Tricalcium Phosphate MSDS

1. Product Name and Identification

Product Name: Tricalcium Phosphate (TCP)
Chemical Name: Calcium phosphate, tribasic
Chemical Formula: $Ca_3(PO_4)_2$
CAS Number: 7758-87-4 / 12167-74-7
EC Number: 231-840-8
Molecular Weight: 310.18 g/mol
Product Use: Food additive, nutritional supplement, pharmaceutical excipient, polishing agent, ceramic applications
Supplier Information: [Company Name, Address, Phone Number, Emergency Contact Information]

2. Composition/Ingredients

Component: Tricalcium Phosphate
Concentration: ≥ 97%
CAS Number: 7758-87-4
EINECS Number: 231-840-8
Impurities: May contain small amounts of dicalcium phosphate, calcium carbonate, and moisture
Loss on Drying: ≤ 2.0% at 200°C
Fluoride Content: ≤ 50 ppm (food grade)

3. Hazards Identification

GHS Classification:

- Not classified as hazardous under GHS criteria
- Eye Irritation (Category 2B) - mechanical irritation only
- GRAS (Generally Recognized as Safe) for food use

Signal Word: None required

Hazard Statements:

- May cause mechanical eye irritation due to dust particles
- Prolonged inhalation of dust may cause respiratory discomfort

Precautionary Statements:

- Avoid breathing dust
- Wear eye protection when handling dusty material
- Wash hands thoroughly after handling

- Use adequate ventilation

4. First Aid Measures

Inhalation:

- Remove person to fresh air and keep comfortable
- If coughing or throat irritation occurs, provide fresh air and water
- Normal recovery expected without treatment
- Seek medical advice if symptoms persist

Skin Contact:

- Wash affected area with soap and water
- No adverse effects expected from normal handling
- If prolonged contact causes dryness, apply moisturizer
- Remove dust-contaminated clothing and wash before reuse

Eye Contact:

- Flush eyes gently with clean water for 15 minutes
- Remove contact lenses if present and easy to remove
- Seek medical attention if irritation continues
- Most eye irritation resolves quickly with thorough rinsing

Ingestion:

- Rinse mouth with water
- Give water to drink if person is conscious
- No treatment typically necessary for small amounts
- Seek medical advice if large quantities consumed or if discomfort occurs

5. Handling and Storage

Handling Precautions:

- Minimize dust generation during handling
- Use appropriate dust control measures
- Avoid prolonged skin contact with dusty material
- Practice good industrial hygiene
- No special handling requirements beyond normal dust control

Storage Requirements:

- Store in dry, cool, well-ventilated area

- Keep container tightly closed to prevent moisture absorption
- Protect from excessive humidity
- Storage temperature: ambient (15-30°C recommended)
- Keep away from strong acids
- No special fire protection requirements

6. Exposure Controls/Personal Protection

Exposure Limits:

- OSHA PEL: 15 mg/m^3 (total dust), 5 mg/m^3 (respirable fraction)
- ACGIH TLV: 10 mg/m^3 (inhalable fraction), 3 mg/m^3 (respirable fraction)
- No specific limits established (generally considered nuisance dust)

Engineering Controls:

- General ventilation usually adequate
- Local exhaust ventilation for dusty operations
- Dust collection systems for bulk handling
- Regular housekeeping to prevent dust accumulation

Personal Protective Equipment:

- **Respiratory:** Dust mask (N95) if dusty conditions exist
- **Eye Protection:** Safety glasses with side shields for dusty operations
- **Skin Protection:** Work gloves for comfort; not required for safety
- **Body Protection:** Standard work clothing adequate

7. Physical and Chemical Properties

Appearance: White, odorless crystalline powder
Odor: Odorless
pH: 7.0-9.0 (10% aqueous suspension)
Melting Point: 1670°C
Boiling Point: Not applicable (decomposes)
Density: 3.14 g/cm^3
Bulk Density: 0.8-1.1 g/cm^3
Solubility: Practically insoluble in water (0.002 g/100 mL at 25°C)
Solubility: Soluble in dilute hydrochloric and nitric acids
Particle Size: Typically 1-50 microns (varies by grade)
Hygroscopicity: Non-hygroscopic

8. Stability and Reactivity

Chemical Stability: Very stable under normal conditions

Conditions to Avoid:

- Strong acids (causes dissolution and gas evolution)
- Extremely high temperatures (>1600°C causes decomposition)
- No other special conditions to avoid

Incompatible Materials:

- Strong mineral acids
- Ammonium salts in presence of moisture
- Aluminum at very high temperatures

Hazardous Decomposition Products:

- Phosphorus pentoxide (at very high temperatures)
- Calcium oxide (at very high temperatures)
- No hazardous decomposition under normal conditions

Hazardous Reactions: No hazardous reactions known under normal use conditions

9. Toxicological Information

Acute Toxicity:

- Oral LD50 (rat): >5,000 mg/kg (practically non-toxic)
- Dermal toxicity: Non-irritating, non-sensitizing
- Inhalation: Nuisance dust effects only

Health Effects:

- **Acute:** No significant acute health effects expected
- **Chronic:** No known chronic health effects from normal use
- **Carcinogenicity:** Not classified as carcinogenic
- **Reproductive:** No known reproductive effects

Target Organs: None identified

Medical Conditions Aggravated:

- Pre-existing respiratory conditions may be aggravated by dust inhalation
- No other medical conditions specifically affected

Toxicological Notes:

- GRAS status for food applications
- Widely used as calcium supplement
- Essential nutrient component
- No evidence of systemic toxicity at normal exposure levels

10. Disposal Considerations

Waste Disposal Methods:

- Dispose as non-hazardous waste in accordance with local regulations
- Can typically be disposed in regular industrial waste streams
- Small amounts may be disposed in regular trash where permitted
- Consider recycling for appropriate industrial applications

Container Disposal:

- Empty containers can be recycled where facilities exist
- No special container disposal requirements
- Rinse containers if recycling
- Follow local waste management guidelines

Environmental Considerations:

- Not harmful to environment in normal quantities
- Natural component of soil and biological systems
- Essentially non-toxic to aquatic life
- Will not bioaccumulate

Regulatory Information:

- Not classified as hazardous waste
- No special disposal permits typically required
- Consult local authorities for large quantity disposal
- May contribute to beneficial soil calcium content

Document Prepared: September 4, 2025
Document Version: 1.0
Next Review Date: September 4, 2028

Emergency Contact: [Insert emergency response number]
Regulatory Compliance: Prepared in accordance with OSHA HCS 2012 and applicable GHS requirements