



# Standard Operating Procedure

## (TRIMETHYLSILYL)DIAZOMETHANE

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(Trimethylsilyl)diazomethane is a greenish-yellow liquid which is mainly used as a methylating agent for generating methyl esters from carboxylic acids. It is regarded as a less explosive alternative to diazomethane, but because it presents significant health hazards, it must be handled cautiously. There are two recent (~2008) deaths which were attributed to inhalation exposures to TMSD.

### Potential Hazards/Toxicity

(Trimethylsilyl)diazomethane is a flammable liquid and vapor that is very toxic or can be fatal when inhaled. Inhalation may cause pulmonary edema, drowsiness, and dizziness. It may be harmful if ingested or absorbed through the skin. Symptoms from exposure include gastrointestinal discomfort, central nervous system depression, lung irritation, chest pain, giddiness, slowed reaction time, slurred speech, headache, dizziness, drowsiness, unconsciousness, nausea, vomiting, and diarrhea. It causes respiratory tract, skin, and eye irritation. Symptoms may be delayed. Prolonged skin exposure may cause defatting and dermatitis. Contact with eyes can cause redness, tearing, and blurred vision. TMSD may also cause adverse liver effects or cancer and is suspected of damaging fertility. **TMSD should not be handled when working alone.**

### Personal Protective Equipment (PPE)

*The University's Personal Protective Equipment Policy can be found on the EHS website ([ehs.yale.edu](http://ehs.yale.edu))*

#### Eye Protection

Safety glasses must be worn. When there is the potential for splashes, goggles and a faceshield must be worn.

#### Hand Protection

Double exam-style nitrile gloves must be worn. A utility grade nitrile glove over an exam style must be worn if there is the likelihood of contact with TMSD.

#### Skin and Body Protection

Long pants or clothing that covers the body to the ankles and closed-toe solid top shoes must be worn when handling TMSD. Lab coats must also be worn.

### Engineering Controls

All work involving TMSD must be performed in a fume hood.

### Storage

- Keep container tightly closed in a cool, dry, and well-ventilated area.
- Opened containers must be carefully resealed and kept upright to prevent leakage.
- If it is necessary to store in refrigerator, it must be kept in a sealed, secondary container and transferred to the fume hood this way. The secondary container must only be opened once inside the fume hood.

- Avoid temperature extremes and direct sunlight.
- Avoid oxidizing agents, chlorine, fluorine, and perchlorates.

## **Emergency Procedures**

### **Fire Extinguishers**

Both ABC dry powder and carbon dioxide extinguishers are appropriate for most fires involving TMSD.

### **Eyewash/Safety Showers**

An ANSI approved eyewash station that can provide quick drenching or flushing of the eyes must be immediately available within 10 seconds travel time for emergency use. An ANSI approved safety drench shower must also be available within 10 seconds travel time from where TMSD is used. Ensure the locations of the eyewashes and safety showers, and how to activate them, are known prior to an emergency.

## **First Aid Procedures**

### **If inhaled**

Remove to fresh air. Call 911 for immediate medical attention.

### **In case of skin contact**

Go to the nearest emergency shower if contaminated. Yell for assistance and rinse for 15 minutes, removing all articles of clothing to ensure contamination is completely removed. Call 911 for immediate medical attention.

### **In case of eye contact**

Go to the nearest emergency eyewash. Yell for assistance and rinse for 15 minutes. Call 911 for immediate medical attention.

## **Spills**

### **Small Spill (inside a fume hood)**

If a small spill occurs inside a fume hood, lab personnel should be able to safely clean it up by following these spill clean up procedures:

- Alert people in immediate area of spill
- Wear personal protective equipment, including utility grade nitrile gloves
- Confine spill to small area with adsorbent material (pads, vermiculite)
- Collect residue, place in container, label container, and dispose of as hazardous waste
- Clean spill area with soap and water

### **Larger Spill or Spill Outside the Fume Hood**

- Evacuate the laboratory (no one can enter unless wearing SCBA)
- Call EHS for emergency assistance (203-785-3555)
- Post someone or mark-off the hazardous area with tape and warning signs to keep other people from entering
- Stay nearby until emergency personnel arrive and provide them with information on the chemicals involved

## **Waste Disposal**

All TMSD solutions/stock materials must be collected as hazardous waste. Store any contaminated waste materials (i.e., pipettes, kimwipes, etc.) inside the fume hood. Items which would normally go in the non-hazardous chemical waste stream (pipettes, syringes, etc) must be rinsed with a dilute acetic acid/methanol solution before being placed in the appropriate stream (needlebox, glass trash, etc.).