

MATERIAL SAFETY DATA SHEET

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MSDS #0501
 Air Flow Indicator Tubes
 Revised: 12/99

PART 1, MATERIAL IDENTIFICATION

Material Name: AIR FLOW INDICATOR TUBES
Chemical Name & Synonyms: Smoke tubes, Stannic Chloride, CAS No. 7646-78-8,

Chemical Family: Metal Chloride
Formula: SnCl₄

PART II, Ingredients & Hazards

| | % | TLV |
|--|-------------------|---|
| Stannic chloride reacts with ambient humidity to liberate a white smoke consisting of HCl and tin compounds. | ca 100 (comb.) | 5 ppm ceiling for HCl 2 mg/M ³ for tin compounds (1999 TLV Book) |

PART III, Physical Data

Boiling Point, 1 Atm, °F (°C): -121 (-85)* **Specific Gravity:** N/A
Vapor Pressure, mm Hg: 41.6 @ 20°C* **Evaporation Rate:** N/A
Solubility in Water: 37% by weight @ rt*
 *Physical data for HCl
Appearance & Odor: Hydrogen chloride is a colorless gas with a pungent odor. It fumes strongly in moist air forming white hydrochloric acid fume. The emitted tin compound has a strong irritating odor.

PART IV, Fire & Explosion Data

| Flash Point & Method | Auto Ignition Temp. °C | Flammability Limits In Air, Vol. % | Lower | Upper |
|----------------------|------------------------|---------------------------------------|-------|-------|
| | | | none | none |
| none | none | | none | none |

Extinguishing Media: Suitable for surrounding fire.

Special Firefighting Procedures: Fire fighters should wear SCBA units to protect against possible toxic decomposition products.

Unusual Fire & Explosion Hazards: Fires encompassing the tubes will emit toxic fumes of chlorides.

PART V, Health Hazard Information

Applicable TLV's: HCl = 5 ppm ceiling (1999 TLV Book). OSHA PEL = 5 ppm ceiling (1989 and pre-1989) Tin compounds = 2 mg/ M³ as tin (1999 TLV Book). OSHA PEL = 2 mg/ M³ (1989 and pre-1989).

Effects of Overexposure: Hydrogen chloride gas (and the acid mist) is corrosive to all human tissue. Prolonged inhalation of gas concentrations moderately above the TLV can damage the teeth and irritate nasal passages. Inhalation of higher concentrations (above 50 ppm) for a short period of time can cause choking and coughing, and produce severe irritation and damage to the mucous membranes of the upper respiratory tract. The NIOSH-recommended IDLH level is 100 ppm. HCl can cause severe irritation and tissue burns. (Anhydrous HCl is more dangerous than the acid mist, since it has an additional dehydrating effect on tissues.) 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 & First Aid Procedure:

Eyes: Flush immediately with running water for at least 15 minutes, including under eyelids. Contact a physician!

Skin: Flush affected areas with running water. Get medical help in case of large area contact or if irritation persists.

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

NFPA Rating (HCl Mist): Health=3, Flammability=0, Reactivity=0

PART VI, Reactivity Information

Stability: HCl is a stable compound. It does not undergo hazardous polymerization, however HCl can catalyze some polymerizations of other compounds.

Conditions to Avoid: Incompatible materials include alkalines, metal oxides and metals.

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

PART VII, Spill, Leak & Disposal Procedures

Spills Procedure: Does not apply.

Disposal Procedure: Soak used tubes in water and neutralize the water with sodium carbonate or equivalent alkaline substance. Dispose tubes via landfill. Consult local authorities to assure compliance with local, state and federal regulations for small scale disposal of tin compounds.

PART VIII, Special Protection Information

Protective Equipment: No respiratory protection is required during normal use as an HVAC air flow indicator. Local ventilation is adequate. Safety glasses with side shields should be worn to minimize eye contact. Safety gloves are not necessary for normal use, although skin contact with HCl and the broken glass tubes should be avoided.

NIOSH Report HETA 93-040-2315 reports high levels of HCl concentration when used for respirator fit testing inside enclosed hoods. Use only as directed in well ventilated areas. Do not use inside concentration hoods, tents or other enclosures designed for other fit test methods. If used for respirator fit testing, follow OSHA 29CFR, 1910.134 Irritant Smoke Protocol found in Appendix A of that document.

PART IX, Special Precautions & Comments

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

Other Precautions: Avoid eye and skin contact with smoke. Do not breath smoke. Use only as directed. Use only in well ventilated areas. Wash hands prior to eating, drinking, smoking or applying cosmetics. Avoid cuts from broken ends of glass tubes.

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