

MATERIAL SAFETY DATA SHEET (EUROPE)

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material/Product Name(s): Supermag* Body Soluble Bulk, Blankets, Board and Modules
Chemical family: This product contains alkaline earth silicate fiber.
General use: Application as thermal insulation, heat containment, heat shields, gaskets and expansion joints in industrial ovens, furnaces, kilns, boilers and other process equipment and in the aerospace, automotive and appliance industries, and as passive fire protection systems and firestops.

Manufacturer/Supplier: Nutec Fibratec, S.A. de C.V.
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SECTION 2. COMPOSITION

Description: Supermag in the form of bulk, blanket and blanket modules is made from high temperature insulation wool.

| Ingredient name | CAS Number | % |
|--|-------------|-----|
| Amorphous calcium - magnesium-silicate fiber | 436083-99-7 | 100 |

Typical compositions by weight % are as follows: SiO₂: 62-67% Alkaline earth content (Ca-Mg) 29-39%

SECTION 3. HAZARDS IDENTIFICATION

Irritation: Mild irritation may occur from exposure to skin, eyes and upper respiratory system. These effects are usually temporary.

Pre – existing skin and respiratory conditions might be aggravated by exposure.

SECTION 4. FIRST AID MEASURES

Eye contact: In the case of eye contamination flush with cold water. Always have an eye bath within easy reach of personnel using insulation wool products and ensure that the bath is kept clean. Never rub the eye as this may cause damage. If in doubt seek medical advice.

Skin contact: In the case of skin irritation rinse affected areas with water and wash gently. Do not rub or scratch the affected area without water or this may increase the irritation.

Inhalation: Remove victim from adverse environment to fresh air and blown nose.



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

By its nature Supermag is a non combustible product. Packaging of bulk is plastic and blanket is cardboard therefore these are combustible. Use extinguishing agents prescribed for fire fighting such combustible packaging. Wear self-contained breathing apparatus when entering smoke filled areas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal protection: In case of accidental spillage which may cause high levels of dust in a confined area provide workers with respiratory protective equipment as prescribed by your local health and safety executive. The masks should be worn until such time as the material has been removed. (Remember all dust in large quantities can endanger your health).

Method for clean up of material: Pick up large pieces of fiber then wet the area before sweeping in order to prevent the creation of airborne dust. Never use compressed air to collect fibers as the smallest particles will remain airborne. Refer to section 13 for disposal.

Environmental protection: Do not leave outside where the wool may be open to the wind and become airborne. Do not flush the wool into natural water courses or drains.

Always check local regulations which may apply.

SECTION 7. HANDLING AND STORAGE

Techniques to reduce dust emission during handling: Handling can be a source of dust emission. Technical or organizational control measures together with good house keeping practices will help to comply with exposure limits. Help with such methods is available on request.

Storage: Avoid damaging the packaging. We do not recommend the re-use of the packaging for products other than Supermag products as confusion may result. Reduce dust emission during unpacking. Emptied containers, which may contain debris, should be cleaned before disposal or recycling.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Hygiene standards and exposure limits: Hygiene standards and exposure limits will differ from country to country. You should check those applicable to your country and comply with the regulations. If not regulatory dust or other standards apply, a qualified industrial hygienist can assist with specific work place evaluation including recommendations for respiratory protection.

Examples of exposure limits in January 2003 are given bellow:

| | | |
|---------|---------------------|-------------------------------------|
| U.K. | 2 f/ml | HSE EH40 work place exposure limit. |
| France | 1 f/ml | Circulaire DRT No. 95-4 du 12/01/95 |
| Germany | 3 mg/m ³ | TRGS 900 |

The exposure limit is a time weighted average numerical concentration of airborne respirable fibers measured by the conventional membrane filter method or gravimetric concentrations of inhalable dust.

Engineering controls: You should regularly review your applications and working practices in order to identify potential sources of dust exposure. Check local regulations applying to hygiene standards and exposure limits in your country. Always try to operate well within those limits. Introduce personal dust monitoring and record the results. Use technical and/or organizational means to comply with regulations. 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.

Keep the workplace clean. Use a vacuum cleaner fitted with a HEPA filter; avoid brushing and compressed air.

Personal Protective Equipment:

Skin Protection: Wear gloves and loose fitting overalls at the neck and wrists. Clean cloths to remove excesses fibers before being taken off (use vacuum cleaning, not compressed air).

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

Respiratory Protection: For dust concentrations below the exposure limit value, RPE is not required but FFP2 respirators may be used on a voluntary basis. For short term operations where excursions are less than 10 times the limit value use FFP2 respirators. In case of higher concentration or where the concentration is not known, please seek advice for your company and/or your supplier.

Information and training of workers: It is vital that all workers are advised of the health and safety aspects of materials they are using. Doing so safeguards their health and also corrects any misconceptions they may have about materials and their dangers.

Workers should be informed about:

- The applications Supermag is used on.
- The requirements concerning smoking, eating and drinking in the workplace.
- The requirements for protective equipment and clothing.

An ongoing training program should be in place to train new and existing personnel in the practices of:

- Good housekeeping and working practices in order to reduce dust emissions.
- The correct use of protective equipment.

Environmental exposure controls: Refer to local, national or European applicable environmental permitted standards for air, water and soil.

For waste, refer to section 13.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Blue/White

Boiling point: N.A.

Flash point: N.A.

Auto inflammability: N.A.

Oxidizing properties: N.A.

Bulk density (Kg/m³): 80 - 300

Partition coefficient: N.A.

Length weighted geometric mean diameter of fiber: >2.0µm

Odour: None

Melting point: >1275 °C

Flammability: N.A.

Explosive properties: N.A.

Vapour pressure: N.A.

Solubility: Slight

SECTION 10. STABILITY AND REACTIVITY

Conditions and materials to avoid: None

Decomposition products: As with much silica bearing refractories continuous use at above 900°C may lead to the formation of several crystalline phases. If crystalline silica is present you should follow corresponding hygiene regulations and standards applicable to your country.

SECTION 11. TOXICOLOGICAL INFORMATION

Irritant properties: Under directive 67/548/EEC annex 5, method B4, fibers referred to as Supermag gave negative results. Supermag along with many other man made mineral fibers can cause temporary mild irritation. This can result in itching and in rare cases and in sensitive persons a rash. This is not a result of a chemical allergy but is caused by minor skin damage caused by the mechanical strength of the fibers.

Human data on respiratory effects: Epidemiological studies were conducted among miners exposed to components used in the production of Supermag. No respiratory diseases were found.

Inhalation toxicology data in animals for calcium magnesium wool: Supermag is manufactured using blends of minerals bearing Calcium, Silica and Magnesium. Fibers of this composition were tested and found to have a bio persistence half-time of less than ten days. Chronic inhalation in rats at high concentrations did not produce any significant adverse effects.

Other animal studies: Fibers containing in Supermag have been designed to be rapidly cleared from lung tissue. This low bio persistence has been confirmed in many studies using EU protocol ECB/TM/27 (Rev 7) and the German method specified in TRGS 905 (1999). When inhaled even at very high doses, they do not accumulate to any level capable of producing a serious adverse biological effect. In live time chronic studies there was no exposure related effect more than would be seen with any inert dust. Sub chronic 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 data available on any adverse ecological effects from this material.

SECTION 13. DISPOSAL INFORMATION

Supermag does not exhibit any characteristics of 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 land fill disposal however you should seek advice from your local health and safety executive on regulations in your area.

As with other silica bearing refractories care should be taken when disposing of materials that have been to temperatures in excess of 900 °C other dangerous materials may have formed. As such it is necessary to bag this material and dispose of in specially designed land fill sites licensed for the disposal of such waste. Laws will differ in each country and you should seek advice on disposal from your local health and safety executive.

SECTION 14. TRANSPORT INFORMATION

You should ensure that fibres are not able to be blown around during transport of new product or the disposal of used material. Not classified as dangerous goods under relevant international transport regulations (ADR, RID, IATA, IMDG).

ADR: Transport by road, Council Directive 94/55/EC.

IMDG: Regulations relating to transport by sea.

RID: Transport by rail, Council Directive 96/49/EC.

ICAO/IATA: Regulation relating to transport by air.

SECTION 15. REGULATORY INFORMATION

FIBRE DEFINITION ACCORDING TO DIRECTIVE 67/548/EEC:

Regulatory status comes from European Directive 67/548/EEC on the classification, labeling and packaging of dangerous substances and preparations as modified by Directive 97/69/EC and its implementations by member states.

According to Directive 67/548/EEC, the fiber container in this product is a mineral wool belonging to the group of man made vitreous (Silicate) Fibers with random orientation with alkali earth oxide ($\text{Na}_2\text{O} + \text{K}_2\text{O} + \text{CaO} + \text{MgO} + \text{BaO}$) content greater than 18% by weight.

Under Directive 67/548/EEC all types of man made vitreous (Silicate) Fibers are classified as irritant despite de fact that testing by the appropriate EU method (B4 in annex 5 of Directive 67/548/EEC) results in no reaction and this would not result in irritant classification.

Under criteria listed in note Q of Directive 67/548/EEC, Fibers container in Supermag are exonerated from carcinogen classification because of low pulmonary bio persistence measured by the methods specified in European Union and German Regulations (EU protocol ECB/TM/27 (Rev. 7) and German method as specified in TRGS 905 (1999)).

PROTECTION OF WORKERS:

Protection measures shall be in accordance with several European Directives as amended and their implementation by member states.

- Protection measures shall also be in accordance with Council Directive 89/391/EEC dated 12 June 1989 "on the introduction of measures to encourage improvements in the safety and health of workers at work". (OJEC (official Journal of the European Community) L 183 of 29 June 1989, page 1).
- Council Directive 98/24/EC dated 7 April 1998 "on the protection of workers from the risks related to chemical agents at work" (OJEC L 131 of 5 May 1998, page 11).

OTHER POSSIBLE REGULATIONS:

Member states are in charge of implementing European Directives into their own national regulations within a period of time normally specified in the directive.

Member states may impose more stringent requirements. Please always refer to any applicable regulations.

SECTION 16. OTHER INFORMATION

Useful references (the Directives which are cited must be considered in their amended version)

- Council Directive 89/391/EEC dated 12 June 1989 "on the introduction of measures to encourage improvements in the safety and health of workers at work". (OJEC L 183 of 29 June 1989, page 1).
- Council Directive 67/548/EEC on the " approximation of the laws, regulations and administrative provision relating to the classification, packaging and labelling of dangerous substance as modified and adapted to the technical progress" (OJEC L 196 of 16 August 1967, page 1).
- Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC (OJEC L 343 of 13 December 1997)
- Council Directive 98/24/EC dated 7 April 1998 "on the protection of workers from the risks related to chemical agents at work" (OJEC L 131 of 5 May 1998, page 11).
- TRGS 521: Faserstäube 5/2000 - Germany.

High concentrations of fibre and other dusts may be generated when after service products and mechanically disturbed during operations such as wrecking. These dusts may contain crystalline Silica. ECFIA recommends:

- Control measures are taken to reduce emissions.
- All personal directly involved wear an appropriate respirator to minimize exposure and comply with local regulatory limits.

These procedures will ensure compliance with local regulatory exposure standards for free crystalline silica. And because devitrified fibres containing silica mixed with amorphous and other crystalline phases are far less biological active than free crystalline dusts, these measures will provide a high degree of protection.

CARE PROGRAMME (Controlled and Reduced Exposure)

The European Ceramic Fibres Industrial Association (ECFIA) has undertaken an extensive industrial Hygiene programme for High Temperature insulation Wool (HTIW). The objectives at twofold:

- To monitor workplace dust concentration at both manufacturers' and costumers' premises
- To document manufacturing and use of HTIW products from an industrial hygiene perspective in order to establish appropriate recommendation to reduce exposures.

If you wish to participate in the CARE programme, contact ECFIA or your supplier.



REFERENCES:

- The European Ceramic Fibres Industry Association (ECFIA), <http://www.ecfia.eu>
- Deutscher Verband der Hersteller und Verarbeiter von Hochtemperaturwolle eV., <http://www.dkfg.de>

NOTICE:

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.

Revised by: F. Miranda
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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).