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

MINE SAFETY APPLIANCES COMPANY
1000 Cranberry Woods Drive
Cranberry township, PA 16066
PHONE 724-776-8600

## ******** 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 absorbed 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 (2012) | | 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 | $LC_{50}$ 200 ppm 4 hours |
| Hydrochloric acid: | Inh Human | $LC_{Lo}$ 1300 ppm 30 minutes |

Exposure may cause severe eye irritation and possible injury.

- **Target Organs:** Blood, liver, lungs, respiratory system, eyes, skin.
- **Potential Health Effects**
  - **Eye:** May cause severe eye irritation.
  - **Skin:** Causes skin irritation. Causes redness and pain.
  - **Ingestion:** Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause headache, nausea, fatigue, and dizziness. Inorganic tin salts may cause systemic toxic effects on the central nervous system, heart, and liver.
  - **Inhalation:** Irritation may lead to chemical pneumonitis and pulmonary edema. May cause severe irritation of the upper respiratory tract with pain, burns, and inflammation. May cause effects similar to those described for ingestion.
  - **Chronic:** Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated exposure may cause adverse reproductive effects.

EXPOSURE LIMITS - See page 1

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

**TSCA**
CAS# 7646-78-8 is listed on the TSCA inventory.

**Health & Safety Reporting List**
None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**
None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**
None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**
None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**
None of the chemicals in this material have an RQ.

**SARA Section 302 Extremely Hazardous Substances**
None of the chemicals in this product have a TPQ.

**SARA Codes**
CAS # 7646-78-8: immediate, delayed, reactive.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 7646-78-8 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## European/International Regulations

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

C

**Risk Phrases:**

R 34 Causes burns.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 7/8 Keep container tightly closed and dry.
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

**WGK (Water Danger/Protection)**

CAS# 7646-78-8: 1

**Canada - DSL/NDSL**

CAS# 7646-78-8 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 7646-78-8 is not listed on the Canadian Ingredient Disclosure List.

**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:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- **Skin:** Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
- **Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.
- **Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- **Notes to Physician:** Treat symptomatically and supportively. Persons with asthma, chronic respiratory disease, skin disorders, eye problems or allergies may be at increased risk from exposure to this substance.

**********  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

DATE OF PREPARATION – Rev 8, January 2013