MATERIAL SAFETY DATA SHEET
29 CFR 1910.1200 OSHA Hazard
Communication Rule Format

MINE SAFETY APPLIANCES COMPANY
P.O. Box 426
Pittsburgh, PA 15230
PHONE (412) 967-3000

********* PRODUCT IDENTITY *********

LABEL IDENTITY - MSA P/N 5607 Ventilation Smoke Tube Assembly,
MSA P/N 5645 Ventilation Smoke Tubes (10/pkg)

CHEMICAL NAME - Stannic chloride sorbed on pumice

ADDITIONAL IDENTITIES - Smoke tubes

FORMULA – Stannic Chloride $SnCl_4$ on pumice

********* APPLICABLE CHEMICAL CONTENTS *********

CHEMICAL NAME	CAS #	Mole %	Exposure Limits in air				
			ACGIH (2009)		OSHA		
			TLV mg/m^3	STEL mg/m^3	PEL mg/m^3	STEL mg/m^3	IDLH mg/m^3
Stannic chloride As Tin	7646-78-8	50-60	2	--	2	--	NE
PUMICE	1332-09-8	40-50	NE	NE	NE	NE	NE
Hydrochloric acid fumes	7647-01-0	Generated upon exposure to water vapor in air	--	2 Ceiling	5 ceiling	--	----
Tin oxides	Unknown	Generated upon exposure to water vapor in air	--	--	--	--	--

Each tube contains approximately 0.8 grams Stannic chloride

Warning: Stannic chloride reacts with water vapor (including moisture in air) yielding tin oxides and corrosive hydrochloric acid fumes. This mixture is irritating to the eyes and mucous membranes. Avoid contact with smoke puffs pumped from the tube.

********* PHYSICAL AND CHEMICAL PROPERTIES *********

APPEARANCE AND ODOR:	Gray to Black Granules, Acid Odor
BOILING POINT:	Stannic chloride 235°F, 113°C
SPECIFIC GRAVITY:	(H_20 = 1) - > 1
PERCENT VOLATILE BY VOLUME:	Approximately 50%
VAPOR PRESSURE:	Stannic chloride 10-20 mm Hg @ 68°F
VAPOR DENSITY:	(AIR = 1) ->>1
SOLUBILITY IN WATER:	Soluble, decomposes

*********PHYSICAL HAZARD INFORMATION *********

PHYSICAL HAZARD - Stannic chloride is strongly acidic and reacts with water vapor (including moisture in air) yielding a smoke containing tin oxides and corrosive hydrochloric acid fumes.

CONDITIONS OR MATERIALS TO AVOID - Avoid strong bases, alcohols, ethylene oxide, alkyl nitrates, and amines.

FLASH POINT - Stannic chloride is not flammable

EXTINGUISHING MEDIA:

Water spray, carbon dioxide, foam or dry chemical for surrounding fire; use water spray to cool fire exposed containers.

SPECIAL FIRE FIGHTING PROCEDURES:

Wear full protective clothing and NIOSH-approved self contained breathing apparatus with full facepiece in the positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Tubes may rupture and emit toxic fumes and dense smoke under fire conditions. Avoid contact with run-off water, which may be acidified by leached tube contents.

* N/A - Not Applicable

********* HEALTH HAZARDS *********

HEALTH HAZARDS - Corrosive, Toxic, Irritant
Stannic chloride: Inh Rat LC_{60} 2300 mg/m3 10 minutes
Hydrochloric acid: Inh Human LC_{Lo} 1300 ppm 30 minutes

SIGNS AND SYMPTOMS OF EXPOSURE -

Eye, skin, and respiratory system irritation, coughing, shortness of breath, headache, nausea, vomiting. Direct contact with liquid Stannic chloride produces acid burns.

PRIMARY ROUTES OF ENTRY - Eyes, nose, mouth, skin

TARGET ORGANS - Eyes, mucous membranes, skin

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: Pre-existing skin disorders may be more susceptible to this material

EXPOSURE LIMITS - See page 1

CARCINOGENICITY DATA - Not listed in NIOSH RTECS, OSHA, NTP or IARC.

EMERGENCY AND FIRST AID PROCEDURES:

Smoke puff generation is under manual control of the user by actuation of a squeeze bulb and overexposure is unlikely under intended conditions of use. First aid procedures follow should overexposure somehow occur.

Eyes: Remove victim from exposure. Flush eyes with water for 15 minutes holding eyelids open. SEE A PHYSICIAN IMMEDIATELY.

Inhalation: Remove to fresh air. Give oxygen if breathing is difficult. Give artificial respiration if breathing has stopped. GET MEDICAL ATTENTION IMMEDIATELY.

Ingestion: If material is ingested, give 2 glasses of water to dilute chemical. Do not induce vomiting. GET MEDICAL ATTENTION IMMEDIATELY.

********* SAFE HANDLING AND USE *********

HYGIENIC WORK PRACTICES –

This product is for use in determination of direction and velocity of ventilation air currents. Avoid breathing emissions from tube. Wash hands after using product.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT: Not Applicable

PROCEDURES FOR SPILL OR LEAK CLEANUP –

If contents of a tube are released, leave area until smoke generation subsides. Avoid skin contact with spilled material and avoid breathing any smoke generated.
If permissible by local, state and federal regulations, qualified first responders should remove residue in accordance with a site-specific plan. In general, first responders may elect to fill a 5 gallon bucket 3/4 full of water and add 1 ounce of sodium bicarbonate. Sweep up the tube and spilled contents and place in the bucket overnight to deactivate spilled material and dispose in accordance with local, state and federal regulations

WASTE DISPOSAL - Dispose in accordance with local, state and federal regulations.

STORAGE - Store in a cool, dry location protected from crushing and impact forces.

********* CONTROL MEASURES *********

PERSONAL PROTECTIVE EQUIPMENT –

Due to the limited amount of stannic chloride per tube and the controlled rate of smoke release, use of personal protective equipment is not indicated under anticipated conditions of use. The user is cautioned to avoid breathing the tube emissions, which are an irritant.

ENGINEERING CONTROLS - Not Applicable

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