HEATSHIELD PRODUCTS, INC.

HEAT PROTECTION YOU CAN COUNT ON

Rev:5.14

MSDS SHEET — PRODUCT NAME: HEATSHIELD ARMOR

SECTION 1: CHEMICAL PRODUCT

Chemical Name: *Calcium-Magnesium-Silicate Wool*
CAS Number: *436083-99-7*
Product Use: *Thermal Insulation*

SECTION 2: COMPOSITION/INGREDIENT INFORMATION

CAS #	Component/Ingredient	Percent by Weight
436083-99-7	Alkaline-Earth Silicate Wool [1]	100

See Section 8 of this MSDS for exposure limit data for these ingredients

[1] *CAS Definition: Alkaline Earth Silicate (AES) consisting of silica (50-82 wt%), calcia and magnesia (18-43 wt%), alumina, titania and zircona (less than 6 wt %), and trace oxids.*

SECTION 3: HAZARDS IDENTIFICATION

Appearance and Odor: Silver-White colored cloth/No odor

Potential Health Effects:

Acute Inhalation: *Dust from this product may cause mechanical irritation of nose, throat and respiratory tract.*
Skin Contact: *Exposure to this product may cause temporary irritation to the skin. Itching and possible inflammation are a mechanical reaction to the fibers and are not damaging in the way that chemical irritants may be.*
Eye Contact: *Dust from this product may cause temporary mechanical irritation to the eyes.*
Ingestion: *Ingestion of this product is unlikely. However ingestion may produce gastro-intestinal irritation and disturbances.*
Medical Conditions Aggravated by Exposure: *Chronic respiratory or skin conditions will not improve and may worsen with exposure to this product.*

Ingredient: *Alkaline-Earth Silicate Wool*

SECTION 4: FIRST AID MEASURES

Inhalation: *Remove from further exposure by moving to a dust free location. See section 8 If Cough or other symptoms develop, seek medical attention.*
Skin Contact: *If skin becomes irritated, do not rub or scratch. Wash the affected area with soap and water.*
Eye Contact: *If eyes become irritated, flush immediately with lukewarm water for 15 minutes. Eyelids should be held away from eyeball to ensure thorough rinsing. Do not rub eyes. If irritation persists, seek medical attention.*
Ingestion: *Drink plenty of water to reduce irritation. If irritation persists, seek medical attention.*

SECTION 5: FIRE FIGHTING MEASURES

Is this product flammable?	No	**Lower Flammability Limit**	Not Available
Flash Point	Not Available	**Flammability Classification**	Not Determined
Upper Flammable Limit	Not Available	**Explosion Data – Sensitivity to mechanical impact**	Not Available
Flash Point Method	Not Applicable	**Hazardous Combustion Products Data**	Not Available

General Fire Hazards: *There is no potential for fire or explosion.*
Extinguishing Media: *Dry chemical, foam, carbon dioxide, and water fog.*
Fire Fighting Instructions: *No special procedures necessary. Use normal firefighting procedures.*

SECTION 6: ACTIONS ON INADVERTENT RELEASE

Containment Procedures: *Pick up any large pieces. Use high efficiency vacuum to clean up spilled material. Use wet sweeping where sweeping is necessary. Do not use compressed air for cleanup.*
Clean-Up Procedures: *Collect material and place in a suitable container for disposal as non-hazardous waste. Avoid creating airborne dust. dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming, the vacuum should be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning.*

SECTION 7: HANDLING AND STORAGE

General Storage: *Use good and safe workplace practices when handling this material.*
Handling: *Handling and use in a manner consistent with good industrial & manufacturing techniques and practices.*
Storage: *Store in un-opened containers under cool and dry conditions.*
Storage Temperature: *Not Determined*
Loading Temperature: *Not Applicable*
Empty Containers: *Do not reuse the container*

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

Manufacturers Recommendation: *It is prudent to reduce exposure to respirable dusts to the lowest attainable level through the use of engineering controls such as ventilation and dust collection devices. Industrial hygiene standards and occupational exposure limits may vary between countries, state and local jurisdictions. Contact your employer to determine which exposure labels apply to your facility. If no regulatory dust or other standards apply, a qualified industrial hygienist can assist with a specific workplace evaluation including recommendations for respiratory protection. In the absence of such guidance, the manufacturer generally recommends the control of AES wool exposures to 1 fiber/cc or less.*

	Exposure Guidelines		
Hazardous Ingredients	**OSHA PEL**	**ACGIH TLV**	**Manufacturer's Reg**
Alkaline-Earth Silicate Wool	None	None	1 f/cc, 8-hr TWA[3]

Engineering Controls: *If dust is generated, provide local exhaust ventilation to control airborne levels below ACGIH TLV-TWA exposure limit for Particulates Not Otherwise Classified of 10mg/m3 for inhalable particles and 3mg/m3 for respirable.*

Personal Protective Equipment:
Eyes and Face: *Wear safety glasses with side shields or goggles when handling this material.*
Skin: *Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation. Use appropriate workplace clothing and procedures when using this material*
Respiratory: *If airborne dust is present, use a NIOSH approved particulate respirator. (3M 8710)*
Comments *This product contains no known OSHA hazardous ingredients per 29 CFR 1910.1200*

Particular care should be taken when working with material that has been in service to minimize dust. If exposure limits are exceeded or if irritation is experienced, approved respiratory protection should be worn.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Silver-White colored	**Odor**	Odorless
Physical State	Fibrous	**pH in water**	Not Applicable
Vapor Density	Not Applicable	**Melting Point**	2327 ° F +
Vapor Pressure	Not Applicable	**Freezing Point**	Not Applicable
Specific Gravity	2.5-3.0	**Solubility**	1 mg/liter<
Odor Threshold	Not Applicable	**Boiling Point**	Not Applicable
Evaporation Rate	Not Applicable	**Coefficient of Water/Oil Distribution**	Not Applicable

SECTION 10: CHEMICAL STABILITY & REACTIVITY INFORMATION

Stability: *This is a stable material*
Reactivity: *Not reactive.*
Hazardous Decomposition: *Hydrogen Chloride, Carbon Monoxide, Carbon Dioxide*
Incompatible Material: *Strong Acids*
Hazardous Polymerization: *Will not occur*

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity:
A) General Product Information: *Dusts may cause mechanical irritation to skin and eyes. Inhalation may cause coughing, nose and throat irritation or sneezing.*
B) Component Analysis:

Component Carcinogenicity: *None known*

Irritancy of the Product:
Acute Inhalation: *Dust from this product may cause mechanical irritation of the nose, throat and respiratory tract.*
Skin Contact*: Dust from this product may cause temporary irritation to the skin.*
Eye Contact: *Dust from this product may cause temporary mechanical irritation to the eyes.*

Irritant Prooperties: *The fibers are negative when tested using approved methods (directive 67/458/EEC, Annex 5, Method b4). Like all man-made mineral fibers and some natural fibers, fibers contained in this product may produce a mild mechanical irritation resulting in temporary itching or rarely, in some individuals, in a slight temporary reddening. Unlike other irritant reactions, this is not the result of allergy or chemical skin damage but is caused by mechanical effects.*

Other animal studies: *Fibers contained in the products listed in the title have been designed to be rapidly cleared from lung tissue. this low biopersistence has been confirmed in many studies on AES using EU protocol ECB/TM/27 (rev7). When inhaled, even at very high doses, they do not accumulate to any level capable of producing a serious adverse biological effect. In lifetime chronic studies there was no exposure-related effect more than would be seen with any "inert" dust. Subchronic studies at the highest doses achievable produced at worst a transient mild inflammatory response. Fibers with the same ability to persist in tissue do not produce tumors when injected into the peritoneal cavity of rats.*

SECTION 12: ECOLOGICAL INFORMATION

No ecological concerns can be identified with this product

SECTION 13: DISPOSAL CONSIDERATIONS

US EPA Waste Number and Descriptions:
A) General Product Information: *This product is not expected to be a characteristic waste under RCRA.*
B) Component Waste Numbers: *No EPA Numbers are applicable for this product's components.*
Disposal Instructions: *This product can be disposed of in a normal manner. Local regulations may apply.*

SECTION 14: TRANSPORTATION INFORMATION

US DOT Regulations:
Primary Hazard Class / Division: *This product has no classification.*
Other Shipping Information: *Product should remain in a proper container during transportation.*

SECTION 15: REGULATORY INFORMATION

US Federal Regulations:

SARA Title III: *None of the components of this product are listed under SARA Section 302 (40 CFR 372 SARA Section 311 and 312 apply.*
OSHA: *Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.*
TSCA: *AES wools have been assigned several CAS numbers; however they are not required to be listed on the TSCA inventory.*
CERCLA: *AES wool contains fibers with an average diameter greater than one micron and thus is not considered a CERCLA hazardous substance.*
CAA: *AES wool contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant*

State Regulations: *AES wools are not know to be regulated by any State. If in doubt, contact your local regulatory agency.*

International Regulations:

Canada WHMIS: *No Canadian Workplace Hazardous Material Information System categories apply to this product.*
Canadian EPA: *All substances in this product are listed as required on the Domestic Substance List (DSL).*
European Union: *These products are exonerated from any carcinogenic classification in the countries of the European Union under the provisions of Nota Q of the European Commission Directive 97/69/EC.*

SECTION 16: OTHER INFORMATION

Precautionary Measures to be Taken After Service Upon Removal: *High temperature insulating wool (THIS) is typically used in insulation applications to keep temperature exposed at 900C or above in a closed space. The Exposure temperature maximum occurs at the hot face surface f the insulation. The heat exposure on the insulation decreases from the hot face to the cold case as the insulation "insulated itself"/ As a result, only thin layers of the hot face surface of the insulation become devitrified and respirable dust generated during removal operations typically do not contain detectable levels of crystalline silica (CS).*

Toxicology evaluation of the effect of the presence of CS in artificially heated HTIW material has not shown any increased toxicity in vitro and in vivo. the results from different factor combinations such as increased brittleness of fibers or micros crystals embedded in the glass structure of the fiber and there not biologically available, may explain the lack of toxicological effects. IARC evolution as provided in Monograph 68 is not relevant since CS is not biologically available in after-service HTIW.

High concentrations of fibers and other dusts may be generated when after-service products are mechanically disturbed during removal. Therefor ECFIA and RCFC recommend:
a) Controlled measures are taken to reduce dust emissions
b) All personnel directly involved wear an appropriate respirator to minimize and comply with local regulatory limits.

HMIS Hazard Rating:
HMIS Health: 1
HMIS Flammability: 0
HMIS Reactivity: 0
HMIS Personal Protective: To be determined by user

Disclaimer

The information presented heren is presented in good faith and believed to be accurate as of the effective date of this Material Safety Data Sheet. Employers may use this MSDS 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 not that information perceived to be less relevant has not been included in this MSDS. Therefore, given the summary nature of this document, Heatshield Products, Inc. does not extend any warranty (express 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.