold.
- Excessive secretions and bronchospasm should respond to adequate doses of atropine.
- Diazepam is the drug of choice for convulsions.
- Usual methods of decontamination, (activated charcoal and cathartics) should be used when patients present 4-6 hours postexposure.
- The administration of atropine, as an antidote, does not require confirmation by acetylcholinesterase levels. Severely poisoned patients develop marked resistance to the usual doses of atropine. [Atropine should not be given to a cyanosed patient - ICI] NOTE: Hypoxia must be corrected before atropine is given. For adult: 2 mg repeatedly SC or IV until atropinization is achieved and maintained (atropinization is characterised by decreased bronchial secretions, heart rate >100 bpm, dry mouth, dilated pupils).
- Pralidoxime (2-PAM, Protopam) is a specific antidote when given within 24 hours and perhaps up to 36-48 hours postexposure. Although it ameliorates muscle weakness, fasciculations and alterations of consciousness, it does not relieve bronchospasm or bronchorrhea and must be given concurrently with atropine. NOTE: Pralidoxime should be given as an adjunct to, NOT a replacement for atropine and should be given in every case where atropine therapy is deemed necessary. Traditional dose: 1 g (or 2 g in severe cases) by slow IV injection over 5-10 minutes. 1-2 g, 4 hourly (maximum dose 12 g in 24 hours) until clinical and analytical recovery is achieved and maintained.
- Avoid parasympathomimetic agents. Phenothiazines and antihistamines may potentiate organophosphate activity. [Ellenhorn and Barceloux: Medical Toxicology]

NOTE: Acute pancreatitis in organophosphate intoxication may be more common than reported. The possible pathogenesis of pancreatic insult are excessive cholinergic stimulation of the pancreas and ductular hypertension. Early recognition and appropriate therapy for acute pancreatitis may lead to an improved prognosis. Cheng-Tin Hsiao, et al; Clinical Toxicology 34(3), 343-347 (1996) BIOLOGICAL EXPOSURE INDEX - BEI These represent the determinants observed in specimens collected from a healthy worker exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Cholinesterase activity in red cells	70% of individual's baseline	Discretionary	NS

B: Background levels occur in specimens collected from subjects NOT exposed

NS: Non-specific determinant; Also observed after exposure to other materials

SQ: Semi-quantitative determinant; Interpretation may be ambiguous. Should be used as a screening test or confirmatory test.

Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. Such surveillance should emphasise

- demography, occupational and medical history and health advice
- physical examination
- baseline estimation of red cell and plasma cholinesterase activity levels by the Ellman method. Estimation of red cell and plasma cholinesterase activity towards the end of the working day

## Section 5 - FIRE FIGHTING MEASURES

Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available
Relative Vapor Density (air=1):	>1

### EXTINGUISHING MEDIA

- - Water spray or fog.
  - Foam.
- Dry agent.  
Carbon dioxide.

### FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.

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- Consider evacuation (or protect in place).

Cool fire exposed containers with water spray from a protected location.

DO NOT approach containers suspected to be hot.

If safe to do so, remove containers from path of fire.

Equipment should be thoroughly decontaminated after use.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

#### ■ Pollutant.

- Solid which exhibits difficult combustion or is difficult to ignite.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Decomposes on heating and produces toxic fumes of: phosphorus oxides (PO<sub>x</sub>), carbon monoxide (CO) and sulfur oxides (SO<sub>x</sub>).

### FIRE INCOMPATIBILITY

- Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### PERSONAL PROTECTION

Glasses:

Safety Glasses.

Chemical goggles.

Full face- shield.

Gloves:

Respirator:

Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- Clean up all spills immediately Environmental hazard - contain spillage.

Avoid breathing vapors and contact with skin and eyes.

Wear protective clothing, gloves, safety glasses and dust respirator.

Use dry clean up procedures and avoid generating dust.

Place spilled material in clean, dry, sealable, labelled container.

Wash spill area with detergent and water.

### MAJOR SPILLS

■

- DO NOT touch the spill material

and Restrict access to area. Clear area of personnel Pollutant - contain spillage.

Alert Emergency Responders and tell them location and nature of hazard.

- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water courses.
- Consider evacuation (or protect in place).

No smoking, naked lights or ignition sources. Increase ventilation.

Stop leak if safe to do so, Avoid generating dust.

Contain spill with sand, earth or vermiculite.

Collect recoverable product into labelled containers for recycling.

Collect residues and seal in labelled drums for disposal.

Wash area down with large quantity of water and prevent runoff into drains.

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

If contamination of drains or waterways occurs, advise emergency services.

### ACUTE EXPOSURE GUIDELINE LEVELS (AEG) (in ppm)

AEG 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and

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reversible upon cessation of exposure.

AEGL 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

■ Avoid generating and breathing dust.

Use good occupational work practice. Observe manufacturer's storing and handling recommendations.

- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Avoid all personal contact, including inhalation.

Wear protective clothing when risk of exposure occurs.

- Avoid smoking, naked lights, heat or ignition sources

Use in a well-ventilated area.

Avoid contact with incompatible materials.

DO NOT spray directly on humans, exposed food or food utensils.

When handling, DO NOT eat, drink or smoke.

Avoid physical damage to containers.

Always wash hands with soap and water after handling. Work clothes should be laundered separately.

Launder contaminated clothing before re-use.

### RECOMMENDED STORAGE METHODS

■ Packaging as recommended by manufacturer.

- Check that containers are clearly labeled

Plastic container.

Polyethylene or polypropylene container.

Steel drum with plastic liner.

### STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

Store in original containers.

- Keep containers securely sealed

Store in a cool, dry place.

Store in a well-ventilated area.

- No smoking, naked lights, heat or ignition sources.

Store away from incompatible materials.

Isolate from NON-pesticides.

Store away from foodstuff containers.

Protect containers against physical damage.

Check regularly for spills and leaks.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+

+

+

+

X

+

X: Must not be stored together

O: May be stored together with specific preventions

+: May be stored together

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

The following materials had no OELs on our records

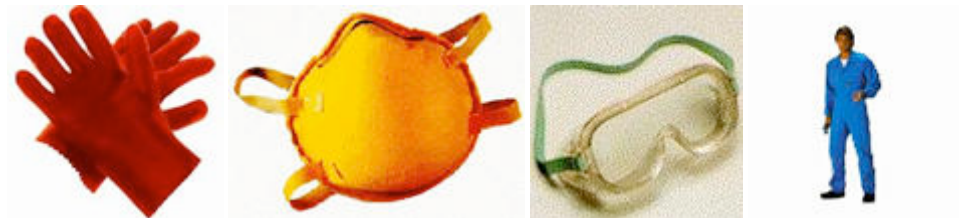
- O,O-diethyl phosphorothioate, potassium salt: CAS:5871-17-0

### MATERIAL DATA

O,O-DIETHYL PHOSPHOROTHIOATE, POTASSIUM SALT:

- No exposure limits set by NOHSC or ACGIH.

### PERSONAL PROTECTION



Consult your EHS staff for recommendations

#### EYE

- - Safety glasses with side shields
  - Chemical goggles
  - Full face shield
  - Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

#### HANDS/FEET

- - DO NOT handle directly. Wear gloves and use scoop / tongs / tools
  - Barrier cream and Elbow length PVC gloves.
  - Safety footwear or Rubber boots or
  - PVC boots

NOTE: Contaminated leather items, such as shoes, belts and watchbands should be removed and destroyed.

#### OTHER

- Cotton washable overalls buttoned to the neck and wrist and washable hat.
- Impervious protective clothing
- Ensure that there is ready access to eye wash unit
- Ensure that there is a supply of atropine tablets on hand
- Ensure all employees have been informed of symptoms of cholinesterase poisoning and that the use of atropine in first aid is understood .

Ensure that there is ready access to breathing apparatus.

Operators should be trained in correct use.

#### RESPIRATOR

Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
10 x PEL	P1	-	PAPR-P1
	Air-line*	-	-
50 x PEL	Air-line**	P2	PAPR-P2
100 x PEL	-	P3	-



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100+ x PEL	-	Air-line*	-
		Air-line**	PAPR-P3

\* - Negative pressure demand \*\* - Continuous flow

Explanation of Respirator Codes:

Class 1 low to medium absorption capacity filters.

Class 2 medium absorption capacity filters.

Class 3 high absorption capacity filters.

PAPR Powered Air Purifying Respirator (positive pressure) cartridge.

Type A for use against certain organic gases and vapors.

Type AX for use against low boiling point organic compounds (less than 65°C).

Type B for use against certain inorganic gases and other acid gases and vapors.

Type E for use against sulfur dioxide and other acid gases and vapors.

Type K for use against ammonia and organic ammonia derivatives

Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, silica.

Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.

Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

### ENGINEERING CONTROLS

■ Use in a well ventilated area, preferably outdoors.

If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator, or Air supplied breathing apparatus.

Correct respirator fit is essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	208.26
Melting Range (°F)	379.4- 383	Boiling Range (°F)	Not available
Solubility in water (g/L)	Partly miscible	Flash Point (°F)	Not available
pH (1% solution)	Not applicable	Decomposition Temp (°F)	Not available
pH (as supplied)	Not applicable	Autoignition Temp (°F)	Not available
Vapour Pressure (mmHG)	Negligible	Upper Explosive Limit (%)	Not available
Specific Gravity (water=1)	Not available	Lower Explosive Limit (%)	Not available
Relative Vapor Density (air=1)	>1	Volatile Component (%vol)	Negligible
Evaporation Rate	Not applicable		

### APPEARANCE

White crystalline solid; does not mix well with water.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- 
- Presence of heat source
- Presence of incompatible materials.
- Product is considered stable.



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- Hazardous polymerization will not occur.

### STORAGE INCOMPATIBILITY

- Segregate from strong alkalis.

Avoid contamination of water, foodstuffs, feed or seed.

A number of phosphate and thiophosphate esters are of limited thermal stability and undergo highly exothermic self-accelerating decomposition reactions which may be catalyzed by impurities. The potential hazards can be reduced by appropriate thermal control measures.

BREITHERICK L.: Handbook of Reactive Chemical Hazards.

- Alkyl esters of thiophosphates are often temperature sensitive and decompose if overheated. Thermal decomposition products include highly toxic and odiferous hydrogen sulfide and extremely odorous alkyl mercaptans. Both species can be detected at extremely low concentrations and vapors may travel long distances.
- Low temperature storage may produce crystallization from solution.
- CARE: If heating to liquefy, use tepid water, Avoid temperatures in excess of 50 deg. C.
- Head-space of drums may contain hydrogen sulfide.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

O,O-diethyl phosphorothioate, potassium salt

### TOXICITY AND IRRITATION

- No significant acute toxicological data identified in literature search.

## Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:

O,O-DIETHYL PHOSPHOROTHIOATE, POTASSIUM SALT:

Ecotoxicology:

Fish LC50 (96 h) Bluegill (*Lepomis macrochirus*) 100 mg/l

Daphnia LC50 (48 h) 100 mg/l

■ Organophosphorus pesticides are relatively non-persistent in the environment with half-lives ranging from hours to several weeks or months. Only rarely are they found in crops beyond the growing season during which they are applied. Chemical or photochemical mechanisms may produce a leaving group which is easily degraded. As a rule these compounds do not represent a serious problem as contaminants of soil and water. Breakdown products are usually non-toxic being composed of low-molecular weight, volatile molecules that are easily degraded and utilized by micro-organisms.

Being esters they are also susceptible to hydrolysis. Most organophosphorus pesticides are stable to acid pHs but under alkaline conditions hydrolysis is rapid with the breakdown rate increasing 10-fold for each pH unit above 7. An increase of 10 deg. C of temperature will increase the hydrolysis rate approximately 4-fold. When these compounds are present in the soil their disappearance is affected by their interaction with the physical characteristics and water content of the soil, and the microflora present.

In certain types of soil strong binding may make them unavailable for biological decomposition. In such soils even running water produces little movement and thus minimal contamination of water supplies. Less tightly bound substances are similarly unlikely to produce substantial contamination because of rapid breakdown. Metallic ions in the soil interact with organophosphorus pesticides through hydrogen linkage whilst increased organic matter facilitates further binding.

In general only minute amounts of pesticide residue and their breakdown products are found in natural water systems. In soil however there is a greater likelihood of the presence and buildup of toxic residues.

### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
O,O-diethyl phosphorothioate potassium salt	HIGH		LOW	HIGH

## Section 13 - DISPOSAL CONSIDERATIONS

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! Recycle wherever possible. Consult manufacturer for recycling options.

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Consult Waste Management Authority for disposal.  
Bury or incinerate residue at an approved site.  
Decontaminate empty containers.  
DO NOT discharge into sewer or waterways.  
Puncture containers to prevent re-use.

## Section 14 - TRANSPORTATION INFORMATION

■ Air transport may be forbidden if this material is flammable, corrosive or toxic gases may be released under normal conditions of transport.  
NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

## Section 15 - REGULATORY INFORMATION

**O,O-diethyl phosphorothioate, potassium salt (CAS: 5871-17-0) is found on the following regulatory lists;**  
"US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified"

## Section 16 - OTHER INFORMATION

### LIMITED EVIDENCE

- Inhalation skin contact and/or ingestion may produce health damage\*.
- Cumulative effects may result following exposure\*.
- May produce discomfort of the eyes\*.

\* (limited evidence).

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■ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/references).

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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