Triethyl Phosphate MSDS

1. Product Name and Identification

Product Name: Triethyl Phosphate (TEP)
Chemical Name: Triethyl phosphate
Chemical Formula: $C_6H_{15}O_4P$
CAS Number: 78-40-4
EC Number: 201-114-5
Molecular Weight: 182.15 g/mol
Product Use: Plasticizer, flame retardant, solvent, chemical intermediate, catalyst
Supplier Information: [Company Name, Address, Phone Number, Emergency Contact Information]

2. Composition/Ingredients

Component: Triethyl Phosphate
Concentration: ≥ 99.5%
CAS Number: 78-40-4
EINECS Number: 201-114-5
Impurities: May contain trace amounts of diethyl phosphate and phosphoric acid esters
Water Content: ≤ 0.1%

3. Hazards Identification

GHS Classification:

- Acute Toxicity - Oral (Category 4)
- Eye Irritation (Category 2A)
- Specific Target Organ Toxicity - Single Exposure (Category 3)
- Aquatic Chronic Toxicity (Category 3)

Signal Word: WARNING

Hazard Statements:

- H302: Harmful if swallowed
- H319: Causes serious eye irritation
- H336: May cause drowsiness or dizziness
- H412: Harmful to aquatic life with long-lasting effects

Precautionary Statements:

- Avoid breathing vapor/spray
- Wash hands thoroughly after handling

- Use only outdoors or in well-ventilated area
- Wear eye protection/face protection
- If in eyes: Rinse cautiously with water for several minutes
- Store in well-ventilated place. Keep container tightly closed

4. First Aid Measures

Inhalation:

- Move person to fresh air and keep at rest in a position comfortable for breathing
- If experiencing respiratory symptoms, call a poison center or doctor
- If not breathing, give artificial respiration
- Monitor for signs of delayed pulmonary effects

Skin Contact:

- Wash with soap and plenty of water for at least 15 minutes
- Remove contaminated clothing and shoes
- If skin irritation or rash occurs, get medical advice/attention
- Wash contaminated clothing before reuse

Eye Contact:

- Rinse cautiously with water for several minutes
- Remove contact lenses, if present and easy to do
- Continue rinsing for at least 15 minutes
- If eye irritation persists, get medical advice/attention

Ingestion:

- Rinse mouth immediately
- Do not induce vomiting unless instructed by poison control center
- Never give anything by mouth to an unconscious person
- Call a poison center or doctor immediately if you feel unwell

5. Handling and Storage

Handling Precautions:

- Use with adequate ventilation
- Avoid contact with eyes, skin, and clothing
- Avoid breathing vapors or mist
- Use explosion-proof electrical equipment

- Ground/bond container and receiving equipment
- Take precautionary measures against static discharge

Storage Requirements:

- Store in cool, dry, well-ventilated area
- Keep container tightly closed
- Store away from incompatible materials
- Temperature range: 5-35°C
- Avoid exposure to heat and direct sunlight
- Use original container or compatible materials

6. Exposure Controls/Personal Protection

Exposure Limits:

- No established OSHA PEL
- No established ACGIH TLV
- Recommended workplace exposure limit: 0.2 mg/m^3 (8-hour TWA)

Engineering Controls:

- Provide adequate general and local exhaust ventilation
- Use process enclosures, local exhaust ventilation, or other engineering controls
- Eyewash stations and safety showers should be available
- Maintain equipment to prevent vapor release

Personal Protective Equipment:

- **Respiratory:** Use NIOSH/MSHA approved respirator if exposure limits are exceeded
- **Eye Protection:** Safety glasses with side shields or chemical goggles
- **Skin Protection:** Chemical-resistant gloves (butyl rubber or nitrile)
- **Body Protection:** Long-sleeved shirt and long pants; chemical-resistant apron for larger operations
- **Footwear:** Closed-toe, chemical-resistant shoes

7. Physical and Chemical Properties

Appearance: Clear, colorless liquid
Odor: Mild, fruity odor
Odor Threshold: 0.2 ppm
pH: Neutral (approximately 7)
Melting Point: -56.4°C
Boiling Point: 215-216°C

Flash Point: 115°C (closed cup)
Auto-ignition Temperature: 454°C
Density: 1.072 g/mL at 20°C
Viscosity: 1.59 mPa·s at 25°C
Vapor Pressure: 0.36 mmHg at 25°C
Vapor Density: 6.28 (air = 1)
Solubility: Miscible with water and most organic solvents

8. Stability and Reactivity

Chemical Stability: Stable under recommended storage and handling conditions

Conditions to Avoid:

- High temperatures above auto-ignition point
- Open flames and sources of ignition
- Strong oxidizing conditions
- Acidic or basic hydrolysis conditions

Incompatible Materials:

- Strong oxidizing agents
- Strong acids and bases
- Alkali metals
- Metal salts in presence of moisture

Hazardous Decomposition Products:

- Carbon monoxide and carbon dioxide
- Phosphorus oxides
- Ethylene
- Various phosphate compounds

Hazardous Reactions: May undergo slow hydrolysis in presence of moisture and heat, producing phosphoric acid and ethanol

9. Toxicological Information

Acute Toxicity:

- Oral LD50 (rat): 1,430 mg/kg
- Dermal LD50 (rabbit): 2,143 mg/kg
- Inhalation LC50 (rat, 4h): >5.11 mg/L

Health Effects:

- **Acute Effects:** Central nervous system depression, eye and respiratory tract irritation

- **Chronic Effects:** Potential liver and kidney effects with repeated exposure
- **Sensitization:** No evidence of skin or respiratory sensitization

Target Organs:

- Primary: Central nervous system
- Secondary: Liver, kidneys, eyes

Carcinogenicity:

- Not listed by IARC, NTP, or OSHA as a carcinogen
- No evidence of carcinogenic effects in available studies

Reproductive Toxicity:

- Limited data available
- Animal studies show no evidence of reproductive toxicity at typical exposure levels

Mutagenicity:

- Negative results in bacterial mutagenicity tests
- No evidence of mutagenic potential

10. Disposal Considerations

Waste Disposal Methods:

- Dispose of contents and container in accordance with local, regional, national regulations
- Incinerate in a licensed facility with appropriate emission controls
- Collect and transfer to appropriate waste disposal facility
- Do not discharge to surface water or sanitary sewer system

Container Disposal:

- Triple rinse containers before disposal
- Offer rinsed container for recycling or reconditioning
- Puncture containers to prevent reuse
- Follow all applicable local, state, and federal regulations

Environmental Precautions:

- Prevent release into waterways, sewers, basements, or confined areas
- Not readily biodegradable
- May persist in environment
- Use appropriate containment to avoid environmental contamination

Special Considerations:

- Material may be subject to hazardous waste regulations

- Consult local environmental authorities for proper disposal requirements
- Consider waste minimization and recycling options
- Emergency spill cleanup should follow appropriate procedures

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Emergency Information: [Insert 24-hour emergency contact number]
Regulatory Compliance: This safety data sheet has been prepared in accordance with OSHA HCS 2012 and GHS requirements

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