

Sodium Tripolyphosphate (STPP) Material Safety Data Sheet (MSDS) —

1. Chemical Product and Company Identification

- **Product Name:** Sodium Tripolyphosphate
 - **Synonyms:** Pentasodium triphosphate, STPP, Sodium triphosphate
 - **Chemical Formula:** $\text{Na}_5\text{P}_3\text{O}_{10}$
 - **CAS Number:** 7758-29-4
 - **Recommended Use:** Water softener, detergent builder, ceramic and textile processing, food additive (in limited contexts)
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2. Composition / Information on Ingredients

Component	CAS Number	Weight %
Sodium Tripolyphosphate	7758-29-4	100%

3. Hazards Identification

Classification (GHS):

- **Eye Irritation:** Category 2A
- **Skin Irritation:** Category 2

Label Elements:

- **Signal Word:** WARNING
- **Hazard Pictograms:**

Hazard Statements:

- H315: Causes skin irritation
- H319: Causes serious eye irritation

Precautionary Statements:

- P264: Wash hands thoroughly after handling

- P280: Wear protective gloves and eye protection
 - P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do.
 - P337 + P313: If eye irritation persists: Get medical advice
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4. First Aid Measures

Inhalation:

- Remove to fresh air. If symptoms persist, seek medical attention.

Skin Contact:

- Wash with plenty of water and soap. Remove contaminated clothing. Seek medical help if irritation develops.

Eye Contact:

- Rinse with clean water for 15 minutes. Hold eyelids open. Seek immediate medical attention.

Ingestion:

- Rinse mouth. Do not induce vomiting. Give water or milk. Get medical help.
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5. Fire-Fighting Measures

- **Flammability:** Non-flammable
 - **Suitable Extinguishing Media:** Use water spray, foam, dry chemical, or CO₂ depending on surrounding fire
 - **Hazardous Combustion Products:** May release sodium oxide, phosphorus oxides
 - **Special Protective Equipment for Firefighters:** Use SCBA and full protective gear
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6. Accidental Release Measures

Personal Precautions:

- Avoid dust generation. Wear suitable PPE including mask and goggles.

Environmental Precautions:

- Prevent entry into waterways or drains. Avoid contamination of soil.

Clean-Up Methods:

- Sweep or vacuum spilled material. Collect into labeled containers. Avoid creating dust.
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7. Handling and Storage

Handling:

- Avoid dust inhalation, contact with eyes/skin. Use in a well-ventilated area.
- Wash hands after use. Do not eat or drink while handling the chemical.

Storage:

- Store in a cool, dry, well-ventilated place.
 - Keep containers tightly closed.
 - Protect from moisture and incompatible materials (e.g., acids)
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8. Exposure Controls / Personal Protection

Occupational Exposure Limits:

- No specific PEL or TLV for STPP. Use general nuisance dust limits:

Agency	Type	Limit
OSHA	PEL (Total)	15 mg/m ³ (particulates)
OSHA	PEL (Resp.)	5 mg/m ³

Engineering Controls:

- Local exhaust ventilation
- Eye wash and safety shower stations

Personal Protective Equipment (PPE):

- **Eyes:** Safety goggles
- **Skin:** Gloves (nitrile, rubber) and protective clothing

- **Respiratory:** Dust mask or respirator (NIOSH approved) when dust is present
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9. Physical and Chemical Properties

Property	Value
Appearance	White crystalline powder
Odor	Odorless
Molecular Weight	367.86 g/mol
pH (1% solution)	9.2 – 10.2
Solubility in Water	Soluble (14.5 g/100 mL at 25 °C)
Melting Point	> 600 °C (decomposes)
Boiling Point	Not applicable
Density	~2.52 g/cm ³
Flash Point	Not flammable
Explosive Properties	None

10. Stability and Reactivity

- **Chemical Stability:** Stable under normal storage and handling conditions
 - **Reactivity:** Alkaline reaction with water
 - **Incompatible Materials:** Acids, moisture (hygroscopic)
 - **Hazardous Decomposition Products:** Sodium oxides, phosphorus oxides
 - **Polymerization:** Will not occur
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11. Toxicological Information

Acute Toxicity:

- **Oral LD50 (rat):** ~3,120 mg/kg
- **Dermal LD50 (rabbit):** > 2,000 mg/kg
- Not considered acutely toxic in small doses

Effects of Exposure:

Route	Effect
Inhalation	Dust may cause irritation of nose and throat

Route	Effect
Skin Contact	May cause mild to moderate skin irritation
Eye Contact	Causes eye irritation; potential for corneal damage if not washed promptly
Ingestion	May cause nausea, abdominal pain, diarrhea in large amounts

12. Ecological Information

- **Aquatic Toxicity:** Harmful to aquatic life due to phosphate enrichment (eutrophication)
 - **Persistence/Degradability:** Inorganic; not biodegradable
 - **Bioaccumulative Potential:** Low
 - **Mobility in Soil:** High solubility; can migrate into water systems
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13. Disposal Considerations

- **Waste Disposal Method:**
 - Dispose in accordance with local, regional, and national regulations.
 - Avoid release into waterways or soil.
 - **Container Disposal:**
 - Rinse empty containers with water.
 - Dispose of according to local guidelines for non-hazardous industrial waste.
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