

MATERIAL SAFETY DATA SHEET
(For Use With Zerodraft Air Leakage Detector)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufactured in the US by: Aldrich Chemical Co., Inc.
P.O. Box 355, Milwaukee, Wisconsin 53201

Preparation Date: Nov/05
Information Phone Number: (414) 273-3850
Emergency Phone Number: (414) 273-3850

For: Zerodraft
125 Traders Blvd. East, Unit 4,
Mississauga, Ont, L4Z 2H3, Canada

Chemical Name: Titanium(IV) Chloride, 99.9%

2. COMPOSITION / INFORMATION ON INGREDIENTS

Component: Titanium Tetrachloride CAS#: 7550-45-0 MF: CL4TI EC NO: 231-441-9

3. HAZARDS IDENTIFICATION

Label Precautionary Statements: Highly Toxic (USA Definition) Very Toxic (European Definition)

Very toxic by inhalation Causes Burns Harmful if swallowed

Reacts violently with water Lachrymator

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Wear suitable protective clothing, gloves and eye/face protection.

Do not breath dust. Air sensitive - keep tightly closed. Handle and store under Nitrogen.

Overpacked Container should be opened only by a technically qualified individual who has read and understood the accompanying handling instructions.

4. FIRST AID MEASURES

In case of exposure, obtain medical attention immediately. This product rapidly hydrolyzes to form Hydrochloric Acid.

In case of contact with skin, wipe off excess material with a dry cloth. Call a physician

Wash remaining material off with copious amounts of water for at least 15 minutes

Remove clothing and shoes prior to showering.

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.

Assure adequate flushing by separating the eyelid with fingers. Call a physician.

Apply cool packs on eyes while transporting patient to a medical facility.

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If swallowed, wash out mouth with water provided person is conscious.

Call a physician, do not induce vomiting.

Wash contaminated clothing, discard shoes.

5. FIRE FIGHTING MEASURES

Extinguishing media: carbon dioxide, dry chemical powder or appropriate foam. Do not use water.

Special firefighting procedures: wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual fire and explosions hazards: emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Evacuate area. Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

Absorb on sand or vermiculite and place in closed containers for disposal.

Ventilate area and wash spill site after material pickup is complete.

A mixture of baking soda and water can be used to neutralize this mixture.

7. HANDLING AND STORAGE, refer to section 8.

Additional information: titanium tetrachloride (NEAT) reacts with tetrahydrofuran causing a violent exothermic reaction and forms a complex with urea that decomposes violently at above 90°C. It forms complexes with disulfur dinitride and tetrasulfur tetranitride that may explode violently.

Incompatible with hydrogen fluoride and potassium.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Wear appropriate niOSH/msha - approved respirator, chemical-resistant glove, safety goggles, other protective clothing.

Safety shower and eye bath - use only in a chemical fume hood.

Faceshield (8 inch minimum)

Do not breath in vapor

Do not get in eyes, on skin, on clothing

Corrosive

Avoid prolonged or repeated exposure

Wash thoroughly after handling

Lachrymator

Harmful vapor

Highly toxic

Keep tightly closed

Do not allow contact with water

Air sensitive

Store in a cool dry place

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odor - colorless to pale yellow liquid

Physical properties - Boiling point: 136.4°C Melting Point: -25°C Flashpoint: None Vapor pressure: 9.6mm 20°C 50mm 55°C

Specific Gravity: 1.726

10. STABILITY AND REACTIVITY

Incompatibilities: Sensitive to Air, Strong oxidizing agents, reacts violently with water.

Hazardous combustion or decomposition products: Toxic fumes of Hydrogen Chloride gas and Titanium/Titanium Oxides

11. TOXICOLOGICAL INFORMATION

Acute Effects: may be fatal if inhaled. Harmful if swallowed. May be harmful if absorbed through the skin.

Material is extremely destructive to tissue of the mucous membranes and upper respiratory track, eyes and skin.

Inhalation may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. To the best of our knowledge, the chemical physical, and toxicological properties have not been thoroughly investigated.

Z-ALD #: XR1925000 Titanium Chloride (TiCl₄)

Toxicity Data: IHL - RAT LC50:400 MG/M3 85GMAT - ,111,82

IHL - MUS LC50:100 MG/M3/2H 85GMAT - ,111,82

Additional information: ORL-RAT LD100:464MG/KG. SKN-RBT LD50: 3160MG/KG. Only Restricted registry of toxic effects of chemical substances (Z-ALD) data is presented here.

12. ECOLOGICAL INFORMATION - Data not yet available

13. DISPOSAL CONSIDERATIONS

For small quantities: Cautiously add to a large stirred excess of water. Adjust the pH to neutral, separate any insoluble solids or liquids and package them for hazardous-waste disposal. Flush the aqueous solution down the drain with plenty of water. The hydrolysis and neutralization reactions may generate heat and fumes which can be controlled by the rate of addition. Observe all federal, state and local environmental regulations.

14. TRANSPORT INFORMATION - Contact Aldrich chemical company for transportation information.

15. REGULATORY INFORMATION - U.S. information

This product is subject to SARA section 313 reporting requirements.

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Aldrich shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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Zerodraft Air Leakage Detector (Z-ALD)

WHAT IT IS

A sealed red Teflon plastic tube 1-1/4" in diameter and 7" long with a 1/4" teflon connector, a 3" rubber hose with cap/nozzle "T". A 10ml glass vial of smoke generating chemical (10 ml, double with the regular size) is pre-installed inside the tube at the factory. **No Mess.** Just bend to activate. Your air leakage detector includes: 1 loaded air leakage detector with cap/nozzle, 1 storage tube (with absorption packet, 2 cleaner sticks, 2 spare nozzles, 1 spare 3" rubber hose), MSDS instructions and this instruction sheet. Ideal for locating leaks and detecting air currents. Shelf life unlimited. Good for 1000+ puffs or one year when activated (with cleaning) then discard.

BENEFITS OVER CONVENTIONAL RECHARGEABLE SMOKE GUNS

- Clean.
- Unbreakable. No Glass Vials of Chemical.
- Low Maintenance.
- Indoor Activation.
- Professional Looking.

REMOVE AIR LEAKAGE DETECTOR FROM STORAGE TUBE

1) Twist off untaped cap marked "Open This End".

Note: Do Not open end marked "Spare Cap/Nozzle and Hose" unless spares are needed.

ACTIVATE NEW AIR LEAKAGE DETECTOR

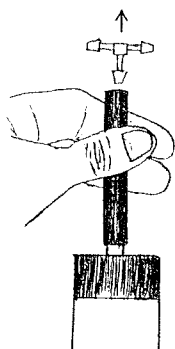
- 1) Remove the cap/nozzle "T".
- 2) Point the nozzle up.
- 3) Place thumbs 3" from end caps and 1/2" apart.
- 4) Bend the red tube till the internal glass vial breaks.
- 5) Hold the nozzle **up for one minute.** (To allow the liquid to flow into the internal wick.)
- 6) Hold the puffer horizontally or up for next 10 minutes. (To allow the liquid to flow into the internal wick.)
- 7) Useable immediately. (Although it may take several hours for the smoke to flow at its maximum).



Bend to Activate-Hold Upright

OPERATING THE AIR LEAKAGE DETECTOR

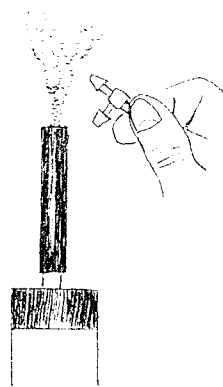
- 1) Remove the cap/nozzle "T" outdoors or in front of an exhaust fan because pressure can build up inside the puffer creating a smoke cloud upon first opening the nozzle cap.
- 2) Gently squeeze the last 4" of the red tube furthest from the nozzle to get a smoke stream. Direct small puffs toward suspected leaks.
- 3) Clean the nozzle with the wood stick supplied or a toothpick or wire every hour or as required. Wipe goop from the tip with a dry paper towel. Remove the 3" rubber hose and clear the 1/4" teflon connector regularly.
- 4) Replace puffer inside airtight tube with dehydrating packet.



Remove Cap/Nozzle



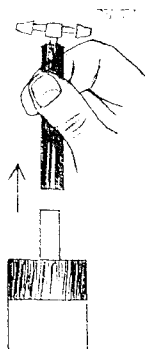
Fine Steam



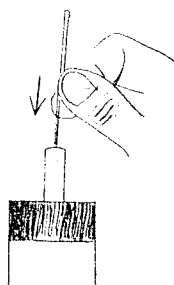
Large Stream



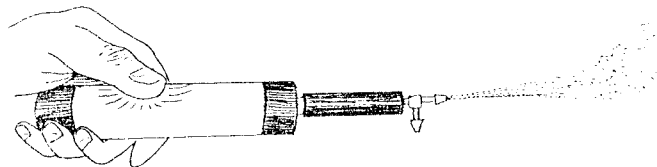
Sealed Off



Remove the Hose



Clean Teflon Connector



Use Small Puffs

STORAGE

Store inside the storage tube, horizontally, in a cool (below 32°C, 90°F) dry place **away from the sun**, electronics and metal. The chemicals will corrode and damage electronics and metal.

CAP/NOZZLE REPLACEMENT

- 1) Replace cap/nozzle "T" or hose when it begins to deteriorate **NOT** when it gets plugged.
- 2) Discard the old cap/nozzle - replace with new cap/nozzle from storage tube end labeled "spare cap/nozzle".

CAUTION

- 1) Do not inhale the chemical smoke!
- 2) Read the material safety data sheet provided for Titanium Tetrachloride (TiCl₄).
- 3) Use the smoke in small quantities.
- 4) Pressurize the enclosure being tested for leaks so that test smoke gets blown outdoors.
- 5) Keep away from children.
- 6) **DO NOT LEAVE IN SUN**
- 7) **DO NOT STORE ABOVE 32°C (90°F)**

CARRYING

Use belly pouch. Carry puffer nozzle up. **DO NOT** carry nozzle down in your pocket - it may leak!

LIQUID SPILLS

Flush with cold water. Wash hands immediately. Clear smoke immediately with blower door exhaust fans and/or open doors.

Zerodraft

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