**MATERIAL SAFETY DATA SHEET**
**(EUROPEAN)**

MSDS Number: 07/2

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## SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Material/Product Name(s):** Nutec Fibratec Moldable SMG.

**Chemical family:** Inorganic. A new composition of amorphous man-made vitreous fiber, Calcium-Magnesium-Silicate wool

**General Uses:** A high-temperature insulating material. This product is used to form troughs or liners for non ferrous metal transfer, gaskets and seals around Burner blocks, protection of metallic parts from heat, pump into voids in badly damaged back up insulation, gaskets and seals for chimneys and stacks, boiler doors, seals and thermal insulation and to fill voids and cracks in refractory surface.

**Manufacturer/Supplier:**

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## SECTION 2. COMPOSITION

**Description:** Nutec Fibratec Moldable SMG is made of Alkaline Earth Silicate fibres. Once dried out, this product may generate dust.

| Material or Component | *CAS No. | % | Symbol | Phrases R |
|---|---|---|---|---|
| Amorphous calcium- magnesium-silicate Mixture | 142844-00-6 | 30-90 | N.A. | N.A. |
| Silica, Colloidal | 7631-86-9 | 10-30 | N.A. | N.A. |
| Organic Material | N.A. | 0-10 | N.A. | N.A. |
| Water | N.A. | 10-50 | N.A. | N.A. |
| Ethylene Glycol | 203-473-3 | 0-3 | Xn | R22 |

*CAS, Chemical Abstract Service Number.

## SECTION 3. HAZARDS IDENTIFICATION

**Irritation:** Mild mechanical irritation may occur from exposure to skin, eyes and upper respiratory system may result from exposure to high dust concentration of dried product. These effects are usually temporary.

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

**Chronic Respiratory Health Effects:** These products may sometimes contain minimal amount of crystalline silica. Prolonged/Repeated inhalation of respirable crystalline silica dust may cause delayed lung injury (silicosis). IARC (International Agency for Research on Cancer) states that there is "sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quarts or cristobalite from occupational sources to classify crystalline silica as carcinogenic to humans (group 1)" (Monograph 68). In making the overall evaluation the working good noted however that carcinogenicity in humans was not detected in all industrial circumstances studied.

**Chronic Respiratory Health Effects for Ethylene Glycol:** NIOSH recently described evidence that ethylene glycol has potential reductive hazards by inhalation of ethylene glycol mist.

## SECTION 4. FIRST AID MEASURES

**Eye contact:** In the case of eye contamination flush with 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

Nutec Fibratec Moldable SMG is a non combustible product. However, virgin product binder may burn and produce gases and/or fumes. Packaging and surrounding materials may be combustible. Use extinguishing agents prescribed for fire fighting such combustible packaging and surrounding materials. Wear self-contained breathing apparatus when entering smoke filled areas.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

Avoid creating airborne dust. Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. When use a vacuum cleaner fitted with high efficiency filter (HEPA). If brushing is used, ensure that the area is wetted down first.

Do not use compressed air for clean up. Do not allow being wind blown. Do no flush spillage to drain and prevent from entering natural water courses.

Refer to section 13 for disposal.

## SECTION 7. HANDLING AND STORAGE

**Handling:** Do not handle wet product with bare hand. The process or processes should be designing to limit the amount of handle. Regular good house keeping will minimize secondary dispersal.

**Storage:** store in original packaging in a dry and cold area. Always use sealed and clearly labelled container. Avoid storage below + 5°C (risk of solidification) or above +40°C. Avoid damaging the packaging. . Keep container closed when not in use. 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:** Industrial hygiene standards and occupational exposure limits vary between countries and local jurisdictions. Check which exposure levels apply to your facility and comply with local regulations. If no regulatory dust or other standards apply, a qualified industrial hygienist can assist with a specific workplace evaluation including recommendations for respiratory protection.

Examples of exposure limits for respirable dust (in January 2003) are given below:

| COUNTRY | Exposure Limit* | SOURCE |
|---|---|---|
| France | 1 f/ml | Circulaire DRT No. 95-4 du 12.01.95 |
| U.K. | 2 f/ml | HSE – EH40 |
| Germany | 3 mg/m$^3$ | TRGS 900 |

**Time weighted average concentrations of airborne respirable ceramic fibres measured over eight hours by the conventional membrane filter method or the total inhalable dust using standard Gravimetric techniques.*

The long – term exposure limit (TWA 8 hours) for ethylene glycol in Germany and U.K. is respectively 26 mg/m$^3$ and 60 mg/m$^3$.
The long – term exposure limit (TWA 15 hours) for ethylene glycol in USA and France is respectively 100 mg/m$^3$ and 125 mg/m$^3$.

### 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 fibres 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 use on a voluntary basis. For short term operations were 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 safe guards their health and also corrects any misconceptions they may have about materials and their dangers, and informed on applicable local regulations.

**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:** A wet, brownish-grayish, moldable, mixture of colloidal silica and amorphous calcium-magnesium-silicate; odorless.

| | | | |
|---|---|---|---|
| **Melting Point:** | **>**1275 °C | **Relative density (g/cm$^3$):** | 2.5 - 2.7 |
| **Water Solubility:** | Slight | **Volatile by volume:** | 0 |
| **pH:** | N.A. | **Evaporation rate:** | N.A, |

## SECTION 10. STABILITY AND REACTIVITY

**Conditions and materials to avoid:** None

**Decomposition products:** Continuous use at above 900°C for sustained periods, may lead to the formation of several crystalline phases. If crystalline silica is present you should follow corresponding hygiene regulations and standards applicable to you country.

For further information please refer to section 16.

**Fumes:** During first heating, oxidation products from the organic binder might be emitted in a temperature range from 180ºC to 600ºC. It is recommended to ventilate the room until all gases and fumes have disappeared. Avoid exposure to high concentrations of gas or fumes.

## 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 baring 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 does 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.

**Experimental studies for Ethylene Glycol:** Ethylene glycol toxicity by ingestion includes kidney effects with oxalate crystal deposition and liver damage. By inhalation exposure, lung changes and irritation of mucosal surfaces occurred in rats. A slight effect on reproduction was seen in mice administered 2000 mg/kg/day in their drinking water. During the studies with pregnant animals where high doses of ethylene glycol have been administered, foetal and maternal toxicity was observed.

## SECTION 12. ECOLOGICAL INFORMATION

These products are inert materials, which remain stable over time.
No adverse ecological effects of this material on the environment are anticipated.

## SECTION 13. DISPOSAL INFORMATION

Nutec Fibratec Moldable SMG 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.

Check for national and/or regional regulation which may apply.

## SECTION 14. TRANSPORT INFORMATION

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 the member states.

According to Directive 67/548/EEC, the fiber contained in this product is a mineral wool belonging to the group of man made vitreous (Silicate) Fibers with random orientation with alkali oxide and alkali earth oxide (Na2O + K2O + CaO + MgO + 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
- Deutschen Verbands 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.*

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