SECTION 1 • PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME OR NUMBER:

- **CERMEX®-PR1800SW & CERMEX®-PR2200SW** paper.
- **THERMOPAK** custom fabricated products are made using one of one or more of the above listed products.

COMPANY: Mid-Mountain Materials, Inc.

ADDRESS: Office: 2835 82nd Ave SE Ste 100, Mercer Island, WA 98040

Plant: 18825 67th Ave NE, Arlington, WA 98223

TELEPHONE: 206-762-7600

FAX: 206-762-7694

COMPLETED BY: A.K.Das

SECTION 2 • COMPOSITION / INFORMATION ON INGREDIENTS

PRODUCT GROUP: Alkaline Earth Silicate (AES) Wool Product

CHEMICAL NAMES: Calcium-Magnesium-Silicate (CMS) Wool or Calcium-Magnesium-Zirconium-Silicate (CMZS) Wool

INGREDIENT & CAS NUMBER	**% BY WEIGHT**	**OSHA**	**PEL ACGIH TLV**
Alkaline-Earth Silicate Wool **(1)**	92 - 96	15 mg/m3 (total dust)	10 mg/m3 (inhalable dust)
436083-99-7		5 mg/m3 (respirable dust)	3 mg/m3 (respirable dust)
Latex	2 - 10	Not established	Not established
NONE			

NOTES:

(1) CAS definition: Alkaline Earth Silicate (AES) consisting of silica (50-82 wt %), calcia and magnesia (18-43 wt %), alumina, titania and zirconia (less than 6 wt %), and trace oxides. This CAS composition also covers Calcium-Magnesium-Silicate(CMS) Wool (CAS no. 329211-92-9) and Calcium-Magnesium-Zirconium-Silicate (CMZS) Wool (CAS no. 308084-09-5).

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

SECTION 3 • HAZARDS IDENTIFICATION

- May cause temporary, mild mechanical irritation to the eyes, skin, nose and/or throat.

- Pre-existing skin and respiratory conditions may be aggravated by exposure.

SECTION 4 • FIRST AID MEASURES

EMERGENCY/FIRST AID PROCEDURES

SKIN: If skin becomes irritated, remove soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful

EYE: If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes.

INHALATION: If respiratory tract irritation develops, move the person to a dust free location. See Section 8 for additional measures to reduce or eliminate exposure.

INGESTION: Ingestion of this material is not likely. If it does occur, however, and if gastrointestinal tract irritation develops, move the person to a dust free environment. If symptoms persist, seek medical attention.

NOTE TO PHYSICIANS: Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure does not result in allergic manifestations. blockage does not occur. If there is blockage, seek medical attention.

SECTION 5 • FIRE FIGHTING MEASURES

NFPA CODES:

NFPA unusual hazards: none Flammability: 0
Health: 1 Reactivity: 0
Special: 0 Flash point: none

HAZARDOUS DECOMPOSITION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARD: None

EXTINGUISHING MEDIA: Use extinguishing media suitable for type of surrounding fire.

SECTION 6 • ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES: 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

STORAGE: Store in original factory container in a dry area. Keep container closed when not in use.

HANDLING: Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. 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.

EMPTY CONTAINERS: Do not reuse the container.

SECTION 8 • EXPOSURE CONTROLS/PERSONAL PROTECTION

MANUFACTURER'S 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 levels 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 CMS wool exposures to 1 fiber/cc or less.

ENGINEERING CONTROLS

Use feasible 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.

PERSONAL PROTECTION 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 work clothing home. If soiled work clothing must be taken home, employers should ensure employees are trained on the best practices to minimize or avoid 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: Wear safety glasses with side shields or other forms of eye protection in compliance with appropriate OSHA standards to prevent eye irritation. The use of contact lenses is not recommended, unless used in conjunction with appropriate eye protection. Do not touch eyes with soiled body parts or materials. If possible, have eye-washing facilities readily available where eye irritation can occur.

RESPIRATORY PROTECTION: When it is not possible or feasible to reduce respirable dust exposures through engineering controls, employees are encouraged to use good work practices together with respiratory protection. Comply with OSHA Respiratory Protection Standards, 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

SECTION 9 • PHYSICAL AND CHEMICAL PROPERTIES

ODOR AND APPEARANCE: White odorless material with a wool type appearance.

CHEMICAL FAMILY: Calcium – Magnesium - Silicate Mixture

BOILING POINT: NA

WATER SOLUBILITY (%): Slight

% VOLATILE: NA

MELTING POINT: Fiber: 1260°C (2300°F)
SPECIFIC GRAVITY RANGE: 2.5 - 3.0

VAPOR PRESSURE: NA

pH: NA

VAPOR DENSITY (Air = 1): NA

MOLECULAR FORMULA: NA

SECTION 10 • STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under conditions of normal use

CHEMICAL INCOMPATIBILITIES: Avoid contact with strong acids.

CONDITIONS TO AVOID: None

HAZARDOUS DECOMPOSITION PRODUCTS: Upon heating above 900°C for sustained periods, this amorphous material begins to transform to mixtures of crystalline phases. During first heating, oxidation products from the organic binder might be emitted in a temperature range from 180°C to 600°C. It is recommended to ventilate the room until gases and fumes have disappeared. Avoid exposure to high concentrations of gas or fumes.

HAZARDOUS POLYMERIZATION: NA

SECTION 11 • TOXICOLOGY INFORMATION

TOXICOLOGY: CMS wools have been tested for their biopersistence using methods devised by the European Union. The results from these studies exonerate CMS wools from carcinogen classification under the criteria listed in Nota Q of European Commission Directive 97/69/EU.

In a lifetime carcinogenicity test, rats were exposed by inhalation for two years (5 days a week; 6 hours a day) to CMS fibers at 200 WHO fibers/ml. There was neither fibrosis nor carcinogenic response; only reversible cellular changes were seen. Further, subchronic inhalation studies on rats with CMS fibers at concentrations of 150 fibers (>20 µm long) per ml for 90 days with follow up to 1 year showed neither inflammation nor cell proliferation. All parameters studied returned rapidly to baseline levels on cessation of exposure.

After-service, CMS wools may contain crystalline phases including some forms of silica. (See Section 16) However, CMS fibers heated to 1000°C for 2 weeks were not cytotoxic to macrophage-like cells at concentrations up to 320 µg/cm2. In the same test, samples of pure crystalline quartz were significantly active at 20 µg/cm2.

EPIDEMIOLOGY: This material has not been the subject of an epidemiology study.

NOTE: Neither the International Agency for Research on Cancer (IARC) nor the National Toxicology Program nor any other U.S. regulatory or classification entity has evaluated CMS wool. CERMEX PR1800SW products are members of a family of materials whose properties are distinct in several ways from other man-made

mineral fibers. In October 2001 IARC re-reviewed Man-Made Vitreous Fibers and "elected not to make an overall evaluation of the newly developed fibers" [such as CMS wool] but recognized that "those that have been tested appear to have low carcinogenic potential in experimental animals."

While CMS wool is an inert material that does not react with the skin, exposures may cause temporary mild mechanical irritation to the eyes, skin, nose and/or throat (for First Aid Measurers, see Section 4). Proper handling practices and the use of protective clothing (see Section 8) can minimize irritation.

SECTION 12 • ECOLOGICAL INFORMATION

No adverse effects of this material on the environment are anticipated.

SECTION 13 • DISPOSAL CONSIDERATION

WASTE MANAGEMENT: To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended.

RCRA: CMS wool, as manufactured, is not classified as a hazardous waste according to Federal regulations (40 CFR 261). As manufactured, CMS wool was tested using EPA's TCLP. Results showed there were no detectable contaminants or detectable leachable contaminants that exceeded the regulatory levels. 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.

SECTION 14 • TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

HAZARD CLASS: NA
UNITED NATIONS NUMBER: NA
LABELS: NA
NORTH AMERICA NUMBER: NA
PLACARDS: NA
BILL OF LADING: Product name

INTERNATIONAL

Not classified as dangerous goods under ADR (road), RID (train), IATA (air) or IMDG (ship).

SECTION 15 • ADDITIONAL REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA TITLE III: This product does not contain any substances reportable under Sections 302, 304, 313(40 CFR 372). Sections 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: CMS wools have been assigned two CAS numbers; however, they are not required to be listed on the TSCA inventory.

CERCLA: CMS wool contains fibers with an average diameter greater than one micron and thus is not considered a CERCLA hazardous substance.

CAA: CMS wool contains fibers with an average diameter greater than one micron and thus is not considered a hazardous air pollutant.

STATES: CMS wools are not known to be regulated by any State. If in doubt, contact your local regulatory agency.

INTERNATIONAL REGULATIONS

CANADA WHMIS: No categories apply to this product.

CANADIAN EPA: All substances in this product are listed, as required, on the (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 APPLICABLE INFORMATION

DEVITRIFICATION: As produced, CERMEX PR1800SW & PR2200SW are vitreous (glassy) AES Wools that do not contain crystalline silica. Continued exposure to elevated temperatures (>1650°F • 900°C) may cause these materials to form crystalline phases, including crystalline silica. The occurrence and extent of crystalline silica formation is dependent on the duration and temperature of exposure, CMS Wool chemistry and/or the presence of fluxing agents. The presence of crystalline silica can be confirmed only through laboratory analysis of the "hot face" fiber. If crystalline silica is present, follow appropriate hygiene standards and national regulations.

Devitrified, after-service CERMEX PR1800SW & PR2200SW, containing crystalline silica, has shown no adverse reactions in toxicity assays (See Section 11). These findings are consistent with IARC's evaluation, which states "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)" and additionally notes "carcinogenicity in humans was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monograph Vol. 68, 1997).

Respirable dust from devitrified CERMEX PR1800SW & PR2200SW products can be controlled with ventilation, dust collectors or respiratory protection as detailed in Section 8 (above). Ventilation and respiratory protection should be provided in compliance with OSHA standards. The evaluation of workplace hazards and, if necessary, the identification of appropriate respiratory protection is best performed by qualified Industrial Hygienists.

LABELING: As product information labels may be required on CERMEX PR1800SW & PR2200SW packages, check local destination regulations before shipping.

HMIS HAZARD RATING:

HEALTH: 1
FLAMMABLE: 0
REACTIVITY: 0
PERSONAL PROTECTIVE: To be determined by user.

DEFINITIONS

29 CFR 1910.134 & 1926.103:
OSHA Respiratory Protection Standards
29 CFR 1910.1200 & 1926.59:
OSHA Hazard Communication
ACGIH American Conference of Governmental Industrial Hygienists
ADR Carriage of Dangerous Goods by Road (International Regulation)

CAA	Clean Air Act
CAS	Chemical Abstract Services
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
DOT	Department of Transportation
DSL	Domestic Substances List (Canada)
EEC	European Economic Committee
EINECS	European Inventory of Existing Commercial Chemical Substances
EPA	Environmental Protection Agency
EU	European Union
HEPA	High Efficiency Particulate Air
HMIS	Hazardous Materials Information System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
LC	Lethal Concentration
LD	Lethal Dose
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PIN	Product Identification Number
PNOC	Particulates Not Otherwise Classified
PNOR	Particulates Not Otherwise Regulated
RCRA	Resource Conservation and Recovery Act
RID	Carriage of Dangerous Goods by Rail (International Regulation)
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TCLP	Toxic Chemical Leachate Program
TDG	Transportation of Dangerous Goods

TITLE III EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT – SECTION:

302	Extremely Hazardous Substances
303	Emergency Release
311	MSDS/List of Chemicals
312	Emergency and Hazardous Inventory
313	Toxic Chemicals Release Reporting
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
WHMIS	Workplace Hazardous Materials Information System
cm	centimeter
f/cc	fibers per cubic centimeter
g	gram
in	inch
kg	kilogram
lb	pound
m	meter
mg	milligram
mg/m3	milligrams per cubic meter of air
mppcf	million particles per cubic meter
mm	millimeter
oz	ounce
ppm	parts per million
mg	microgram

NA	Not Applicable
ND	No Data/Not Determined
NE	Not Established
NR	Not Regulated

To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy or completeness of such information. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible long term adverse effects. To the extent that any hazards may have been mentioned in the publication, we neither suggest nor guarantee that such hazards are the only ones that exist. Final determination of the suitability of any information or product for the use contemplated by any user, the manner of that use, and whether there is any infringement of any patents is the sole responsibility of the user. We recommend that anyone intending to rely on any recommendation or to use any equipment, processing technique, or material mentioned in this publication should satisfy himself as to such suitability and that he can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturers' or suppliers' current instruction for handling each material they use.

<<< End of MSDS >>>