MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology  
Standard Reference Materials Program  
100 Bureau Drive, Stop 2300  
Gaithersburg, Maryland 20899-2300

SRM Number:  1867a  
MSDS Number:  1867a  
SRM Name:   Uncommon Commercial Asbestos

Date of Issue:  13 September 2011

MSDS Coordinator:   Mario J. Cellarosi  
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Description: This Standard Reference Material (SRM) is comprised of three uncommon commercial asbestos materials (actinolite asbestos, anthophyllite asbestos, and tremolite asbestos) intended for use in the identification of these minerals by polarized light microscopy. A unit of SRM 1867a consists of a set of three bottles containing several grams of one of the three mine-grade asbestos materials.

Substance: Actinolite Asbestos, Anthophyllite Asbestos, Tremolite Asbestos

Other Designations:

Actinolite Asbestos (Actinolite)
Anthophyllite Asbestos (Anthophyllite; azbolen asbestos)
Tremolite Asbestos (Tremolite)

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4):  
Health = 1  
Fire = 0  
Reactivity = 0

Major Health Hazards: Asbestos is a cancer hazard in humans.

Physical Hazards: None listed.

Potential Health Effects:

Inhalation: Short term (acute) exposure to asbestos through dust or fumes, my result in irritation of the respiratory tract and chest pains. Long term (chronic) exposure to asbestos may cause asbestosis, an interstitial fibrosis of the lung tissue, difficulty breathing, bluish skin color, lung damage, and cancer.

Skin Contact: Skin contact with asbestos may cause irritation. Asbestos fibers may penetrate the skin and result in asbestos corns, due to the thickening of the skin around the implanted fiber. These corns are of minor health significance and disappear on removal of the fibers. Repeated or prolonged contact with asbestos may result in dermatitis.

Eye Contact: Eye contact with asbestos may result in irritation due to mechanical action. Repeated or prolonged exposure may result in conjunctivitis.

Ingestion: Ingestion of asbestos may result in digestive disorders. Repeated or prolonged ingestion may result in cancers of the buccal cavity and pharynx, esophagus, stomach, colon, and rectum.

Listed as a Carcinogen/Potential Carcinogen:

Component: Actinolite, Anthophyllite, Tremolite

Yes  No

X(a)  X(b)  X(c)

(a) NTP - Reasonably anticipated to be a human carcinogen.
(b) IARC - Listed as a Group 1 carcinogen.
(c) OSHA - Present, see 29 CFR 1910.1001.
### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>EC Number (EINECS)</th>
<th>Nominal Mass Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinolite</td>
<td>77536-66-4</td>
<td>Not assigned.</td>
<td>100</td>
</tr>
<tr>
<td>Anthophyllite</td>
<td>77536-67-5</td>
<td>Not assigned.</td>
<td>100</td>
</tr>
<tr>
<td>Tremolite</td>
<td>77536-68-6</td>
<td>Not assigned.</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^{(a)}\) Hazardous components 1 % or greater; carcinogens 0.1 % or greater are listed in compliance with OSHA 29 CFR 1910.1200.

**Component:** Actinolite, Anthophyllite, Tremolite

**EC Classification:** T
**EC Safety (S No.):** 45, 53
**EC Risk (R No.):** 45, 48/23
**EC Classification Risk/Safety Phrases:** See Section 15, “Regulatory Information”.

### 4. FIRST AID MEASURES

**Inhalation:** If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

**Skin Contact:** Rinse affected area with copious amounts of water followed by washing with soap and water for at least 15 minutes while removing contaminated clothing. Seek medical attention, if needed.

**Eye Contact:** Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** Seek immediate medical attention.

### 5. FIRE FIGHTING MEASURES

**Fire and Explosion Hazards:** Negligible fire hazard.

**Extinguishing Media:** Use extinguishing media appropriate for the surrounding fire.

**Fire Fighting:** Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

**Flash Point (°C):** Not available.
**Method Used:** Not applicable.
**Autoignition Temp. (°C):** Not applicable.

**Flammability Limits in Air**
- **UPPER (Volume %):** Not applicable.
- **LOWER (Volume %):** Not applicable.

### 6. ACCIDENTAL RELEASE MEASURES

**Occupational Release:** Collect spilled material in appropriate container for disposal. Avoid generating dust. Clean up residue with a high-efficiency particulate filter vacuum.

**Disposal:** See Section 13, “Disposal Considerations”.

### 7. HANDLING AND STORAGE

**Storage:** Store and handle in accordance with all current regulations and standards.

**Safe Handling Precautions:** See Section 8, “Exposure Controls and Personal Protection”.

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8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Component Exposure Limits: Actinolite, Anthophyllite, Tremolite

- OSHA (TWA): 0.1 fiber/cm³
- OSHA (STEL): 1.0 fiber/cm³ (30 mins)
- ACGIH (TWA): 1.0 fiber/cm³ (respirable fibers: length >5 µm, aspect ratio ≥3:1)
- NIOSH (TWA): 0.1 fiber/cm³


Respirator: Refer to the “NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84” for selection and use of respirators certified by NIOSH.

Eye Protection: Wear safety goggles. An eye wash station should be readily available near the handling and use areas.

Personal Protection: Wear protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Actinolite</th>
<th>Anthophyllite</th>
<th>Tremolite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance and Odor</td>
<td>green to grey solid; odorless</td>
<td>white, green, brown or gray solid; odorless</td>
<td>white, green, blue or yellow solid; odorless</td>
</tr>
<tr>
<td>Relative Molar Mass</td>
<td>complex molecule</td>
<td>complex molecule</td>
<td>complex molecule</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>insoluble</td>
<td>insoluble</td>
<td>insoluble</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>3.0–3.2</td>
<td>2.857–3.2</td>
<td>2.9–3.2</td>
</tr>
<tr>
<td>Melting Point (°C)</td>
<td>not applicable</td>
<td>not applicable</td>
<td>not applicable</td>
</tr>
<tr>
<td>Solvent Solubility</td>
<td>insoluble</td>
<td>insoluble</td>
<td>insoluble</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability: X Stable   _____ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: Acids, bases.

Fire/Explosion Information: See Section 5, “Fire Fighting Measures”.

Hazardous Decomposition: Miscellaneous decomposition products.

Hazardous Polymerization: _____ Will Occur   X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation   X Skin   X Ingestion

Toxicity Data: The components of this material have been reviewed, no endpoints are listed.

Target Organ(s): Respiratory system and gastrointestinal tract.

Health Effects (Acute and Chronic): See Section 2, “Hazards Identification” for potential health effects.
Mutagen/Teratogen:

- **Actinolite**: Rat, Intraperitoneal LD₅₀, 50 mg/kg
- **Anthophyllite**: Rat, Inhalation TCₐ₀, 11 mg/m³ (1 year)
- **Tremolite**: Rat, Intrapleural TDₐ₀, 100 mg/kg

**Medical Conditions Generally Aggravated by Exposure**: Respiratory disorders.

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity Data**: No data available.

### 13. DISPOSAL CONSIDERATIONS

**Waste Disposal**: Dispose in accordance with all applicable federal, state, and local regulations.

### 14. TRANSPORTATION INFORMATION

**U.S. DOT and IATA**: White asbestos, UN2590, Hazard Class 9, Packing Group III, Excepted Quantity E1.

### 15. REGULATORY INFORMATION

**U.S. REGULATIONS**

- CERCLA Sections 102a/103 (40 CFR 302.4): 0.454 kg final RQ (friable, Asbestos).
- SARA Title III Section 302 (40 CFR 355.30): This material is not regulated.
- SARA Title III Section 304 (40 CFR 355.40): This material is not regulated.
- SARA Title III Section 313 (40 CFR 372.65): 0.1% de minimis concentration (friable, Asbestos).
- OSHA Process Safety (29 CFR 1910.119): This material is not regulated.
- SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

<table>
<thead>
<tr>
<th>Category</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACUTE:</td>
<td>No</td>
</tr>
<tr>
<td>CHRONIC:</td>
<td>Yes</td>
</tr>
<tr>
<td>FIRE:</td>
<td>No</td>
</tr>
<tr>
<td>REACTIVE:</td>
<td>No</td>
</tr>
<tr>
<td>SUDDEN RELEASE:</td>
<td>No</td>
</tr>
</tbody>
</table>

**STATE REGULATIONS**

California Proposition 65: This material is subject to California Safe Drinking Water and Toxic Enforcement Act of 1986. Keep out of water supplies and sewers.

**CANADIAN REGULATIONS**

WHMIS Classification: Not determined.

**EUROPEAN REGULATIONS**

**EC Classification**:
- T: Toxic

**EC Risk Phrases**:
- R45 - May cause cancer.
- R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.

**EC Safety Phrases**:
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S53 - Avoid exposure – obtain special instructions before use.

**NATIONAL INVENTORY STATUS**

- **U.S. Inventory (TSCA)**: Not listed inventory.
- **TSCA 12(b), Export Notification**: Section 6, 0.1 % de minimis concentration.
16. OTHER INFORMATION

**Sources:** ChemADVISOR, Inc., MSDS *Actinolite*, 10 June 2011.


**Disclaimer:** Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.