

MATERIAL SAFETY DATA SHEET

Uniphos Envirotronic Pvt.Ltd.

Nahuli (PO) Valsad (Dist)

Gujarat – 396 108, India

Tel: 91 260 2730156 / 57/58

Fax: 91 260 2431832

Section 1 - Material Identification

Material Name: Smoke tube / Stannic Chloride Irritant Smoke Fit Testing Device

Chemical Name: Stannic Chloride (CAS No. 7646-78-8, UN No. 1827)

Synonyms:

- A. Tin tetrachloride, Tin (IV) Chloride
- B. Air Flow Indicator Tube
- C. Irritant Smoke Generator
- D. Irritant Smoke Tube

Formula: SnCl₄

Chemical Family: Metal Chloride

Section 2 - Ingredients and Hazards

Stannic chloride reacts with ambient humidity to liberate a white smoke consisting of hydrogen chloride (HCl) and tin compounds. The emitted tin compound HCl has a strong irritating odor.

Exposure Limits

Tin Inorganic Compounds

ACGIH-TLV: TWA 2 mg/m³

OSHA PEL: 2 mg/m³

Hydrogen Chloride

OSHA PEL: Ceiling 5 ppm

ACGIH-TLV: STEL Ceiling 2 ppm

Listed in the 2004 ACGIH-TLV handbook with a carcinogenicity notation of A4, which is defined as "Not classifiable as a human carcinogen".

Section 3 - Physical Data

Stannic Chloride

Appearance: Colorless liquid
Boiling Point: 237.2°F
Melting Point: -22.36°F
Volatility: N/A
Specific gravity: 2.23 g/cm³ (at 68°F)
Solubility: N/A

Hydrogen Chloride

Appearance: Colorless to slightly yellow gas, irritating odor
Boiling Point: -121°F
Melting Point: N/A
Specific Gravity: N/A
Vapor Pressure: 40.5 atm
Solubility in Water: 37% by weight @ room temperature
Vapor Density: (Air=1)= 1.268
(N/A = Not Available)

Section 4 - Fire and Explosive Data

Flash Point and Method: N/A
Auto Ignition Temp. °F: N/A
Flammability Limits In Air Volume %
Lower: N/A
Upper: N/A

Extinguishing Media: Use extinguishing media appropriate for the material that is burning.

Special Firefighting Procedures: Firefighters should use SCBA units to protect against possible toxic decomposition products and wear protective clothing. If there is a fire around the area where tubes are stored, move the tubes or cool the tubes by dousing with a large amount of water. Do not put water on tubes that have been crushed or broken.

Unusual Fire and Explosion Hazards: Fire encompassing the tubes will emit toxic fumes of chlorides. Violently reacts with water to generate heat. Generates smoke with moisture in air. Mixing with alkali metal may result in an explosion.

Section 5 - Health Hazard Information

Exposure Limits Information:

Tin Inorganic Compounds

ACGIH-TLV: TWA 2 mg/m³

OSHA PEL: 2 mg/m³

Hydrogen Chloride

OSHA PEL: Ceiling 5 ppm

ACGIH-TLV: STEL Ceiling 2 ppm

Toxicological Information:

Stannic Chloride

Skin Corrosion: May result in extreme irritation and burns to the skin.

Irritation (Skin, Eyes): Eye contact may result in extreme irritation to the eyes.

Acute Toxicity: When inhaled, irritates nose, throat, and respiratory tract.

Hydrogen Chloride

Acute Toxicity: When inhaled, irritates nose, throat, and respiratory tract.

Effects of Overexposure:

Hydrogen chloride gas is corrosive. Prolonged inhalation of gas concentrations moderately above the ACGIH: TLV ceiling of 2 ppm can irritate nasal passages. Inhalation of higher concentrations (above 2 ppm) for short periods of time can cause choking and coughing, and produce severe irritation to the mucous membranes of the upper respiratory tract. The NIOSH-recommended IDLH level is 50 ppm. HCl can cause severe irritation and tissue burns. If deeply inhaled, pulmonary edema may occur. The emitted tin compound is also an irritant to eyes, skin, and mucous membranes, due to its acidity.

Emergency and First Aid Procedure:

Eyes: Immediately flush eyes with large amounts of clean running water for at least 15 minutes, occasionally lifting the lower and upper lids to flush the area under the lids. Contact a physician.

Skin: Flush the affected areas with large amounts of clean running water and wash with soap for at least 15 minutes. Get medical help in case of a large area of contact or if irritation persists.

Inhalation: Remove test subject to fresh air. Restore and/or support breathing as necessary. Provide oxygen therapy for persistent coughing or if breathing is difficult. Keep subject warm and at rest. Get medical help.

Swallowed: If swallowed, get medical help immediately.

Section 6 - Reactivity Information

Stability: SnCl₄ decomposes upon exposure to moist air or water. HCl is a stable compound

Conditions to Avoid: Reacts with turpentine, alcohols, and amines causing a potential fire hazard.

Incompatible materials include alkali compounds, amines, metal oxides, hydroxides, copper, brass, zinc, other metals, turpentine, and alcohols. Mixing with alkali metals may result in an explosion.

Hazardous Decomposition Products: When heated to decomposition, the smoke tubes will emit chloride fume.

Section 7 - Spill, Leak, and Disposal Procedures

Spill Procedure: Does not apply.

Broken Glass Cleanup: Broken glass should not be picked up with bare hands.

Disposal Procedure: Soak used tubes in large volume of water and neutralize with sodium carbonate or equivalent alkaline substance. Dispose of tubes via landfill. Consult local authorities to assure compliance with all local, state, and federal laws and regulations, including but not limited to EPA regulations.

Section 8 - Special Protection Information

Protective Equipment: For irritant smoke quantitative fit testing, wear respiratory protection in accordance with OSHA 29 CFR 1910.134, NIOSH 42 CFR Part 84, and good practice. Wear safety goggles to minimize eye contact and keep eyes closed during exposure to irritant smoke. Wear chemical resistant safety gloves with resistance to broken glass in accordance with NIOSH and OSHA standards and good practice.

Section 9 - Special Precautions and Comments

Dangerous to Life: Read, understand, and comply with all instructions, warnings, labels, and other literature accompanying this product before attempting to use or using this product. Use this product in accordance with the manufacturer's instructions, specifications, and warnings, and only with the manufacturer's specified parts, components, and accessories.

Class of Users: This product is only to be sold to, only for use by, and only for storage by trained, qualified, professional industrial or commercial users.

Handling and Storage: Store in the original container in a cool dry place. Protect against light, heat, moisture, and physical damage.

Shipping Information: Ship this product according to local, state, and federal laws and regulations, including but not limited to federal Department of Transportation regulations in DOT 49 CFR.

Other Precautions: Avoid eye and skin contact with smoke. Do not directly breathe the smoke. Avoid the buildup of smoke. Use in a well ventilated area. Do not use under a hood or in a confined space. Do not blow smoke directly into anyone's unprotected face or eyes. Test only one person at a time. Do not blow smoke between test subjects. Immediately after using the smoke tube or being exposed to the smoke, scrub face, hands, and any area exposed to the smoke with soap and clean running water and always before eating, drinking, smoking, applying, cosmetics, or inserting or removing contact lenses. Do not use this product for respirator fit testing or a "Sensitivity Check" if any of the following conditions is present:

- A. The test subject has pre-existing respiratory, cardiovascular, bronchial, or sinus medical condition.
- B. The test subject is under a physician's care for respiratory, cardiovascular, bronchial, or sinus problems.
- C. The test subject is being treated for allergies, hypersensitivity, or asthma or has a pre-existing allergic, hypersensitivity, or other condition.
- D. The test subject is allergic to or hypersensitive to hydrogen chloride, stannic chloride, stannic oxide, stannic dioxide, tin tetrachloride, tin compounds, hydrochloric acid, or metal chloride.

Section 10 - Disclaimer of warranties

The information and recommendations contained in this document are provided free without charge solely for use by qualified industrial or commercial users at their discretion and risk. Read, understand, and comply with all instructions, warnings, labels, and manuals before using this product. All statements, information, and recommendations contained in this document are believed correct and complete as of the date issued, but the accuracy and completeness thereof is not guaranteed and no warranty of any kind is made with respect to the information or recommendations contained in this document. The test subjects' sensitivity to stannic chloride varies. The size of different manufacturers' aspiration bulb pumps or bellows pumps varies. The packing density and chemical purity of different manufacturers' irritant smoke tubes vary. The skill and training of test administrators vary. Given the variety of factors that can affect the use and application of a product or component, some of which are uniquely within the user's knowledge or control, it is essential that the user evaluate the product or component to determine whether the product or component is fit for a particular purpose and additionally suitable for user's method of use or application and suitable for the test subject.