

**MATERIAL SAFETY DATA SHEET
(U.S.A)**

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SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material/Product Name(s): Supermag* Body Soluble Boards and Special Shapes
Chemical family: Alkaline earth silicate fiber
Synonyms: AES wool, Synthetic vitreous fiber (SVF), man made vitreous fiber (MMVF), man made mineral fiber (MMMMF), Calcium – magnesium - silicate fiber (CMS).

Manufacturer/Supplier: Nutec Fibrattec, S.A. de C.V.
 Carretera Saltillo – Monterrey #100 (km 62.5)
 66359 Santa Catarina N.L., México
 Phone (MX): +52(81) 8151-4601
<http://www.nutecfibrattec.com>

SECTION 2. INGREDIENTS/COMPOSITION

Material or Component	*CAS No.	%	Exposure limits
Amorphous calcium - magnesium-silicate fiber	436083-99-7	30-90	OSHA PEL Respirable Dust: 5 mg/m ³ Total Dust: 15 mg/m ³ ACGIH TLV Non established
Silica, Colloidal	7631-86-9	5-60	OSHA PEL (80mg/m ³ / %Crystalline Silica) or 20mppcf ACGIH TLV Non established
Starch	9005-25-8	2-10	OSHA PEL Respirable Dust: 5 mg/m ³ Total Dust: 15 mg/m ³ ACGIH TLV Respirable Dust: 3 mg/m ³ Total Dust: 10 mg/m ³

Typical Chemical Analysis of the fiber, Wt %: SiO₂ 58 – 72, CaO 29 – 34, MgO 3 - 5

*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

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.

Medical conditions which 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. Do not rub eyes. If irritation persists, seek medical attention.

Skin contact: Wash affected areas with mild soap and water, using a skin cream or lotion after washing may be helpful.

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.

Note to physicians: Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure does not result in allergic manifestations.

SECTION 5. FIRE FIGHTING MEASURES

NFPA codes: **Flammability:** 0, **Health:** 1, **Reactivity:** 0, **Special:** 0.

NFPA Unusual Hazards: None.

Flammable properties: None.

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. Used 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 AND PERSONAL PROTECTION

Manufacturer's Recommendation: It is prudent to reduce exposure to respirable dusts to the lowest possible 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 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. 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.

Eye Protection: Wear goggles or safety glasses with side shields to prevent eye contact 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 effective engineering and/or administrative controls are insufficient, the use of appropriate respiratory protection, in accordance with the requirements of OSHA 29 CFR 1910.134 and 29 CFR 1926.103, 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:	Beige to light Brown.	Odour:	N.A.
Chemical family:	Calcium-Magnesium-Silicate Mixtures.	Vapor pressure:	N.A.
Boiling Point:	N.A.	Specific Gravity:	2.5 – 3.1
Melting Point:	>1275 °C (2320 °F)	Bulk Weight (lbs/ft³):	16-30
Water Solubility:	Slight	Volatile by volume:	0
pH:	N.A.	Evaporation rate:	N.A.

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Stable under conditions of normal use.

Conditions to avoid: None.

Hazardous Polymerization: Product is stable; polymerization will not occur.

Chemical Incompatibilities: Avoid contact with Strong mineral acids.

Hazardous Decomposition Products: Upon heating above 1650°F (900°C) for substantial periods, this amorphous material begins to transform to mixtures of amorphous and crystalline phases. (See section 16 for additional information). Oxides of carbon and trace of ammonia may release from starch during initial heating of this product.

SECTION 11. TOXICOLOGICAL INFORMATION

Epidemiology: This product has not been the subject of a long-term epidemiological study.

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

In a life time 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, sub chronic inhalation studies on rats with CMS fibers at concentrations of 150 fibers (> 20 µm long) per milliliter 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 (1832°F) for two weeks were not cytotoxic to macrophage like cells at concentrations up to 320µg/cm². In the same test, samples of pure crystalline quartz were significantly active at 20µg/cm².

Silica Amorphous: Toxic effects found in animals following a single inhalation exposure to amorphous silica include upper respiratory irritation, lung congestion, bronchitis and emphysema. Repeated inhalation exposure at concentrations of 50 to 150 mg/m³ produced increased lung weight and lung changes. No progressive pulmonary fibrosis was seen and the observed lung changes were reversible. No adverse effects observed in this study at 10 mg/m³. No animal test reports have been found which define carcinogenic, mutagenic, or reproductive effects.

Note: Supermag* 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 wools is an inert material that does not react with skin, exposures may cause temporary mild mechanical irritation to the eyes, skin, nose and/or Throat (for first aid measures, see section 4). Proper handling practices and the use of protective clothing (see section 8) can minimize irritation.

SECTION 12. ECOLOGICAL INFORMATION

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

SECTION 13. DISPOSAL INFORMATION

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

RCRA: CMS wool, is not classified as a hazardous waste according to federal regulations (40 CFR 261). As manufactured, CMS wool was tested using EPA's toxicity characteristics leaching procedure (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. TRANSPORT INFORMATION

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

International:

- Not classified as dangerous goods under ADR (Road), RID (Train), IATA (air) or IMDG (ship).

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, (40 CFR 372). Sections 311 and 312 (40 CFR 370) apply (delayed hazard).

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:** CMS wools have been assigned two CAS numbers; However, they are not required to be listed on the TSCA inventory.
- CERCLA:** Calcium-magnesium-silicate fibers with an average fiber diameter greater than one micron and thus is not considered a CERCLA hazardous waste.
- CAA:** Calcium-magnesium-silicate 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.
- Canada EPA:** 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 Note Q of the European Commission Directive 97/69/EC.

SECTION 16. OTHER INFORMATION

As produced, supermag* are vitreous (glassy) AES wools that do not contain crystalline silica. Continued exposure to elevated temperatures (> 900°C (1652°F)) 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 supermag*, containing crystalline silica, has shown no adverse reaction in toxicity assay (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 studies. 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 supermag* 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.

ACRONYMS AND REFERENCES USED IN PREPARATION OF MSDS:

- ACGIH:** American Conference of Governmental Industrial Hygienists
- ADR:** Carriage of Dangerous goods by road (international regulation).
- CAA:** Clean Air Act.
- 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
- EPA:** Environmental Protection Agency.
- EU:** European Union.
- f/cc:** Fibers per cubic centimeter.
- HEPA:** High Efficiency Particulate Air.



HMIS □:	Hazardous Materials Identification System (National Paint & Coatings Association)
IARC:	International Agency for Research on Cancer mg/m ³ : Milligrams per cubic meter
IATA:	International Air Transport Association.
IMDG :	International Maritime Dangerous goods code.
mg/m ³	Milligrams per cubic meter of air.
mppcf:	Million particles per cubic meter.
MSHA:	Mine Safety and Health Administration.
NFPA:	National Fire Protection Association
NIOSH:	National Institute for Occupational Safety and Health
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit (OSHA)
PNOC:	Particulate Not Otherwise Classified
PNOR:	Particulate Not Otherwise Regulated
RCRA:	Resource Conservation and Recovery Act.
RID:	Carriage of dangerous goods by Rail. (International Regulation).
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:	<i>Community Right-to-Know</i> , MSDSs or List of Chemicals
Section 312:	<i>Community Right-to-Know</i> , Inventories & Locations, (Tier I/II)
Section 313:	Toxic Chemicals, Toxic Chemical Release Reporting, Form R
STEL:	Short term exposure limit.
TCLP:	Toxicity Characteristics Leaching Procedures. (EPA)
TLV:	Threshold Limit Values (ACGIH)
TSCA:	Toxic Substance Control Act.
WHMIS:	Workplace Hazardous Materials Information System. (Canada)
29 CFR 1910.134 & 1926.103:	OSHA Respiratory Protection Standard.
29 CFR 1910.1200 & 1926.51:	OSHA Hazard Communication Standards.

REFERENCES:

- Refractory Ceramic Fiber coalition (USA) www.rcfc.net
- ECFIA (Europe) www.ecfia.org

DISCLAIMER:

Although reasonable care has been taken in the preparation of the information contained herein, Nutec, extends no warranties, makes no representation and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

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*** This product is manufactured in Mexico by Nutec under patent license (US Patent Nos. 5332699, 5714421, 599247, 6180546, 7259118 and equivalent patent elsewhere).**