

TOLCIDE® PS50A

INDUSTRIAL ANTIMICROBIAL

ACTIVE INGREDIENT:
Tetrakis(hydroxymethyl) phosphonium sulfate..... 50%
OTHER INGREDIENTS..... 50%
TOTAL..... 100%
EPA Reg. No. 4554-17
EPA Est. 80347-TX-1

KEEP OUT OF REACH OF CHILDREN

WARNING

First Aid	<ul style="list-style-type: none"> Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If swallowed:	<ul style="list-style-type: none"> Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not take anything by mouth to an unconscious person.
If inhaled:	<ul style="list-style-type: none"> Have person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center for further treatment advice.
If on skin or clothing:	<ul style="list-style-type: none"> Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Have the product container or label with you when calling a poison control center or doctor or going for treatment.	
Notes to physician:	<p>Precautions in excess of those stated on this label may be necessary. Repeat as needed to maintain control.</p>

See Side Panels for Additional Precautionary Statements
In case of emergency, call CHEMTREC at 1-800-424-9300
Manufactured for:



RHODIA INC.
8 Cedar Brook Drive
Cranbury, NJ 08512-7500 • 609-860-4000
Active ingredient produced in United Kingdom

NET CONTENTS: As Marked on Container

PRECAUTIONARY STATEMENTS
HAZARD TO HUMANS AND DOMESTIC ANIMALS
DANGER: Causes irreversible eye damage and irritation. Do not get in eyes, on skin, or on clothing. Wear impervious eye protection, gloves, and shoes and avoid contact with skin. Wash thoroughly after use. Avoid breathing dust or mist. Wash thoroughly with soap and water after use. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS
This product is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters, unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

STORAGE AND DISPOSAL
Do not contaminate water, food or feed by storage or disposal.
STORAGE: Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of a spill, flood the area with large quantities of water.
PESTICIDE DISPOSAL: Pesticide wastes are acutely toxic. Improper disposal of excess pesticide, spray material, or empty containers may cause serious adverse effects on the environment. Do not discharge to sewer systems. Contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
CONTAINER DISPOSAL: Triple rinse (or equivalent) all containers and after for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or other procedure approved by state and local authorities.

DIRECTIONS FOR USE
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.
Note: For cooling water systems of equal to or greater than 4000 gallons, do not apply by open recirculation. For cooling water systems of less than 4000 gallons, do not apply by open recirculation. For cooling water systems, a recirculation pump delivery system is required for the use and application method.

INDUSTRIAL AND/OR COMMERCIAL REDUCING COOLING WATER SYSTEMS (for control of bacteria, fungi and algae)
Initial Sludge Dose: Add 140-250 ppm of TOLCIDE® PS50A (70-262.5 ppm THPS) based on total water volume. Repeat until control is obtained. Thereafter, add either intermittently 63-210 ppm of TOLCIDE® PS50A (32-105 ppm THPS) or continuously 20-80 ppm of TOLCIDE® PS50A (10-40 ppm THPS) per day.
Dirty systems must be cleaned prior to treatment.

HEAT TRANSFER SYSTEMS (Evaporative Condensers, Dairy Sweetwater Systems, Hydrostatic Stillwaters and Refrills, Brewery and Other Pasteurizers, and Warmers)
Add TOLCIDE® PS50A at the same application rates, and in the same manner as described above. It should be added to a point of uniform mixing such as a basin area, sump area, or other reservoir or collecting area from which the treated water will be circulated uniformly throughout the system.

SERVICE WATER AND AUXILIARY SYSTEMS
TOLCIDE® PS50A should be added to service water and auxiliary systems at the same application rates, and in the same manner as described above. It should be added to a point of uniform mixing such as a basin area, sump area, or other reservoir or collecting area from which the treated water will be circulated uniformly throughout the system.

AIR WASHING SYSTEMS (for use in California)
For control of bacteria and fungi. Pre-clean the system with detergent and dechlorinate with an oxidizing agent. Add TOLCIDE® PS50A (25-70 ppm THPS) at a point where uniform mixing and even distribution will occur. Repeat as needed to maintain control.

DIRECTIONS FOR USE—continued
PAPER AND PAPERBOARD MANUFACTURING (for control of bacteria, fungi and algae)
Add TOLCIDE® PS50A to the manufacturing process at a point in the system where mixing action is good, e.g., raw stock crests, before or during mill.
Add intermittently or continuously depending on mill conditions.
Initial Dosage: Add 49-100 ppm of TOLCIDE® PS50A (24.5-50 ppm THPS) based on total water volume of an equivalent based on dry weight of paper produced.
Continuous Dosage: Add 25-50 ppm of TOLCIDE® PS50A (12.5-25 ppm THPS) based on total water volume of an equivalent based on dry weight of paper produced.

INDUSTRIAL FRESH WATER SYSTEMS (for use in California)
Do not use in freshwater used in the manufacture of paper and paperboard products and in cooling towers. TOLCIDE® PS50A is effective in controlling algae in holding tanks and systems supplying water to pulp and paper mills, textile mills, and other manufacturing plants. In pulp and paper mills, treatment of the fresh water with TOLCIDE® PS50A can make an important contribution to slime control. The use of TOLCIDE® PS50A as described will reduce the development of slime in fresh water pipes and other equipment, and on the pulp and paper mill machine parts contacted by fresh water.
For the control of algae in industrial fresh water systems, TOLCIDE® PS50A should be added to a concentration of 2-20 ppm of product (1-10 ppm THPS). Treatment should be based on the amount of water entering a pond or reservoir or leaving the pond or reservoir and entering the immediate processing operations. While treatment can be made continuously, regular slug-dosing treatment will provide adequate control.

INDUSTRIAL WASTEWATER SYSTEMS (Wastewater Systems, Wastewater Sludge and Wastewater Holding Tanks) (for use in California)
TOLCIDE® PS50A should be added to a wastewater system or sludge at a convenient point of uniform mixing such as a digester. Add 500-2000 ppm of TOLCIDE® PS50A (250-1250 ppm THPS) per 1000 gallons of wastewater or sludge.
MACROFOULING CONTROL (for use in California)
TOLCIDE® PS50A should be added continuously to maintain a level of 20 ppm active ingredient (THPS) in the system for a period of at least 60 days.

PROTECTION SYSTEMS
TOLCIDE® PS50A is effective at controlling microbial growth in waters and on pipe surfaces in the protection systems. Such microbial growth when combined with other forms of corrosion can lead to accelerated corrosion rates and pitting corrosion, commonly referred to as microbiologically influenced corrosion. TOLCIDE® PS50A also helps to remove free oxygen from the water, thus eliminating an important nutrient for bacteria and an important reactant in many corrosion reactions.
TOLCIDE® PS50A should be added to a free protection system using a chemical feeding pump capable of variable pump rates. The TOLCIDE® PS50A should be injected at a point such as a pipe, manifold or return feed water line, where uniform mixing and distribution will occur. Add 150-200 ppm TOLCIDE® PS50A (75-100 ppm THPS) depending on severity of microbial contamination in the system. Repeat as needed.

SOLUTIONS EMULSIONS
Not for use in manufacture of paper and paperboard products and adhesives that may come in contact with food. For the preservation of solutions, emulsions, adhesives and other aqueous liquid products, the addition of 0.005% to 0.35% of TOLCIDE® PS50A (0.0176-1.175% THPS) is effective. Add at a point in the processing system where there will be sufficient time and agitation for good mixing and dispersion. The exact amount of TOLCIDE® PS50A to be added for the preservation of given formulations will depend on the components as well as local storage time and requirements.

DIRECTIONS FOR USE—continued
OIL FIELD AND PETROCHEMICAL OPERATIONS
TOLCIDE® PS50A is effective in controlling surface micro-organisms, general aerobic bacteria, including microorganisms that contribute to biofilm formation in oil field recovery, processing and distribution applications and supporting systems such as injection water, water holding tanks, desalting water, recirculating water handling systems, and pipelines. TOLCIDE® PS50A has been shown to disperse iron sulfide and aqueous iron from which used under these conditions, leading to improved filter life and well injectivity, and reduction of hydrocarbon slimes. TOLCIDE® PS50A is also effective for use in controlling microbial growth in fluids used for drilling and stimulation of oil wells.

Water Flooding
TOLCIDE® PS50A should be added to a water flood system at a point where uniform mixing will occur.
Initial Dosage: For a relatively fouled system, add 140-250 ppm TOLCIDE® PS50A (70-125 ppm THPS). When added to a flowing system, slug dose for 2-6 hours based on flow rates. Repeat as necessary until control is achieved.
Subsequent Dosage: Once control has been achieved, add 21-147 ppm TOLCIDE® PS50A (10.5-73.5 ppm THPS) weekly or as needed to maintain control. When added to a flowing system, slug dose for 2-6 hours based on flow rates.
Continuous Treatment: TOLCIDE® PS50A can be dosed continuously at a level of 21-100 ppm (10.5-50 ppm THPS).

Oil and Gas Production and Transmission Pipelines and Systems
TOLCIDE® PS50A should be added at a point in the pipeline where uniform mixing will occur. The application should be considered to ensure maximum distribution of TOLCIDE® PS50A through the entire internal surface of the pipeline by adding an amount of product which eventually comes out the other end of the pipeline. Criteria for success of the treatment will be reduction in bacterial count and/or corrosion rates.

Sludge Dosing: Follow instructions for water flood treatment.
Continuous Dosage: TOLCIDE® PS50A can be dosed continuously at a level of 21-150 ppm (10.5-75 ppm THPS).

Drilling Fluids, Packer Fluids, Completion and Workover Fluids
TOLCIDE® PS50A should be added to these fluids at a point where uniform mixing will occur. Add 49-2100 ppm of TOLCIDE® PS50A (24.5-1050 ppm THPS) to a freshly prepared fluid depending on severity of contamination.

Gas Storage Well and Systems (for use in California)
Injection wells should be treated with TOLCIDE® PS50A at the same application rates, and in the same manner as described under Water Floods. Individual dips should be treated with a sufficient quantity of TOLCIDE® PS50A to produce a concentration of 50-200 ppm TOLCIDE® PS50A (25-100 ppm THPS) when diluted by the water present in the dip. Injections should be repeated as needed to maintain control.

Hydrofracturing
Water used in hydraulic fracturing or vesiculation should contain 100-1000 ppm TOLCIDE® PS50A (50-500 ppm THPS), depending on water quality and length of time the equipment will remain idle.

Pipeline Pigging and Scraping Operation
Add TOLCIDE® PS50A to a slug of water immediately following the scraper (initially the water volume can be kept to a minimum and contained between the scraper and a trailing pig). Sufficient TOLCIDE® PS50A should be added to produce a concentration of 0.1% to 0.1% (50-500 ppm THPS) in the water at the discharge point or pig leg, depending on the length of the pipeline and the severity of fouling.

Note: Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk and/or handling of this material, when such use and/or handling is contrary to label directions.
TOLCIDE® is a registered trademark of Rhodia UK Limited.



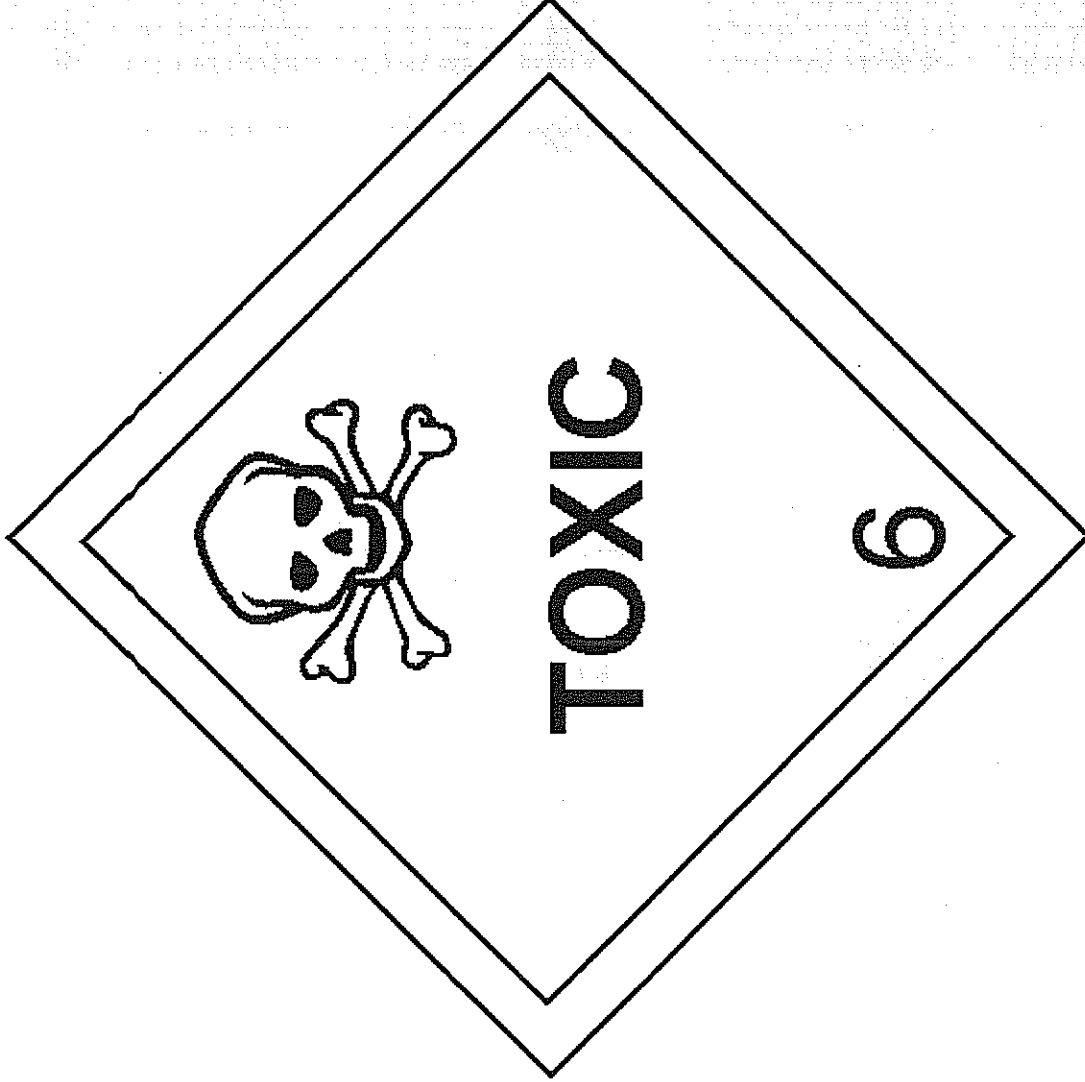
CN 7500
8 Cedar Brook Drive
Cranbury, NJ 08512-7500

FOR INDUSTRIAL USE ONLY
AL'USAGE INDUSTRIEL SEULEMENT
PARA USO INDUSTRIAL SOLAMENTE

IN CASE OF EMERGENCY – Call

CHEMTREC:
USA: 800-424-9300;
INT'L: +1-703-527-3887

Rhodia CAERS (Communication and
Emergency Response System):
800-916-3232



TOXIC LIQUID, ORGANIC, N.O.S.
(PHOSPHONIUM TETRAKIS(HYDROXY- METHYL)-SULFATE)
Liquide toxique, organique, N.A.D.
Líquido tóxico, orgánico, N.O.S.
UN 2810

Product of UK



Material Safety Data Sheet

TOLCIDE PS50A

Date Prepared: 2/01/07

Supersedes Date: 4/03/06

1. PRODUCT AND COMPANY DESCRIPTION

RHODIA INC.
RHODIA NOVECARE
CN7500
8 Cedar Brook Drive
Cranbury NJ 08512-7500

Emergency Phone Numbers:

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC (800-424-9300 within the United States or 703-527-3887 for international collect calls) or Rhodia CAERS (Communication and Emergency Response System) at 800-916-3232.

For Product Information:

(888) 776-7337

EPA FIFRA Registration Number:

4564-17

Chemical Name or Synonym:

TETRAKIS(HYDROXYMETHYL) PHOSPHONIUM SULFATE; THPS

Molecular Formula:

$2(C_4H_{12}O_4P)O_4S$

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Reg Number	OSHA Hazard	Percentage
TETRAKIS(HYDROXYMETHYL) PHOSPHONIUM SULFATE	55566-30-8	Y	~ 50.0

3. HAZARDS IDENTIFICATION

A. EMERGENCY OVERVIEW:

Physical Appearance and Odor:

colorless / liquid, characteristic odor.

Warning Statements:

DANGER! RISK OF SERIOUS DAMAGE TO EYES. HARMFUL IF INHALED. HARMFUL IF SWALLOWED. MAY CAUSE ALLERGIC SKIN REACTION. POSSIBLE DEVELOPMENTAL HAZARD, MAY ADVERSELY EFFECT THE DEVELOPING FETUS (BASED ON ANIMAL DATA).

B. POTENTIAL HEALTH EFFECTS:

Acute Eye:

Expected to cause significant irritation to the eyes. Can cause tearing, pain, burns, permanent damage to the cornea.

Acute Skin:

May cause irritation upon prolonged contact. May cause sensitization.

Acute Inhalation:

Harmful if inhaled. May cause coughing, shortness of breath, chest pain.

Acute Ingestion:

Harmful if ingested. May cause nausea, vomiting.

Chronic Effects:

Repeated, prolonged ingestion may cause liver damage, (See Section 11-Chronic for a discussion of animal studies.) In a rabbit study, animals fed this product during pregnancy produced an increase in the numbers of offspring with eye abnormalities and/or minor skeletal variations, only at doses that also caused maternal (parental) toxicity. (See Section 11 for details of chronic studies).

4. FIRST AID MEASURES

FIRST AID MEASURES FOR ACCIDENTAL:

Eye Exposure:

Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Seek immediate medical attention.

Skin Exposure:

In case of contact, immediately wash with plenty of soap and water for at least 15 minutes. Seek medical attention. Remove contaminated clothing and shoes while washing. Clean contaminated clothing and shoes before re-use or discard if they cannot be thoroughly cleaned.

Inhalation:

Remove victim from immediate source of exposure and assure that the victim is breathing. If breathing is difficult, administer oxygen, if available. If victim is not breathing, administer CPR (cardio-pulmonary resuscitation). Seek medical attention.

Ingestion:

Wash out mouth with water and keep at rest. Seek immediate medical attention. Do not induce vomiting unless instructed to do so by a physician.

MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:

Skin contact may aggravate existing skin disease.

NOTES TO PHYSICIAN:

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Treat symptomatically. No specific antidote available.

5. FIRE FIGHTING MEASURES

FIRE HAZARD DATA:

Flash Point:

Not Applicable

Extinguishing Media:

Recommended: water fog, carbon dioxide, dry chemical, foam.

Special Fire Fighting Procedures:

Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind; keep out of low areas. Evacuate residents who are downwind of fire.

Unusual Fire and Explosion Hazards:

Containers may explode (due to the build-up of pressure) when exposed to extreme heat.

Hazardous Decomposition Materials (Under Fire Conditions):

oxides of sulfur
oxides of phosphorus
oxides of carbon

6. ACCIDENTAL RELEASE MEASURES

Evacuation Procedures and Safety:

Ventilate closed spaces before entering. Personnel handling this material should be thoroughly trained to handle spills and releases. Wear appropriate protective gear for the situation. See Personal Protection information in Section 8. Evacuate and isolate spill area.

Containment of Spill:

Stop leak if it can be done without risk. Dike spill using absorbent or impervious materials such as earth, sand or clay. Dike area to prevent runoff. Collect and contain contaminated absorbent and dike material for disposal.

Cleanup and Disposal of Spill:

Recover material, if possible. DO NOT RETURN MATERIAL TO ITS ORIGINAL CONTAINER. Absorb with an inert absorbent. Shovel up into an appropriate closed container (see Section 7: Handling and Storage). Clean up residual material by washing area with water. Collect washings for disposal. The material should be properly packaged and disposed of in compliance with applicable regulations. Decontaminate tools and equipment following cleanup.

Environmental and Regulatory Reporting:

Do not flush to drain. Runoff from fire control or dilution water may cause pollution. Prevent material from entering public sewer system or any waterways. Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Minimum/Maximum Storage Temperatures:
Not Available

Handling:

Personnel handling this product should be thoroughly trained as to its hazards. Do not get on skin or in eyes. Do not breathe vapors and mists. Avoid direct or prolonged contact with skin and eyes. Use only as directed.

**** HAZARD WARNING**]This product belongs to a chemical family that HAS BEEN TESTED in combination with Trimethylolpropane , Trimethylolpropane derived products or their corresponding Trimethylolpropane homologs for toxicity of the thermal decomposition products in the absence of flame. Products in this chemical family PRODUCED OBSERVABLE ADVERSE HEALTH EFFECTS in laboratory animals. There is a possibility that this thermal decomposition produces bicyclic phosphates and/or phosphites. Bicyclic phosphates and phosphites have acute neurotoxic properties and may cause convulsive seizures in laboratory test animals. Therefore, this product should not be used in conjunction with Trimethylolpropane or Trimethylolpropane derived products unless tested to determine their decomposition toxicity. Follow all precautionary measures outlined in this Material Safety Data Sheet and/or contact Rhodia Inc.

Storage:

Store in an area that is clean, cool, dry, well-ventilated, Store away from; bases, oxidizers, reducing agents, Store in tightly closed containers. Container material to avoid: ordinary steel, Recommended container material: high density, high molecular weight polyethylene containers. Store in original container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Introductory Remarks:

These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations.

Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

Exposure Guidelines:

Exposure limits represent regulated or recommended worker breathing zone concentrations measured by validated sampling and analytical methods, meeting the regulatory requirements. The following limits apply to this material, where, if indicated, S=skin and C=ceiling limit:

TETRAKIS(HYDROXYMETHYL) PHOSPHONIUM SULFATE

ACGIH	Notes	TWA	STEL
		2 mg/cu m	

Engineering Controls:

Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures: general area dilution/exhaust ventilation.

Respiratory Protection:

When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Eye/Face Protection:

Eye and face protection requirements will vary dependent upon work environment conditions and material

handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to the work area. Face contact should be prevented through use of a face shield.

Skin Protection:

Skin contact should be prevented through use of suitable protective clothing, gloves and footwear, selected with regard for use conditions and exposure potential. Consideration must be given both to durability as well as permeation resistance.

Work Practice Controls:

Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material:

- (1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.
- (2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.
- (3) Wash exposed skin promptly to remove accidental splashes or contact with this material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product Information phone number in Section 1 for its exact specifications.

Physical Appearance:

colorless / liquid.

Odor:

characteristic odor.

pH:

3 to 6 at 100 wt/wt%.

Specific Gravity:

1.256 at 25 C (77 F).

Density:

1.21 to 1.29 g/ml at 25 C (77 F).

Water Solubility:

miscible

Melting Point Range:

Not Available

Freezing Point Range:

~ -10 C (14 F)

Boiling Point Range:

Not Available

Vapor Pressure:

Not Available

Vapor Density:
Not Available

Viscosity:
viscosity (centistokes) : 4 cs at 23 C (73 F).

Molecular Weight:
406.3

10. STABILITY AND REACTIVITY

Chemical Stability:

This material is stable under normal handling and storage conditions described in Section 7. Under unusual conditions, such as very high temperatures and/or in the presence of strong reducing agents, the product may break down to form hazardous decomposition products noted below. The customer is advised to seek further advice from Rhodia Water Technical Service personnel when considering such applications.

Conditions To Be Avoided:

heat

Temperatures above 160C.

See HAZARD WARNING under HANDLING : in Section 7.

Materials/Chemicals To Be Avoided:

strong bases

strong acids

strong oxidizing agents

strong reducing agents

Decomposition Temperature Range:

> 160 C (320 F)

The Following Hazardous Decomposition Products Might Be Expected:

Decomposition Type: thermal

oxides of sulfur

oxides of phosphorus

oxides of carbon

phosphine gas

Hazardous Polymerization Will Not Occur.

Avoid The Following To Inhibit Hazardous Polymerization:

not applicable

11. TOXICOLOGICAL INFORMATION

Acute Eye Irritation:

Toxicological Information and Interpretation:

eye - eye irritation, rabbit. Severely irritating. This material is expected to cause significant irritation to the eyes.

Acute Skin Irritation:**Toxicological Information and Interpretation:**

skin - skin irritation, rabbit. Minimally irritating. This material is not expected to cause significant irritation to the skin.

skin - sensitization, guinea pig. Sensitizing. May cause significant allergic skin reaction.

Acute Dermal Toxicity:

The following data is for similar or related products.

Toxicological Information and Interpretation:

LD50 - lethal dose 50% of test species, > 2000 mg/kg, rat. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate.

Acute Respiratory Irritation:

No test data found for product.

Toxicological Information and Interpretation:

lung - lung irritation (qualitative), **. This material is not expected to cause significant irritation to the respiratory tract.

Acute Inhalation Toxicity:

The following data is for similar or related products.

Toxicological Information and Interpretation:

LC50 - lethal concentration 50% of test species, 0.59 mg/l/4 hr, rat. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate.

Acute Oral Toxicity:

The following data is for similar or related products.

Toxicological Information and Interpretation:

LD50 - lethal dose 50% of test species, 575 mg/kg, rat. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate.

Chronic Toxicity:

This product does not contain any substances that are considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens.

The following data is for similar or related products.

Toxicological Information and Interpretation - REPRODUCTIVE TOXICITY, rat. Material is not a reproductive toxin. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate. - CARCINOGENICITY, **. There was no evidence of carcinogenicity in F344/N rats and B6C3F1 mice (both sexes) dosed by gavage at 5 or 10 mg THPS/kg/day for 2 years. ^{ref.} NTP study report TR296, 1987]. - MUTAGENICITY, **. Ames Test: Negative. - MUTAGENICITY, **. Chinese hamster ovary cells (chromosomal aberrations): Positive. - TERATOGENICITY, **. A developmental toxicity study in rabbits resulted in statistically significant developmental effects in offspring, principally including eye malformations, hydrocephaly and skeletal variations, at doses that also caused maternal (parental) bodyweight gain reduction. The No Observed Effect Level (NOEL) for development toxicity and maternal toxicity (rabbit) = 18 mg/kg/day. A developmental toxicity study in rats showed a statistically significant increase only in one skeletal variation (supernumary ribs), at doses that also caused maternal toxicity. The No Observed Effect Level for development toxicity (rat) = 30 mg/kg/day; No observed effect level for maternal toxicity (rat) = 15 mg/kg/day. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate. Medical surveillance for over 30 years of employees in our manufacturing facility has shown no evidence of developmental toxicity from long-term exposure nor from exposure following an acute incident, for example, a major or minor spillage. - MUTAGENICITY, **. Dominant Lethal Assay ^{rat} (in vivo): Negative. - MUTAGENICITY, **. Mouse micronucleus (in vivo): Negative. - MUTAGENICITY, **. Unscheduled DNA synthesis assay: Negative. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate. - SUB-CHRONIC EXPOSURE, 1 mg/kg/90 days, rat. Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

The following data is based on the technical grade active ingredient(s) (TGAI).

Ecotoxicological Information and Interpretation:

LC50 - lethal concentration 50% of test species, 19.4 mg/l/48 hr, *Daphnia magna*.

LC50 - lethal concentration 50% of test species, 93 mg/l/96 hr, bluegill sunfish (*Lepomis macrochirus*).

LC50 - lethal concentration 50% of test species, 119 mg/l/96 hr, rainbow trout (*Oncorhynchus mykiss*).

LC50 - lethal concentration 50% of test species, 86 mg/l/96 hr, Juvenile Plaice.

LC50 - lethal concentration 50% of test species, 340 mg/l/96 hr, Brown Shrimp.

LC50 - ecotox Method for association with dry sediment weight., 2174 mg/kg/10 days, *Corophium volutator*. (dry sediment weight).

LD50 - lethal dose 50% of test species, 311 mg/kg, Mallard duck (*Anas platyrhynchos*). Material tested was a 75% aqueous solution of Tetrakis (hydroxymethyl) phosphonium sulfate.

Chemical Fate Information:

Product is not expected to bioaccumulate. The following data is for similar or related product. This product is readily biodegradable under aerobic and anaerobic conditions in a sediment-water system. 28 days (aerobic) and 30 days (anaerobic). THPS has been shown to degrade rapidly once diluted to sub-ppm concentrations and forms trishydroxymethyl phosphine oxide which is classified as non-toxic.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

EPA Hazardous Waste - NO

14. TRANSPORTATION INFORMATION

Transportation Status: **IMPORTANT!** Statements below provide additional data on listed DOT classification.

The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

US Department of Transportation

Hazard Class..... 6.1

Shipping Name:

TOXIC LIQUID, ORGANIC, N.O.S.

Technical Shipping Name:

PHOSPHONIUM, TETRAKIS(HYDROXYMETHYL)-, SULFATE

ID Number..... UN2810

Packing Group.... III

Labels..... TOXIC

Emergency Guide #.... 153

15. REGULATORY INFORMATION

Inventory Status

Inventory	Status
UNITED STATES (TSCA)	Y
CANADA (DSL)	N
EUROPE (EINECS/ELINCS)	P
AUSTRALIA (AICS)	N
JAPAN (MITI)	N
SOUTH KOREA (KECL)	N

Y = All ingredients are on the inventory.

E = All ingredients are on the inventory or exempt from listing.

P = One or more ingredients fall under the polymer exemption or are on the no longer polymer list. All other ingredients are on the inventory or exempt from listing.

N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing.

FEDERAL REGULATIONS

Inventory Issues:

This product is excluded from TSCA because it is solely for FIFRA regulated use.

SARA Title III Hazard Classes:

Fire Hazard	- NO
Reactive Hazard	- NO
Release of Pressure	- NO
Acute Health Hazard	- YES
Chronic Health Hazard	- YES

STATE REGULATIONS:

This product contains the following components that are regulated under California Proposition 65:

Ingredient Name	Cancer List	Reprod. List	No Sign. Risk Lvl (ug/day) California	RPI
FORMALDEHYDE	Y	N	40	ND

16. OTHER INFORMATION

National Fire Protection Association Hazard Ratings--NFPA(R):

2	Health Hazard Rating--Moderate
0	Flammability Rating--Minimal
1	Instability Rating--Slight

National Paint & Coating Hazardous Materials Identification System--HMIS(R):

2	Health Hazard Rating--Moderate
0	Flammability Rating--Minimal
1	Reactivity Rating--Slight

Reason for Revisions:

Change and/or addition made to Section 3, Warning Statements in Section 3, Section 11, SARA 313 Information in Section 15.

Key Legend Information:

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissible Exposure Limit
TWA - Time Weighted Average
STEL - Short Term Exposure Limit
NTP - National Toxicology Program
IARC - International Agency for Research on Cancer
ND - Not determined
RHODIA - Rhodia Established Exposure Limits

Disclaimer:

The information herein is given in good faith but no warranty, expressed or implied, is made.

**** End of MSDS Document ****