

Section 1 – Chemical Product and Company Identification

MSDS Name: Tri-tert-butylphosphine in Toluene

Chemical Family: Organophosphine

Molecular Formula: C₁₂H₂₇P

Use of the substance: For research and development use only.

Company: Optima Chemicals Group, LLC
200 Willacoochee Hwy.
Douglas, Georgia 31535
Telephone (912) 384-5101 FAX (912) 384-6330
Emergencies: Telephone (912) 384-5101

Section 2 – Hazards Identification

Hazards:

Highly flammable liquid and vapor
Causes severe skin burns and eye damage
Suspected of damaging the unborn child
May be fatal if swallowed and enters airway
May cause drowsiness or dizziness
May cause damage to organs through prolonged and repeated exposure

Precaution Statements:

Keep away from heat, sparks open flame-NO SMOKING
Keep container tightly sealed
Ground/Bond container and receiving equipment
Use explosion –proof electrical, ventilation and lighting equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear chemical splash goggles with a face shield, chemical resistant gloves and clothing
Do not breathe dust or mist
Wash thoroughly after handling
Obtain special instructions before use
Do not handle until safety precautions have been read and understood
Use personal protective equipment as required
Use only outdoors and in well-ventilated areas
Do not breathe vapors

NFPA Rating: Health: 3 Flammability: 3 Reactivity: 2 Special: None

In case of fire do not use water or carbon dioxide. Use dry chemical.

Section 3 – Composition, Information on Ingredients

<u>CAS #</u>	<u>Chemical Name</u>	<u>EC NO</u>	<u>WT %</u>
13716-12-6	Tri-tert-butylphosphine	237-366-4	5-34
108-88-3	Toluene	203-625-9	66-95

Section 4 – First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, lifting upper and lower lids. Seek medical attention.

Skin: Quickly wipe off as much as possible, then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and/or shoes. Thoroughly wash with soap and water, seek medical attention.

Ingestion: Quickly wipe material from the mouth, and rinse mouth out with plenty of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention.

Inhalation: Remove from exposure, to fresh air immediately. If not breathing give artificial respiration, and seek medical attention.

Notes to Medical Doctor: This product is corrosive to eyes, skin, respiratory and gastrointestinal tracts. Consideration should be given to careful endoscopy as stomach or esophageal burns, perforations or strictures may occur. Careful gastric lavage with an endotracheal tube in place should be considered. Treatment is controlled, removal from exposure followed by symptomatic and supportive care.

Section 5 – Fire Fighting Measures

Flammable Limits: Upper: 7.1% Lower: 1.1% (Toluene)

General Hazard: Flammable liquid. Air and oxygen sensitive.

Fire Extinguishing Agents Recommended: Do not use water or CO₂, use a dry chemical powder.

Hazardous Combustion Products: Carbon dioxide, carbon monoxide, phosphorus oxides.

Special Fire fighting Procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Autoignition temperature: Not available.

Properties contributing to flammability: Air reactivity of product.

Flashpoint: > -30°C (9.8% tri-t-butylphosphine in toluene)

Sensitivity to Static Discharge: No

Sensitivity to Impact: None

Section 6 – Accidental Release Measures

Remove all sources of ignition. Spilled material can catch fire spontaneously on contact with water. Contain spill with absorbent. Transfer to approved transport container and clean up spillage with an absorbent. Dispose of waste according to local and Federal laws and regulations. Before cleanup measures begin, review the entire MSDS with particular attention to Section 3, and Section 8.

Section 7 - Handling and Storage

Handling: Do not get in eyes, on skin or clothing. Do not breathe vapors or mist. Use in a closed system under argon or nitrogen.

Storage: Store in cool, dry place. Store in tightly closed container. Keep away from sources of ignition, water, air, acids and oxidizing materials.

Section 8 – Exposure Controls, Personal Protection

Exposure Limits: PEL (OSHA) –200 ppm, TWA (ACGIH) – 50 ppm, STEL/Ceiling (OSHA) – 300 ppm

Engineering Controls: Use in closed system under argon or nitrogen. If personal contact can occur, use local exhaust ventilation (explosion proof), to keep airborne concentrations low.

Eyes and Face: Wear splash goggles with a face shield.

Skin: Chemical resistant gloves clothing.

Respiratory: When engineering controls are not adequate, wear a NIOSH/MSHA respirator approved for protection against organic vapors and mists.

Work Hygienic Practices: Quick-drench eyewash and safety shower.

Section 9 – Physical and Chemical Properties

Appearance and Odor: Clear to milky white, garlic like odor and odor of toluene.

Melting Point: Not available

Boiling Point: Toluene 110°C

Flash Point: -17 degrees C

Vapor Pressure: Not available

Vapor Density: Not available

pH: Not available

Specific Gravity: 0.79 g/cm³

Percent Volatile: 100%

Water Solubility: Insoluble

Evaporation Rate: Not available

Flammable Limits: Not available

Molecular Weight: 146.22

Autoignition Temperature: Not applicable

Viscosity: Not available

Decomposition Temperature: Not available

Explosive Properties: Not explosive

Oxidizing Properties: Not an oxidizer

Section 10 – Stability and Reactivity

Stability: Stable at room temperature

Incompatibility: Heat, fire, air, and oxidizing chemicals. Reacts violently with halogenated hydrocarbons.

Hazardous Polymerization: Does not polymerize

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide. Thermal decomposition may produce toxic fumes of phosphorus oxides and/or phosphine.

Conditions to Avoid: Heat, exposure to air.

Section 11 – Toxicological Information

Eyes: Expected to be extremely irritating and corrosive..

Skin: Toluene- irritant.

Ingestion: Toluene- Oral LD₅₀=636 mg/kg (rat).

Inhalation: Toluene- LC₅₀=49 gm/m³/4H (rat).

Acute Effects from Overexposure: This product is corrosive to the eyes (may cause blindness), skin, respiratory and gastrointestinal tracts. Inhalation of vapors may cause dizziness, nausea, anesthesia, numbness, burning sensation and motor weakness in fingers and toes, incoordination, and headache. If swallowed and enters the lungs-may cause lung damage.

Chronic Effects from Overexposure: No data available.

Sensitization: No data available.

Carcinogenicity: Not listed by NTP, OSHA, EH40. IARC; listed as group 3, or ACGIH;.

Mutagenicity: No data available.

Reproductive Toxicity: No data available.

Section 12 – Ecological Information

Ecotoxicological Information: No data available.

Chemical Fate Information: No data available. The product reacts with air to form phosphine oxides.

Section 13 – Disposal Considerations

Dispose of in accordance with federal, state, and local regulations.

Section 14 – Transport Information

DOT Shipping: flammable liquids, corrosive, N.O.S. (Tri-t- butylphosphine), 3, UN2924, PG II

Labels: Flammable, corrosive

Marine Pollutant: No

Custom Tariff Number: 2942.00.9060

PIH: Not designated Poison Inhalation Hazard by USDOT.

Section 15 – Regulatory Information

United States:

Immediate acute health hazard; delayed chronic health hazard
Section 311 Hazard Category (40CFR 370): hazard, fire hazard, reactive.

Section 313 Reportable Ingredients (40 CFR 372): This product is reportable.

Section 302 Extremely Hazardous Substances (40 CFR 355): Not listed.

CERCLA Hazardous Substance, RQ, (40 CFR 302.4): Toluene-reportable quantity of 1000 lbs.

TSCA Sec 12B Export Notification: Not subject.

TSCA Inventory Status (40 CFR 710): Toluene is listed. For research and development purposes only.

Canada:

WHMIS: Hazard Classification – UN 2924, Class B, Division 6 (Reactive Flammable Materials), Class E, (Corrosive), Class D2A, Ingredient Disclosure List: Toluene is listed.

Section 16 – Additional Information

Creation Date: 02/05/10

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

This information is believed to be accurate and represents the best information currently available to Optima Chemical Group LLC. However, we make no warranty of merchantability, express or implied, with respect to such information and assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.