

MATERIAL SAFETY DATA SHEET

VESUVIUS USA

MSDS No.: 2133

Phone: VESUVIUS RESEARCH: 1-419-986-5126

Date prepared: 12/00

CHEMTREC, 24-Hr Emergency Assistance: 1-800-424-9300

Revision Date: 10/05

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material/Product Name(s): CALSIMAG™ BULK, BLANKET, MODULES, PYROSCAT® CSM DUCT WRAP, PYROSCAT® CSM BLANKET, PYROSCAT® CSM FASTR™ DUCT WRAP, CER-WOOL® CSM PIPE WRAP

CAS Number: Mixture

Chemical family: Inorganic. A new composition of amorphous man-made vitreous fiber

General use: An intermediate to high-temperature insulating material.

Manufacturer/Supplier: VESUVIUS USA
RESEARCH CENTER
495 Emma Street

P.O. Box 392

Bettsville, OH 44815

Phone: 419-986-5126

SECTION 2. INGREDIENTS/COMPOSITION

Ingredient name:	CAS Number:	Percent:	IARC/NTP/OSHA:	Exposure Limits:
Amorphous calcium-magnesium-silicate	Mixture	100	No	OSHA "particulate not otherwise regulated" Respirable Dust: 5mg/m ³ ; total Dust: 15mg/m ³ . ACGIH PNO: Total dust: 10 mg/m ³ ; respirable dust: 3mg/m ³ . Vesuvius recommends a TWA of 1 fiber/cc.

Typical Chemical Analysis of the fiber*, Wt.%.

SiO ₂	62	-	65
CaO	29	-	32
MgO	3.4	-	4.2
Impurities	0.5	-	2.0

VESUVIUS USA recommends an exposure limit of one (1) fiber per cubic centimeter for respirable fiber as an 8-hour time weighted exposure. Fiber concentration is determined by time weighted air samples collected and analyzed using NIOSH Method 7400 ("B" counting rules).

* The listed oxides do not exist as separate, or crystalline compounds, but exist in an amorphous, glassy phase. Glasses are a class of materials made from silicon dioxide and other metal oxides that solidify from the molten state without crystallization.

SECTION 3. HAZARDS IDENTIFICATION

HMIS

HEALTH HAZARD	1 - SLIGHT
FLAMMABILITY HAZARD	0 - MINIMAL
REACTIVITY HAZARD	0 - MINIMAL
PERSONAL PROTECTION	TO BE DETERMINED BY USER

EMERGENCY OVERVIEW:

Exposure to glass fibers sometimes causes irritation to the skin and, less frequently, irritation to the eyes, nose, or throat. This is not an allergic reaction, but simply a mechanical irritation. Skin irritation typically is experienced by individuals who are newly exposed to fibrous glass and it usually diminishes after several days of exposure. Good personal and industrial hygiene practices minimize the amount of discomfort.

Eye contact: Fiber may cause moderate irritation to the eye.

Skin contact: Contact with bare skin can cause moderate skin irritation by the abrasive action.

Inhalation: Inhalation of airborne particulate can irritate the upper respiratory system as well as throat.

Ingestion: An unlikely route of exposure. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, and abdominal pain.

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HAZARD IDENTIFICATION continued from page 1

Medical conditions that may be aggravated by contact:

Inhalation of fiber/dust may aggravate existing chronic lung conditions such as, but not limited to, bronchitis, emphysema, and asthma.

SECTION 4. FIRST AID MEASURES

Eye contact: Flush eyes, including under the eyelids, with large amounts of water. If irritation persists, seek medical attention.

Skin contact: Wash affected areas with mild soap and water.

Inhalation: Remove victim from adverse environment to fresh air.

Ingestion: Ingestion is an unlikely route of exposure. If ingested in sufficient quantity and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting to qualified medical personnel, since particles may be aspirated into the lungs. Seek immediate medical attention.

SECTION 5. FIRE FIGHTING MEASURES

NFPA codes: Flammability: 0, Health: 0, Reactivity: 0, Special: 0.

Fire and Explosion: Product is not combustible

Extinguishing Media: Use extinguishing media appropriate to combustibles in area of fire.

Firefighting instructions: Firefighters should wear NIOSH-approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Spill procedures: Carefully, cleanup and place material into a suitable covered container, being careful to avoid creating any airborne dust. If dusty conditions exist, use HEPA filtered vacuum equipment if available, if not, use a dust suppressant with sweeping; do not use compressed air. Clean-up personnel should wear approved respiratory protection, gloves, and goggles to prevent irritation from contact and/or inhalation.

SECTION 7. HANDLING AND STORAGE

This product is stable under all conditions of storage. Store in original containers. Keep container closed when not in use.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

OSHA PEL	-	Not Established
OSHA PNOR	-	Total dust 15mg/m ³ ; Respirable dust 5mg/m ³
ACGIH TLV	-	None established
ACGIH PNOG	-	Inhalable particulate 10mg/m ³ ; Respirable dust 3mg/m ³

Manufactures 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 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.....

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assist with a specific workplace evaluation including recommendations for respiratory protection. 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.

Engineering controls: Technologies to control respirable dust such as local exhaust ventilation, point of generation dust collection, downdraft workstations, emission controlling tool designs and materials handling equipment are generally effective for minimizing exposures to respirable dust.

Personal Protective Equipment:

Skin Protection: Wear long-sleeved, loose-fitting clothing, gloves and eye protection with side shields to prevent skin irritation.

Eye Protection: Wear goggles or safety glasses with side shields to prevent eye contact.

Respiratory Protection: When effective engineering and/or administrative controls are insufficient, the use of appropriate respiratory protection, in accordance with the requirements of OSHA 1910.134, is recommended. For dust concentrations below the applicable exposure limit value, PPE is not required. 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: A white to off-white fibrous material. Available in loose, bulk, blanket, and module forms; odorless. Blanket may contain an aluminum foil/fiber scrim composite facing.

Boiling Point: Not applicable**Specific Gravity(g/cc):** 2.5-3.1**Melting Point:** 1260°C (2300°F)**Bulk Weight(lbs/ft³):** 4-12**Water Solubility:** 0**% Volatile by volume:** 0**pH:** Not Applicable**Evaporation rate:** Not applicable

SECTION 10. STABILITY AND REACTIVITY

Hazardous Polymerization: Product is stable; polymerization will not occur

Chemical Incompatibilities: Strong mineral acids

Hazardous Decomposition Products: Fibers contained in this product may form cristobalite when used at temperatures above 1000°C for sustained periods of time. See Section 16 for more information.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Toxicology: This product has been the subject of limited testing. Available scientific literature suggests that alkaline earth oxides >18% by weight are highly soluble and do not produce respiratory disease in animal studies.

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Revision Date: 10/05**Toxicological Information continued:**

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). Other types of man-made vitreous fibers (MMVF) have been evaluated and subsequently classified as potential carcinogens. Various classifications, such as "possible carcinogen", and "reasonably anticipated to be a carcinogen" have been given to other MMVF's.

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". This fiber chemistry is exonerated from any carcinogenic classification in the countries of the European Union under provision of Nota Q of the EC Directive 97/69/EC.

SECTION 12. ECOLOGICAL INFORMATION

No data available on any adverse ecological effects from this material.

SECTION 13. DISPOSAL INFORMATION

Waste Management/Disposal: This product does not exhibit any characteristics of a hazardous waste. It is recommended that the product should be contained in bags or suitable closed containers to prevent creating any airborne dust during disposal. The product is suitable for landfill disposal. However, debris generated during installation, maintenance or tear-out procedures may be contaminated with other hazardous materials. Therefore, appropriate waste analysis may be necessary to determine proper disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state and local regulations.

SECTION 14. TRANSPORT INFORMATION

US Department of Transportation: Not regulated by DOT as a hazardous material. No hazard class, no label or placard required, no UN or NA number assigned.

Canadian TDG Hazard Class & PIN: Not regulated

SECTION 15. REGULATORY INFORMATION**United States Regulations**

SARA TITLE III: This product does not contain any substances reportable under SARA Sections 302, 304, and 313.

OSHA: Comply with Hazard Communication Standard 29 CFR 1910.1200 and 29 CFR 1926.59. Also, Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103.

TSCA: All substances in this product are listed in the chemical substance inventory.

CERCLA: CALSIMAG™ contains fibers with an average fiber diameter greater than one micron and thus is not considered a CERCLA hazardous waste.

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

STATES: Calcium-magnesium-silicate fibers are not known to be regulated by the States. If in doubt, contact your local regulatory agency.

International Regulations

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

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Regulatory information continues on page 5

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Regulatory Information continued

Canada CEPA: All substances in this product are listed on the Domestic Substances List (DSL).

European Union: This fiber chemistry is 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

After-Service CALSIMAG™ Removal: CALSIMAG™ fibers may devitrify and form cristobalite (a form of crystalline silica) when used at temperatures above 1000°C for sustained periods. Chronic exposure to respirable crystalline silica may lead to lung disease. IARC has concluded that "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." {IARC Monograph 68, June 1997, p. 210-211}. The Occupational Safety and Health Administration (OSHA) has adopted a permissible exposure limit (PEL) for respirable Cristobalite at 0.05 mg/m³. When needed, the use of proper exposure controls and respiratory protection is recommended to reduce potential health risks and to ensure compliance with OSHA requirements. 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. For more detailed information regarding respirable crystalline silica, contact VESUVIUS USA for Product Stewardship information.

Product Stewardship Program: VESUVIUS USA has established a program to provide customers with up-to-date information regarding the proper use and handling of fiber-based products, including CALSIMAG™ products. In addition, VESUVIUS USA 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 VESUVIUS USA Stewardship Program Information Line at 1-800-355-1100, Box 1975.

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS':

ACGIH: American Conference of Governmental Industrial Hygienists
CAS#: CAS Registration Number is an assigned number to identify a material. CAS stands for Chemical Abstracts Service.
CERCLA: Comprehensive Environmental Response, Compensation & Liability Act
EPCRA: Emergency Planning and Community Right-to-Know Act of 1986
f/cc: Fibers per cubic centimeter
HMIS™: Hazardous Materials Identification System (National Paint & Coatings Association)
IARC: International Agency for Research on Cancer
mg/m³: Milligrams per cubic meter
NIOSH: National Institute for Occupational Safety and Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit (OSHA)
PNOC: Particulate Not Otherwise Classified
PNOR: Particulate Not Otherwise Regulated
PSP: Product Stewardship Program
RCFC: Refractory Ceramic Fiber Coalition
REL: Recommended Exposure Limit (NIOSH)
SARA: Superfund Amendments and Reauthorization Act
TITLE III: Emergency Planning and Community Right To Know Act
Section 302: Extremely Hazardous Substances

Section 304: Emergency Release
Section 311: *Community Right-to-Know*, MSDSs or List of Chemicals
Section 312: *Community Right-to-Know*, Inventories & Locations, (Tier I/II)
Section 313: Toxic Chemicals, Toxic Chemical Release Reporting, Form R

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TLV: Threshold Limit Values (ACGIH)
TWA: Time Weighted Average
29CFR1910.134: OSHA Respiratory Protection Standard

REFERENCES:

Sax, N. Irving: Dangerous Properties of Industrial Materials, Ninth Edition, Van Nostrand Reinhold Co., Inc., 1996.
Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, Third Edition, Wiley-Interscience, New York, NY 1982.
Clansky, K.B., Suspect Chemicals Sourcebook, 1992-2 Edition, Roytech Publications, Bethesda, Maryland.
Sax, N.Irving and Lewis, R.J. Hawley's Condensed Chemical Dictionary, Eleventh Ed., Van Nostrand Reinhold Co., Inc., NY
Manufacturers/Suppliers, Material Safety Data Sheets on Raw Materials Used

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