

# Material Safety Data Sheet

## Smoke Generating Tubes

### SECTION I - MANUFACTURER AND CONTACT INFORMATION

Manufacturer: RAE Systems Inc.  
Address: 3775 North First Street  
San Jose, CA 95134 USA

Telephone Number: 408-952-8200  
FAX Number: 408-952-8480  
Date Prepared: 3 August 1999  
Date Reviewed: 15 March 2006

### SECTION II - HAZARDOUS COMPONENTS

<u>Component</u>	<u>Formula</u>	<u>CAS No</u>	<u>EC No</u>	<u>UN No</u>	<u>TWA</u>
a. Stannic Chloride 5-15%	SnCl <sub>4</sub>	7646-78-8	231-588-9	UN1827	n/a
Synonyms: Tin(IV) Chloride, Tin tetrachloride, Libavius Fuming Spirit					
b. Inert ingredients 85-95%	(non-Hazardous)				

### SECTION III - PHYSICAL & CHEMICAL PROPERTIES

<u>Component:</u>	<u>SnCl<sub>4</sub></u>	<u>HCl</u>	<u>Inert Ingredients</u>
<u>Description:</u>	Slightly yellowish clear liquid	Colorless gas	Inorganic solids
<u>Melting Point:</u>	-33°C	-114.2°C	n/a*
<u>Boiling Point:</u>	114°C	-85.1°C	n/a
<u>Vapor Press.:</u>	20 mm Hg @ 20°C	41.6 mm Hg @ 20°C	n/a
<u>Vapor Density:</u>	n/a*	1.268 (air=1.000)	n/a
<u>Density:</u>	2.226 g/cc	n/a	n/a
<u>Water solubil:</u>	Decomposes	37% by weight	n/a

\*n/a = not available

### SECTION IV - FIRE AND EXPLOSION HAZARDS

Stannic chloride and HCl are non-flammable and have no known upper and lower explosion limits. Excessive heat may be released on contact with water. Fire hazard caused indirectly by release of HCl on exposure of broken tubes to moist air.

FIRE FIGHTING MEASURES - Dry powder. Wear SCBA and protective clothing.

### SECTION V - REACTIVITY

STABILITY: Reacts with water and moisture in the air to form a smoke of HCl and tin oxychlorides.

CONDITIONS TO AVOID: Do not expose to air until use.

INCOMPATIBILITIES: Bases, ethylene oxide, water alcohols, metals

HAZARDOUS POLYMERIZATION: Will not occur, but HCl may catalyze the polymerization of other compounds

### SECTION VI - HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY: INHALATION? Yes. SKIN? Yes. INGESTION? Yes.

HEALTH HAZARDS (Acute & Chronic):

Stannic Chloride is considered Highly Toxic (USA) or Toxic (EU) and is corrosive to the skin, eyes and respiratory tract. Contact with moisture releases hydrochloric acid fumes, which is also highly corrosive. Contact with moist air also releases tin compounds, which may be toxic. Symptoms of inhalation exposure include severe coughing, wheezing, shortness of breath, headaches, nausea, and vomiting.

Produces lung irritation and damage to the mucous membranes of the upper respiratory tract. In extreme cases, pulmonary edema can occur. Exposure to skin causes irritation or tissue burns. May be fatal if swallowed or on excessive contact.

<u>Component</u>	<u>SnCl<sub>4</sub></u>	<u>Tin Oxides and Compounds</u>	<u>HCl</u>
U.S. 8-hr TWA	n/a	2 mg/m <sup>3</sup> as Sn	5 ppm ceiling OSHA 2 ppm ceiling ACGIH
Carcinogen	Inadequate data	Inadequate data	No

#### FIRST AID PROCEDURES

Skin & Eyes: Wash thoroughly with water and in severe cases seek medical attention.

Ingestion: Wash out mouth with water. Do not induce vomiting. Seek medical attention.

Inhalation: Remove from exposure, rest and keep warm. Seek medical attention. Provide oxygen therapy for persistent coughing or difficult breathing.

#### SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Users are not exposed to the hazardous components until the tubes are broken open.

- Read, understand and comply with all labels, warnings and instructions accompanying these tubes before use. Failure to comply may cause serious injury or death.
- For use in respirator fit testing according to OSHA 29 CFR 1910.134 (App A) and OSHA 1910.139.
- Wear safety glasses and gloves to protect against chemical exposure and flying glass. Wear a respirator when exposed to smoke. Vapors are corrosive to skin and overexposure can result in serious injury or death.
- DO NOT inhale smoke directly. If inhaled enough to cause coughing, remove victim to fresh air. If coughing persists, provide oxygen and contact a physician.
- Use only in a well-ventilated area. DO NOT use in a confined space.
- DO NOT use under a respirator fit testing hood or other enclosed space, because fume concentrations may build up to levels that can cause serious injury or death.
- Avoid contact of smoke with skin. DO NOT direct smoke stream directly at the skin during fit testing. If smoke contacts skin for a prolonged time, flush with copious amounts of water for 15 minutes and contact a physician.
- If smoke contacts eyes, immediately flush with water for 15 minutes and contact a physician. Eyes should be kept tightly closed during fit testing.
- Use only the pump(s) at the flow rates specified in OSHA CFR 1910.134 and 29 CFR 1910.139. If the pump is operated at non-specified flow rates it could increase the smoke and fume concentrations and cause serious injury or death.
- Do not use for fit testing on persons with pre-existing respiratory or related medical conditions or are allergic to tin compounds or hydrochloric acid.

#### LEAK & DISPOSAL PROCEDURES

Contain any large leaks using a plastic vessel. Cover with solid adsorbent such as vermiculite or alkaline adsorbent. Dilute and wash with plenty of water or soapy water. Dispose of washings and/or solids according to local regulations regarding hazardous waste. Each tube contains ~0.7 g SnCl<sub>4</sub> before use.

#### SECTION VIII - CONTROL MEASURES

Store in the box at <40°C when not in use.