



KT Refractories US Company

Office Address: 3615 Elmridge St, Houston, TX 77025

Warehouse Address: 4583 S. Wayside Dr., Houston, TX 77087

Phone: 1877-365-2995 Fax: 713-838-2248

www.KTRefractories.com

Material Safety Data Sheet

1. IDENTIFICATION OF THE PRODUCTS AND OF THE COMPANY

IDENTIFICATION OF THE PRODUCT

Product Name: LUYANGWOOL® Aluminosilicate Fiber Products

Material Name: Ceramic fiber, Aluminosilicate Refractory Fiber, Refractory Ceramic Fiber(RCF)

General Use: High temperature insulation

Product Series: 1260°C ceramic fiber blanket

IDENTIFICATION OF THE COMPANY

KT Refractories US Company

3615 Elmridge st., Houston TX 77025

Tel : 281-935-7219 Fax: 713-838-2248

2. COMPOSITON / INFORMATION ON INGREDIENTS

TRADE NAME: LuyangWool High Index Fibers:

Chemical Indexes: $Al_2O_3 + SiO_2 > 97\%$

$Al_2O_3 > 45\%$

$Fe_2O_3 < 1.0\%$

$Na_2O + K_2O \leq 0.5$

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.

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4. FIRST AID MEASURES

EYE CONTACT:

If eyes become irritated, wash 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. Get medical attention if irritation persists.

SKIN CONTACT:

If skin becomes irritated, 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. Change into clean clothing.

INGESTION:

Relocate affected individual to an environment of clean and fresh air. Drink plenty of water seek medical help if symptoms persist.

INHALATION:

Remove affected individual to a dust free place, seek medical help if irritation persists.

Notes to physicians: Skin and respiratory effects are the result of mechanical irritation: fiber exposure does not result in allergic manifestations.

5. FIRE FIGHTING MEASURES

Non-combustible (does not burn) product.

Auto-ignition temperature: none

NFPA Unusual Hazards: none

Unusual fire and explosion hazards: none

Extinguishing Media: use proper extinguishing media for the surrounding fire.

Fire fighting protective equipment: wear full bunker gear including positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES



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Avoid creating airborne dust. Maintain routine housecleaning procedures. Vacuum only with HEPA filtered equipment, if sweeping is necessary, use a dust suppressant and keep material in closed containers. Do not use compressed air for clean-up. Workers should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could cause water pollution.

7. HANDLING AND STORAGE

CLEAN-UP

Clean up dust carefully. Use wet sweeping or high efficiency vacuum to remove dust. Do not use compressed air.

During after-service removal activities, wet exposed material frequently to minimize airborne dust. A surfactant may be added to the water to improve the wetting process. Use only enough water to wet the insulation. Do not allow water to accumulate on floors.

EMPTY CONTAINERS:

Product packaging may contain residue. Do not reuse.

8. EXPOSE CONTROLS / PERSONAL PROTECTION

Components OSHA Supplier

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Alumino--silicate fiber None established

ACGIH TLV:

Aluminosilicate fiber—none established

For Alumino--silicate fiber, refer to OSHA guidance regarding "Particulates not otherwise Regulated" (PNOR). Control airborne dust levels as follows:

Components Particle size OSHA

PNOR total dust 15mg/m³

Respirable dust 5mg/m³

ACGIH particulates not otherwise classified (PNOC)—INHALABLE

PARTICULATE: 10mg/m³. RESPIRABLE PARTICULATE: 3mg/m³

Other Occupational Exposure Levels(OEL)

RCF-related occupational exposure limits vary from country to country. Listed here are a few regulatory OEL examples: Australia--0.5f/cc; Austria—0.5f/cc;

Canada—0.5 to 1 f/cc; Denmark—1 f/cc

France—0.6 f/cc; Germany—0.5 f/cc; Netherlands—1 f/cc; United Kingdom—2 f/cc

Example is: RCFC REG 0.5 f/cc. The objectives and criteria underlying each of these OEL decisions also vary. The evaluation of occupational exposure limits and determining their relative applicability to the workplace is performed on a case-by-case, by a qualified industrial hygienist.

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to limit airborne fiber concentrations to the minimum attainable level, contact the Shandong Luyang Share Company stewardship information Line at 86-533-3281714

Eye Protection:

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In case of overhead work, wear goggles or safety glasses with side shields to prevent eye contact.

Skin Protection:

Wear gloves, head covering and full body clothing as necessary to prevent skin irritation.

Respiratory Protection:

When effective engineering and administrative controls are insufficient, the use of appropriate respiratory protection, pursuant to the requirements of OSHA 1910.134 and 29 DFR 1926.103 for the particular hazard or airborne concentrations in the work place, it is recommended. For dust concentrations below applicable exposure limit value.

9. PHYSICAL AND CHEMICAL PROPERTIES

Oxidizing properties None

Odor None

Chemical family: Aluminosilicate fibers

Chemical Indexes: $Al_2O_3 + SiO_2 > 97\%$

$Al_2O_3 > 45\%$

$Fe_2O_3 < 1.0\%$

$Na_2O + K_2O \leq 0.5$

Vapor density: not applicable

Water solubility: not applicable

PH: not applicable

Boiling Point: not applicable

Melting point: 3200°F

10. STABILITY AND REACTIVITY

Chemical stability: stable under conditions of normal use.

Incompatibility: hydrofluoric acid, and concentrated alkali.

11. TOXICOLOGICAL INFORMATION

Epidemiological studies conducted by institution of human environment protection in China has provided no evidence that there is a direct cause-and effect relationship between cumulative exposure to aluminosilicate fibers and lung cancers or particular pulmonary diseases.

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However recent toxicological experiments using physiological exposure method (inhalation) have produced findings of respiratory disease in rodents, Aluminosilicate refractory fiber has found to be a rodent carcinogen under the conditions that the rodents are exposed to high levels of the material (75—115fibers/cc)on a basis of lifetime duration.

12. ECOLOGICAL INFORMATION

No data is available on adverse effects of the material on the environment.

13. DISPOSAL CONSIDERATIONS

As produced, this material is usually accepted for disposal at most sites licensed for the disposal of industrial waste. Check applicable regulations and waste site policies prior to disposal. Waste should be placed in sealed containers for disposal.

In case of contamination, by other materials classified as hazardous waste, expert guidance should be sought.

14. TRANSPORT INFORMATION

Product should remain in sealed containers during transportation.

15. REGULATORY INFORMATION

CERCLA: the aluminosilicate fibers of this product have an average diameter of 2-4 um and are not considered CERCLA hazardous substances(CERCLA 40 CFR302)

Clean Air Act(CAA): thermal insulation fibers are composed of(RCF) with an average diameter greater than 1 micron, and therefore are not considered hazardous air pollutants.

Toxic Substances Control Act(TSCA): all substances in this product are listed, as required, on the TSCA chemical inventory.

International Regulations:

Canadian Workplace Hazardous Materials Information System(WHMIS):

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

Canadian Environmental Protection Act(CEPA):

All substances in this product are listed, as required, on the Domestic Substances List(DSL). Chemicals which are listed on the Non—Domestic Substances list:

16. OTHER INFOMATION

Removal after service: Under sustained and steady high temperature over 1800°F, this material will possibly transform to crystalline silica(cristobalite) in exposed portions. Prolonged or repeated exposure to respirable crystalline silica dust may lead to lung diseases. IARC has listed crystalline silica in Category 2A a probable carcinogen (“ crystalline silica inhaled in the form of quartz or cristobalite from occupational source is carcinogenic to humans” IARC monograph 68, June 1997 p 210—211). The permissible exposure limit(PEL) set by OSHA for respirable cristobalite is 0.05mg/m³. whenever possible follow section 8 procedures for exposure controls and personal protection.

Abbreviations:

CERCLA: comprehensive environmental response compensation and liability act of 1980

CAS: Chemical abstracts service

F/cc: fibers per cubic centimeter

HMIS: Hazardous Material information system

Mg/m³: Milligrams per cubic meter of air

NIOSH: National institute for Occupational Safety and Health

OSHA: Occupational Safety and Health Administration

PEL: permissible exposure limit

SARA: super amendments and reauthorization act

TSCA: toxic Substances Controls Act