

Tetrakis Hydroxymethyl Phosphonium Sulfate MSDS

1. Product Name and Identification

- **Product Name:** [Tetrakis\(hydroxymethyl\)phosphonium sulfate](#)
- **Synonyms:** THPS, Octakis(hydroxymethyl)phosphonium sulfate
- **CAS Number:** 55566-30-8
- **Chemical Formula:** $C_8H_{24}O_8P_2S$
- **Recommended Use:** Biocide, flame retardant, industrial water treatment.
- **Company Identification:** [Enter Supplier Name and Contact Information Here]

2. Composition/Ingredients

- **Component Name:** Tetrakis(hydroxymethyl)phosphonium sulfate
- **CAS Number:** 55566-30-8
- **Concentration:** Typically supplied as a 75% aqueous solution.

3. Hazards Identification

Emergency Overview: This product is a clear, colorless to pale yellow liquid with a pungent odor. It is corrosive and can cause severe skin burns and eye damage. Harmful if swallowed or inhaled. May cause an allergic skin reaction. Very toxic to aquatic life.

Potential Health Effects:

- **Eye Contact:** Corrosive. Causes serious, potentially irreversible eye damage. Symptoms include severe pain, redness, watering, and blurred vision.
- **Skin Contact:** Corrosive. Causes severe skin burns and blistering. Can be absorbed through the skin. May cause an allergic skin reaction (sensitization) upon repeated contact.
- **Inhalation:** Harmful if inhaled. Vapors or mists can cause severe irritation or burns to the nose, throat, and respiratory tract. High concentrations may lead to serious respiratory issues.
- **Ingestion:** Harmful if swallowed. Causes severe burns to the mouth, throat, and stomach. Symptoms may include intense pain, nausea, vomiting, and abdominal distress.

4. First Aid Measures

- **Eye Contact:** Immediately flush eyes with large amounts of clean, low-pressure water for at least 30 minutes, holding eyelids apart. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention.

- **Skin Contact:** Immediately remove all contaminated clothing and shoes. Rinse the affected skin area with plenty of water for at least 15-20 minutes. Seek immediate medical attention. Wash clothing before reuse.
- **Inhalation:** Move the person to fresh air. If the person is not breathing, give artificial respiration. If breathing is difficult, administer oxygen. Call a poison control center or doctor for treatment advice.
- **Ingestion:** Call a poison control center or doctor immediately. Have the person rinse their mouth with water. Do not induce vomiting unless told to do so by medical personnel. If the person is conscious and can swallow, give a small amount of water to drink. Never give anything by mouth to an unconscious person.

5. Handling and Storage

- **Handling:** Do not get in eyes, on skin, or on clothing. Use only in a well-ventilated area. Avoid breathing vapor or mist. Wear complete personal protective equipment (see Section 8). Wash hands and face thoroughly after handling.
- **Storage:** Store in a cool, dry, well-ventilated location, away from direct sunlight and incompatible materials. Keep the container tightly closed and in an upright position to prevent leakage. Store in a corrosion-resistant container. Keep away from bases and oxidizing agents.

6. Exposure Controls/Personal Protection

- **Engineering Controls:** Use in a closed system or with effective local exhaust ventilation to control airborne levels. Emergency eyewash fountains and safety showers should be available in the immediate work area.
- **Personal Protective Equipment (PPE):**
 - **Eye/Face Protection:** Wear chemical splash goggles and a face shield.
 - **Skin Protection:** Wear chemical-resistant gloves (e.g., butyl rubber, neoprene), boots, and a full-body chemical-resistant suit or apron.
 - **Respiratory Protection:** If ventilation is insufficient to control vapors or mists, use a NIOSH-approved respirator with an organic vapor cartridge and a particulate pre-filter.
 - **General Hygiene:** Do not eat, drink, or smoke in work areas. Discard contaminated clothing and shoes that cannot be decontaminated.

7. Physical and Chemical Properties

- **Appearance:** Clear, colorless to pale yellow liquid
- **Odor:** Pungent
- **pH:** 2.5 - 4.5 (as supplied)
- **Melting Point:** < -20 °C (-4 °F)
- **Boiling Point:** 104 °C (219 °F)
- **Flash Point:** > 100 °C (212 °F)

- **Solubility in Water:** Completely miscible
- **Specific Gravity:** ~1.38
- **Vapor Pressure:** Similar to water

8. Stability and Reactivity

- **Chemical Stability:** Stable under recommended storage conditions.
- **Conditions to Avoid:** Exposure to high temperatures, direct sunlight, and incompatible materials.
- **Incompatible Materials:** Strong oxidizing agents, strong bases (can release flammable phosphine gas), and metals like carbon steel and aluminum.
- **Hazardous Decomposition Products:** Thermal decomposition can produce toxic fumes, including oxides of carbon, phosphorus, and sulfur. Contact with bases can generate phosphine gas.
- **Hazardous Polymerization:** Will not occur.

9. Toxicological Information

- **Acute Toxicity:**
 - **Oral (LD50, Rat):** ~200 mg/kg (Category 3)
 - **Dermal (LD50, Rabbit):** >2000 mg/kg
- **Carcinogenicity:** Not classified as a carcinogen by IARC, NTP, or OSHA.
- **Irritation:** Corrosive. Causes severe skin burns and serious eye damage.
- **Sensitization:** May cause an allergic skin reaction.

10. Disposal Considerations

- **Waste Disposal:** This material, when discarded, is a hazardous waste. Disposal must be in accordance with all applicable federal, state, and local regulations. 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. Do not dispose of via sewer systems. Contact a licensed professional waste disposal service to dispose of this material.