1. IDENTIFICATION

(a) Product identifier used on the label

FYREWRAP® DUCT INSULATION
FYREWRAP® ELITE™ 1.5 DUCT INSULATION
FYREWRAP® 1.5 DUCT INSULATION
FYREWRAP® EZ 1.5 DUCT INSULATION
FYREWRAP® MAX 2.0 DUCT INSULATION

(b) Other means of identification

ALKALINE EARTH SILICATE WOOL (AES), Synthetic vitreous fiber (SVF), man-made vitreous fiber (MMVF), man-made mineral fiber (MMMF), alkaline-earth-silicate fiber, magnesium silicate fiber, high temperature insulation wool (HTIW)

(c) Recommended use of the chemical and restrictions on use

Application as passive fire protection systems. (Please refer to specific technical data sheet for more information).

(d) Name, address, and telephone number

Unifrax I LLC
600 Riverwalk Parkway, Suite 120
Tonawanda, NY 14150

Product Stewardship Information Hotline
1-800-322-2293 (Monday - Friday 8:00 a.m. - 4:30 p.m. EST)

For additional SDSs, visit our web page, http: //www.unifrax.com, or call Unifrax Customer Service at (716) 768-6500

(e) Emergency phone number

CHEMTREC will provide assistance for chemical emergencies. Call 1-800-424-9300

2. HAZARDS IDENTIFICATION

(a) Classification of the chemical in accordance with paragraph (d) of §1910.1200

AES wools are not classified following self-classification guidelines of the OSHA Hazard Communication Standard (HCS) 2012. The assessment of all available toxicological data on AES during the classification process resulted in a "no classification" conclusion.

(b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

Not applicable.

(c) Describe any hazards not otherwise classified that have been identified during the classification process

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure. These effects are usually temporary. Minimize exposure to airborne dust.
3. COMPOSITION / INFORMATION ON INGREDIENTS

(a) Chemical and (b) Common Name

<table>
<thead>
<tr>
<th>STANDARD PRODUCT FORM</th>
<th>CAS Number</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amorphous alkaline-earth-silicate (calcium-magnesium-silicate) wool (SiO2 62-67 %, CaO 28-33 %, MgO 1-6 %, trace elements 0-1%)</td>
<td>436083-99-7</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENCAPSULATED PRODUCT FORM</th>
<th>CAS Number</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amorphous alkaline-earth-silicate (calcium-magnesium-silicate) wool (SiO2 62-67 %, CaO 28-33 %, MgO 1-6 %, trace elements 0-1%)</td>
<td>436083-99-7</td>
<td>96-98</td>
</tr>
<tr>
<td>Aluminum foil with fiberglass reinforcement and inorganic adhesive.</td>
<td>N/A (ARTICLE)</td>
<td>2-4</td>
</tr>
</tbody>
</table>

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

4. FIRST AID MEASURES

(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion

SKIN
Handling of this material may generate mild mechanical temporary skin irritation. If this occurs, rinse affected areas with water and wash gently. Do not rub or scratch exposed skin.

EYES
In case of eye contact flush abundantly with water; have eye bath available. Do not rub eyes.

NOSE AND THROAT
If these become irritated move to a dust free area, drink water and blow nose. If symptoms persist, seek medical advice.

(b) Most important symptoms/effects, acute and delayed

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure. These effects are usually temporary.

(c) Indication of immediate medical attention and special treatment needed, if necessary

NOTES TO PHYSICIANS
Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure does not result in allergic manifestations.

5. FIRE FIGHTING MEASURES

(a) Suitable (and unsuitable) extinguishing media and

(b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Non-combustible products, class of reaction to fire is zero. Packaging and surrounding materials may be combustible. Use extinguishing agent suitable for surrounding combustible materials.
6. ACCIDENTAL RELEASE MEASURES

(a) Personal precautions, protective equipment, and emergency procedures

Minimize airborne dust. Compressed air or dry sweeping should not be used for cleaning. See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines.

(b) Methods and materials for containment and cleaning up

Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

7. HANDLING AND STORAGE

(a) Precautions for safe handling

Handle fiber carefully to minimize airborne dust. Limit use of power tools unless in conjunction with local exhaust ventilation. Use hand tools whenever possible.

(b) Conditions for safe storage, including any incompatibilities

Store in a manner to minimize airborne dust.

EMPTY CONTAINERS

Product packaging may contain residue. Do not reuse.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

(a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>MANUFACTURER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amorphous alkaline-earth-silicate (calcium-magnesium-silicate) wool</td>
<td>Particulates Not Otherwise Regulated (PNOR) : Total Dust -- 15 mg/m². Respirable Fraction -- 5 mg/m²*</td>
<td>None established.</td>
<td>See below**</td>
</tr>
</tbody>
</table>
*There is no specific regulatory standard for INSULFRAX® in the U.S. OSHA’s “Particulate Not Otherwise Regulated (PNOR)” standard [29 CFR 1910.1000, Subpart Z, Air Contaminants] applies generally; Total Dust 15 mg/m³; Respirable Fraction 5 mg/m³.

** As with most industrial materials, it is prudent to minimize unnecessary exposure to respirable dusts. Note that Industrial hygiene standards and occupational exposure limits differ between countries and local jurisdictions. Check with your employer to identify any “respirable dust”, “total dust” or “fiber” exposure standards to follow in your area. If no regulatory dust or fiber control standard apply, a qualified industrial hygiene professional can assist with a specific evaluation of workplace conditions and the identification of appropriate respiratory protection practices. In the absence of other guidance, the supplier has found that it is generally feasible to control occupational fiber exposure to 1 f/cc or less.

(b) Appropriate engineering controls

Use engineering controls such as local exhaust ventilation, point of generation dust collection, down draft work stations, emission controlling tool designs, and materials handling equipment designed to minimize airborne fiber emissions.

(c) Individual protection measures, such as personal protective equipment

Skin Protection

Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed clothing home. If soiled work clothing must be taken home, employers should ensure employees are thoroughly trained on the best practices to minimize non-work dust exposure (e.g., vacuum clothes before leaving the work area, wash work clothing separately, rinse washer before washing other household clothes, etc.).

Eye Protection

As necessary, wear goggles or safety glasses with side shields.

Respiratory Protection

When engineering and/or administrative controls are insufficient to maintain workplace concentrations below the applicable level, the use of appropriate respiratory protection, pursuant to the requirements of OSHA Standards 29 CFR 1910.134 and 29 CFR 1926.103, is recommended. A NIOSH certified respirator with a filter efficiency of at least 95% should be used. The 95% filter efficiency recommendation is based on NIOSH respirator selection logic sequence for exposure to particulates. Selection of filter efficiency (i.e. 95%, 99% or 99.97%) depends on how much filter leakage can be accepted and the concentration of airborne contaminants. Other factors to consider are the NIOSH filter series N, R or P. (N) Not resistant to oil, (R) Resistant to oil and (P) oil Proof. These recommendations are not designed to limit informed choices, provided that respiratory protection decisions comply with 29 CFR 1910.134.

The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a qualified Industrial Hygienist.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>(a) Appearance</th>
<th>White, fibrous wool</th>
<th>(j) Upper/lower flammability or explosive limits</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) Odor</td>
<td>Odorless</td>
<td>(k) Vapor pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(c) Odor threshold</td>
<td>Not applicable</td>
<td>(l) Vapor density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(d) pH</td>
<td>Not applicable</td>
<td>(m) Relative density</td>
<td>2.60</td>
</tr>
<tr>
<td>(e) Melting point</td>
<td>1260° C (2300° F)</td>
<td>(n) Solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>(f) Initial boiling point and boiling range</td>
<td>Not applicable</td>
<td>(o) Partition coefficient: n-octanol/water</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(g) Flash point</td>
<td>Not applicable</td>
<td>(p) Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>(h) Evaporation rate</td>
<td>Not applicable</td>
<td>(q) Decomposition temperature</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

(a) Reactivity
AES is non-reactive.
(b) Chemical stability
As supplied AES is stable and inert.
(c) Possibility of hazardous reactions
None
(d) Conditions to avoid
Please refer to handling and storage advice in Section 7
(e) Incompatible materials
None
(f) Hazardous decomposition products

11. TOXICOLOGICAL INFORMATION

(a) through (d)

Toxicological Data/Epidemiology Data

EPIDEMIOLOGY

This product has not been the subject of epidemiological study. Epidemiological studies related to other fiber chemistries of similar solubility have not identified a statistically significant incidence of exposure-related respiratory disease.

TOXICOLOGY

A review of available scientific literature suggests an inverse relationship between dissolution rate and potential health effects; i.e. the higher the dissolution rate of a fiber the lower its potential to produce health effects. The dissolution rate of INSULFRAX® fiber has been determined through standardized in vitro testing. The dissolution rate of INSULFRAX® fibers is higher than that of other fiber types that have been tested in chronic animal studies and did not produce respiratory disease.

This product possesses a fiber chemistry within the regulatory (European Commission Directive 97/69/EC) definition as a "man-made vitreous (silicate) fiber with random orientation with alkaline oxide and alkaline earth oxide (Na2O + K2O + CaO + MgO + BaO) content greater than 18% by weight". INSULFRAX® fibers have been tested pursuant to EU protocol ECB/TM/26, rev. 7, Nota Q, Directive 97/69/EC. The results for the short term biopersistence test by inhalation (IH test) was 7 days; well below the regulatory threshold of 10 days cited in Directive 97/69/EC. Based on testing results, INSULFRAX® based products are not regarded as potential carcinogens and they ARE EXEMPT from European classification as such. By virtue of these test results, these products ARE EXEMPT from European regulatory guidelines that require hazard warning labels with specific risk phrases citing respiratory disease potential. In addition, INSULFRAX® fibers have been tested in an independent laboratory, by intratracheal (IT test) instillation, under a protocol that was consistent with the requirements of the German Hazardous Substances Ordinance (BGBl. I pp. 1782, 2049, Third Amendment, Appendix V, No. 7). The half-life clearance of INSULFRAX® fibers was 30 days; well below the applicable regulatory thresholds. Based on the IT test results, INSULFRAX® products ARE EXEMPT from the requirements of the German Ordinance.

Irritant Properties

The definition of "skin irritation" contained in the hazard communication standard, 29 CFR 1900.1200, Appendix A.2.1.1, is "the production of reversible damage to the skin following the application of a test substance for up to 4 hours." When tested using approved methods (for example EU Directive 67/548/EC, Annex V, Method B4), fibers contained in this material give negative results. The fiber contained in this product is an inert material which doesn't interact chemically with exposed skin. However, there is a possibility that exposure to this product may cause temporary mechanical irritation to the eyes, skin or respiratory tract (nose, throat, lungs). This temporary irritation can be mitigated with proper handling practices designed to limit exposure and the use of protective clothing (glasses, gloves, clothing).

(e) International Agency for Research on Cancer and National Toxicology Program
This product has not been specifically evaluated by any regulatory authority or other classification entity, such as the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP).

### 12. ECOLOGICAL INFORMATION

(a) Ecotoxicity (aquatic and terrestrial, where available)  
No known aquatic toxicity.

(b) Persistence and degradability  
These products are insoluble materials that remain stable over time and are chemically identical to inorganic compounds found in the soil and sediment; they remain inert in the natural environment.

(c) Bioaccumulative potential  
No bioaccumulative potential.

(d) Mobility in soil  
No mobility in soil.

(e) Other adverse effects (such as hazardous to the ozone layer)  
No adverse effects of this material on the environment are anticipated.

### 13. DISPOSAL CONSIDERATIONS

**WASTE MANAGEMENT**

To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

**DISPOSAL**

ISOFRAX® fiber, as manufactured, is not classified as a hazardous waste according to Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

**EUROPEAN UNION**

Waste from this product is not classified as “hazardous” or “special” under European Union regulations. Disposal is permitted at landfills licensed for industrial waste.

### 14. TRANSPORT INFORMATION

| (a) UN number | Not Applicable |
| (b) UN proper shipping name | Not Applicable |
| (c) Transport hazard class(es) | Not Applicable |
| (d) Packing group, if applicable | Not Applicable |
| (e) Environmental hazards (e.g., Marine pollutant (Yes/No)) | Not a marine pollutant |
| (f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code) | Not Applicable |
| (g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises | Not Applicable |

Canadian TDG Hazard Class & PIN: Not regulated  
Not classified as dangerous goods under ADR (road), RID (train) or IMDG (ship).
15. REGULATORY INFORMATION

UNITED STATES REGULATIONS

EPA: Superfund Amendments and Reauthorization Act (SARA) Title III - This product does not contain any substances reportable under Sections 302, 304, 313, (40 CFR 372). Sections 311 and 312 (40 CFR 370) apply (delayed hazard).

Toxic Substances Control Act (TSCA) - All substances in this product are listed, as required, on the TSCA inventory.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Clean Air Act (CAA) - ISOFRAX® contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant.


States: INSULFRAX® products are not known to be regulated. However, state and local OSHA and EPA regulations may apply to these products. If in doubt, contact your local regulatory agency.

INTERNATIONAL REGULATIONS

Canada: Canadian Workplace Hazardous Materials Information System (WHMIS): No Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product.

Canadian Environmental Protection Act (CEPA) - All substances in this product are listed, as required, on the Domestic Substance List (DSL)

European Union: European Directive 97/69/EC - By virtue of testing results, INSULFRAX® fiber has been exempted from classification and labeling as a potential carcinogen.

16. OTHER INFORMATION

PRODUCT STEWARDSHIP PROGRAM

Unifrax has established a program to provide customers with up-to-date information regarding the proper use and handling of fiber-based products, including INSULFRAX® THERMAL INSULATION PRODUCTS. In addition, Unifrax has also established a program to monitor airborne fiber concentrations at customer facilities. If you would like more information about this program, please call the Unifrax Product Stewardship Information Line at 1-800-322-2293.

The HTIW Coalition and the U.S. Occupational Safety and Health Administration (OSHA) are partners in PSP HTW, a comprehensive, multi-faceted risk management program designed to control and reduce workplace exposures to high temperature insulation wools (HTIW). For more information regarding PSP HTW, please visit http://www.htiwcoalition.org

DEFINITIONS

ACGIH: American Conference of Governmental Industrial Hygienists
ADR: Carriage of Dangerous Goods by Road (International Regulation)
CAA: Clean Air Act
CAS: Chemical Abstracts Service
CERCLA: Comprehensive Environmental Response, Compensation and Liability Act
DSL: Domestic Substances List
EPA: Environmental Protection Agency
EU: European Union
f/cc: Fibers per cubic centimeter
HEPA: High Efficiency Particulate Air
Revision Summary: Updated to align with OSHA HCS 2012. Replaces 01/03/2012 MSDS.

SDS Prepared By: UNIFRAX RISK MANAGEMENT DEPARTMENT

DISCLAIMER

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Employers may use this SDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this SDS. Therefore, given the summary nature of this document, Unifrax I LLC does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.