MATERIAL SAFETY DATA SHEET

SENSIDYNE, INC.
16333 BAY VISTA DRIVE
CLEARWATER, FLORIDA 33760
800/451-9444, 727-530-3602,
FAX 727-539-0550

MSDS #5100
Air Flow Indicator Tubes

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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: $SnCl_4$

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.)	2 ppm ceiling for HCl 2 mg/M^3 for tin compounds (2006 TLV Book)

PART III, Physical Data

Boiling Point, 1 Atm, ^oF (^oC): -121 (-85)* **Specific Gravity**: N/A
Vapor Pressure, mm Hg: 41.6 @ 20^oC* **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 Ingition Temp. ^oC	Flammability Limits In Air, Vol. %	Lower	Upper
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 = 2 ppm ceiling (2006 TLV Book). OSHA PEL = 5 ppm ceiling
Tin compounds = 2 mg/ M^3 as tin (2006 TLV Book). OSHA PEL = 2 mg/ M^3.

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 50 ppm (NIOSH Pocket Guide to Chemical hazards, 2/2004). 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 muicous 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: Incompatable 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 except in tight spaces. Local ventilation is adequate as long as the smoke can be avoided. 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.

If used for respirator fit testing, follow OSHA 29CFR, 1910.134 Irritant Smoke Protocol found in Appendix A of that document under “Fit Testing Procedures - General Requirements” and “Irritant Smoke Protocol”. Use only as directed in well ventilated areas per the OSHA protocol. Do not use inside concentration hoods, tents or other enclosures designed for other fit test methods. Test only the respirator types specified in the OSHA protocol. Test only subjects that have been properly fitted per the OSHA protocol and have passed the respirator manufacturer’s recommended negative or positive pressure qualitative test. Conduct any sensitivity screening tests only per the OSHA protocol, using only a weak concentration of the smoke.

NIOSH Report HETA 93-040-2315 reports high levels of HCl concentration from similar products are possible.

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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