unistara
HIGH QUALITY REFRACTORIES

UNIBOND A 25

SCHEDA TECNICA - DATA SHEET

Revisione n° 05 del 27/10/2010 - Redatta da AB

Cemento refrattario alluminoso
Aluminous refractory mortar

Caratteristiche fisiche – *Physical properties*		
Costituente base ***Main component***	Quarzite *Quartz*	
Classificazione PRE e gruppo ***PRE class and Group***	Classe B, Gruppo 130 *Class B, Group 130*	
Temperatura limite di impiego ***Max service temperature***	1350	°C
Imballo ***Packing***	Fusti in plastica da 25 kg *Plastic box 25 kg*	
Natura del legante ***Type of bond***	Chimica, presa all'aria *Chemical air-setting*	
Aspetto fisico ***Appearance***	Umido, pronto all'uso *Wet, ready to use*	
Periodo di utilizzo ***Period of validity for use***	Entro 6 mesi dalla data di produzione in confezione integra *Within 6 months since the production in not-damage packaging*	
Test Vicat (Ti 10 – Ts 25) ***Vicat Test (Ti 10 – Ts 25)***	15	mm
Granulometria max ***Grain size max***	0.25	mm
Modo d'impiego ***Installation method***	Cazzuolabile *Trowelling*	

Analisi chimica – *Chemical analysis*		
$Al_2O_3 + TiO_2$	16	%
SiO_2	73	%
Fe_2O_3	0.54	%
$Na_2O + K_2O$	4	%

I valori dichiarati rappresentano la media della produzione corrente e non possono essere usati come limiti garantiti. Data are current averages and cannot be used as limits for specifications.

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HIGH QUALITY REFRACTORIES

ISO 450 – ISO 550

SCHEDA TECNICA - DATA SHEET

Revisione n° 07 del 31/05/2011 - Redatta da AB

Mattone isolante
Insulating fire brick

Proprietà fisiche – *Physical properties*	ISO 450	ISO 550	
Densità *Density*	425	500	kg/m^3
Temperatura limite di impiego *Max service temperature*	900	900	°C
Resistenza alla compressione a freddo *Cold crushing strength*	13	25	kg/cm^2
Resistenza alla compressione a caldo a 800 °C *Hot crushing strength at 800 °C*	18	34	kg/cm^2
Porosità *Total porosity*	82	81	%
Ritiro lineare permanente (12h/850 °C) *Linear reheat shrinkage (12h/850 °C)*	1	1	%
Conducibilità termica *Thermal conductivity*			
200 °C	0.10	0.12	W/mK
400 °C	0.12	0.14	
600 °C	0.14	0.16	
Modulo di rottura a freddo *Cold module of ropture*	7	16	kg/cm^2
Modulo di rottura a caldo a 800 °C *Module of ropture at 800 °C*	9	17	kg/cm^2

Analisi chimica – *Chemical analysis*		
Al_2O_3	14.9	%
SiO_2	66.1	%
TiO_2	0.5	%
Fe_2O_3	4.0	%
CaO	5.9	%
MgO	1.3	%
K_2O	5.1	%
Na_2O	1.7	%

I valori dichiarati rappresentano la media della produzione corrente e non possono essere usati come limiti garantiti. Data are current averages and cannot be used as limits for specifications.

SCHEDA DI SICUREZZA
MATERIAL SAFETY DATA SHEET

SGQ P02 Mod.05

In Accordance with the Directive 2001/58/CE

1. Identification of product and supplier:

INSULATING FIRE BRICKS

Supplier — **Unistara S.p.A.**
Piazza Rossetti 3b/1
16129 - Genova (ITALY)

Contacts — **Technical division Unistara**
Tel.: +39 010 57699 - Fax: +39 010 591949
tech@unistara.com

2. Information of product composition

Identification of product: Insulating fire bricks

Information on ingredients: The product is a mixture of the components: Al_2O_3 + SiO_2 + TiO_2 + Na_2O + Fe_2O_3 + CaO + others in low percentages that give the following composition after being cooked at 1100°C and higher:

Chemical name	CAS number	%
Aluminum silicate - Al_2SiO_5	-	30 - 70
Crystalline Silica (quarts)	14808-60-7	20 - 30
Crystalline Silica (cristobalite)	14464-46-1	0 - 30

3. Hazard identification

Under normal supplying conditions the product is not dangerous. Eventual hazards are linked to the formation of dust produced during the manufacturing of the product (cutting, grinding, breaking, cleaning of dust filters) or in course of demolishing pre-existing linings.
Primary routes of entry: via inhalation of dust into lungs and respiratory tract and via dust and particles to the eyes
Primary target organs: lungs, respiratory tract and eyes

Potential health effects:
Inhalation: long term overexposure to inhaled crystalline silica dust may cause permanent and irreversible lung damage including silicosis.
Skin contact: possible dryness or irritation resulting from long term exposures to product dust
Eye contact: a mechanical irritant which can cause moderate to severe eye irritation
Ingestion: Non-hazardous when ingested. Potentially a mild irritant to the GI tract if excessive quantity is ingested
Medical conditions aggravated by exposure: pre-existing chronic upper respiratory and lung diseases such as, but not limited to, bronchitis, emphysema and asthma

Carcinogenicity: This product contains crystalline silica which is considered a hazard by inhalation. The International Agency for Research on Cancer (IARC) has classified occupational exposures to inhaled crystalline silica as being carcinogenic to humans (Class 1). This classification is based on what IARC considered sufficient evidence from epidemiological studies of humans for the carcinogenicity of inhaled silica in the forms of quartz and cristobalite. Crystalline silica is also known to cause Silicosis, a non-cancerous lung disease

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HIGH QUALITY REFRACTORIES

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www.unistara.com

4. First aid measures

Exposure ways	Immediate measures to adopt
Inhalation:	Exposure to fresh air. Drink water to clear throat and blow nose.
Skin contact:	Good personal hygiene practices. Wash with mild soap and warm water after each exposure.
Eye contact:	Flush with large amounts of water until irritation subsides, at least 15 minutes.
Ingestion:	Emergency procedures not normally required. May be a temporary irritant to the GI system.
Other information:	See a physician every time symptoms persist.

5. Fire fighting measures

Extinguishing method: This is a refractory product: not combustible or explosive as supplied. Compatible with all standard extinguishing methods

Use fire prevention equipment appropriate for the type of surrounding combustible materials and packing materials

6. Accidental release measures

Personal precautions: if dusty conditions exist, wear a face mask approved for the use with dust

Environmental precautions: none normally required, avoid dispersion of dust

Clean-up procedures: pick up or shovel material into waste containers to reduce the formation of dust. Wet the area if necessary to control dust. Vacuum the dust with equipment fitted with HEPA filters

7. Handling and storage

Handling: handling of the product is not dangerous.
Manufacturing the product may cause the production of dust.
Storage: store in dry area. Always separate the materials according to their hazard class. Avoid contact with aggressive chemical agents (ex. Acids)

8. Exposure controls and personal protection

Chemical name	CAS number	TLV	PEL
Crystalline Silica (quarts)	14808-60-7	0.05 mg/m3	0.1 mg/m3
Crystalline Silica (cristobalite)	14464-46-1	0.05 mg/m3	0.05 mg/m3

TLV= ACGIH, 8 hr time weighted average (TWA)
PEL= OSHA permissible exposure limit

TLV and PEL limits are for total inhalation dust

Respiratory protection: wear a face mask (according to UNI EN 149 2001) to protect against dust present in the work area

Eye protection: wear safety glasses with side shields, goggles or face shields when cutting, milling or abrading to protect eyes against dust and particles

Skin protection: under normal conditions wearing protective gloves and clean body-covering clothing should be adequate

Other: maintain sufficient mechanical or natural ventilation to assure dust concentrations remain below PEL/TLV. Use local exhaust if necessary. Power equipment should be equipped with properly designed dust collection devices

9. Physical and chemical properties

Physical state:	solid
Aspect:	shape
Color:	white / grey
Odour:	none
Melting point:	≥1200°C (for further information see the specific Data Sheet)
Boiling point:	N.A.
Vapour density:	N.A.
Solubility:	N.A.
pH:	
Flammability:	none

Self-combustion:	none
Explosive properties:	none
Density:	≥ 500 Kg/m3 (for further information see the specific Data Sheet)

10. Stability e reactivity

Products to avoid:	strong acids and bases.
Chemical stability:	stable under normal conditions.
Decomposition products:	none

11. Toxicological information

Toxicological hazards: no toxicological studies of these products have been performed. The product may contain cristobalite. See section 3.

Reproductive effects: none known

12. Ecological information

Most ingredients in this product are natural minerals. Unless contaminated in service, this product is non-hazardous to the environment

13. Disposal consideration

The non contaminated product must be disposed of at special solid waste sites.

If the product has been used, the user must evaluate the possibility that the materials were not modified following eventual impregnations caused by the use and therefore must follow the procedure of disposal specifically for new situations not foreseen by the supplier.

Note: Please consult local regulations and statuary European Union provisions

14. Transport information

Labeling not required

15. Regulatory information

According to European Directive 67/549/CEE e 88/379/CEE, labeling is not required on pallets.

For the evaluation of risks in the work place, see local regulations

16. Other information

The information and recommendations indicated above are the best available at the date of publication of this Material Safety Data Sheet. This refers to the indicated product only and cannot be considered as applicable if said product is mixed with other products or contaminated by extraneous substances during use. This data sheet does not guarantee the implicit or explicit chemical / physical characteristics of the product described above.

The user is however obliged to verify the suitability and completeness of said information on the basis of the specific use of the product.

This Material Safety Data Sheet refers to the products:

AT 08 ST, BNZ 23, BNZ 23 C, BNZ 23 L, BNZ 25, BNZ 26, BNZ 26-60, BNZ 28, BNZ 30, BNZ 32, Calor 26, Calor 26-60, Calor 26B, Calor A, Calor B, Calor CA, IG 26, IG 26-60, ISO 450, ISO 550, ISOLA, IZOKER O5/2, PS 8, RI 23, RI 23B, RI 28, RL 11-7, RL 23, RL 26, RL 33, RL 34, RL 34 HP, SL 9, SL 10 S, TDM 23, TDM 23 L, TDM 25 HS, TDM 26, TDM 28, TDM 30,UNI 23, UNI 26, UNI 24-06, UNI 26-08

UNICERAMICA

I prodotti UNICERAMICA sono realizzati con fili cardati costituiti da Fibra Ceramica.
Per garantire una buona resistenza meccanica anche alle alte temperature, i fili di Ceramica sono rinforzati con fili in INCONEL o in VETRO.
I manufatti sono totalmente esenti da fibre di amianto.

The base material of UNICERAMICA Products consists of Ceramic Fiber.
In order to ensure that the strength is manteined at high temperature, UNICERAMICA thread are reinforced either with Inconel or glass.
Products do not contain any Asbestos Fiber.

Impieghi tipici - *Typical use*

Guarnizioni per caldaie, forni industriali, forni per ceramica e laterizio, industria siderurgica.

High temperature gaskets for boilers, industrial furnaces, kilns for ceramics and bricks, iron metallurgy industry.

Caratteristiche fisiche - *Physical properties*

Temperatura massima di esercizio	1100 (INCONEL)	°C
	700 (VETRO)	°C
	1260	°C
Max working temperature	*1100 (INCONEL)*	*°C*
	700 (GLASS)	*°C*
	1260	*°C*
Temperatura di Fusione	1760	°C
Melting temperature	*1760*	*°C*
Diametro medio delle fibre	3	micron
Fibers diameter	*3*	*micron*
Colore	bianco	
Color	*white*	

Analisi chimica - *Chemical analysis*

SiO_2	52	%
Al_2O_3	47	%
TiO_2	1	%

Altro - *Others*

- Notevole resistenza alle alte temperature
  Very good resistance at high temperature
- Eccellente stabilità chimica
  Very good chemical stability
- Ottima flessibilità
  Excellent flexibility
- Buona resistenza meccanica
  Good mechanical resistance
- Ottimo isolamento termico ed acustico
  Excellent thermal and acoustic insulation

I valori dichiarati rappresentano la media della produzione corrente e non possono essere usati come limiti garantiti. *The data are current production averages. They cannot be used as limits for a specification.*

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High Quality Refractories

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Revisione 02
del 22/04/05
Gianna Berti

SCHEDA TECNICA
DATA SHEET

According to Directive 2001/58/CE

1. Identification of the product and of the company:

TRADUZIONE MSDS UNICERAMICA

Supplier **Unistara S.p.A.**
Piazza Rossetti 3b/1
16129 – Genova (ITALY)
Contacts: **Technical Department Unistara**
Tel.: +39 010 57699 – Fax: +39 010 591949
tech@unistara.com

2. Composition / Information on product components

The product is available in various forms: bulks, blankets, rigid slabs, special shapes, moisture felts, papers and felts, ropes, cloths.

Common product description: ceramic refractory fibres for use at high temperatures.
Information on components:

CHEMICAL COMPOSITION	%
SiO_2	48 – 60
Al_2O_3	25 – 52
ZrO_2	Max 15

NUMBER CAS	142 844-00-6
SYMBOL	T
RISK PHRASES	R 49; R 38

3. Hazard Identification

Light irritation to the skin, eyes and upper respiratory system may result from exposure.
Health hazards: The product belongs to a group of fibres classified under Directive 97/69/CE as category 2 cancinogen ("substances which should be regarded as if they were carcinogenic to men"). Tests on animals demonstrate that excessive exposure can cause fibrosis and lung cancer, but this has not been confirmed on humans.

4. First Aid Measures

Exposure to	Immediate measures to adopt
Contact with skin:	In case of irritation, rinse with water the affected area and wash gently.
Contact with eyes:	Wash eyes with abundant water until the irritation diminishes. Have an eye bath available.
Other information:	Consult a doctor each time the symptoms persist.

5. Fire fighting measures

Extinguishing Measures: This product is not combustible or explosive when supplied. Compatible with all standard methods of extinguishing. Use fire prevention equipment appropriate for the type of surrounding combustible materials and packing materials. Wear self-contained breathing apparatus when entering oxygen deficient areas.

6. Measures Against accidental release of product

Individual precautions: See point 8.
Methods of product removal : Follow a procedure that avoids the formation and /or spreading of inhaled dust (for example damping the materials). Remove the large pieces first and use a vacuum cleaner with an optimal filter. When cleaning with a broom, make sure that the area is wetted

down first. Do not use compressed air for clean up. For waste disposal refer to point 13.

Environmental precautions: Shelter from the wind. In case of spillage do not dispose in drains and prevent from entering the natural water courses. Verify the local normative in force.

7. Handling and Storage

7.1 *Handling*: Handling can cause the release of dust. A process should be designed to limit the amount of handling. Using specially treated or packaged products will minimize dust release. Some preliminary regulated operations allow minimizing secondary dust dispersal. See point 6.

7.2 *Storage:* Use sealed and visibly labelled containers. Avoid damaging the containers (reduce the release of dust during packing out). Emptied containers that may contain debris must be cleaned.

8. Exposure control / Personal protection

Reduce dust exposure: Define the work area and restrict access only to authorized and trained workers. Keep the workplace clean. Use a vacuum cleaner fitted with a HEPA filter; avoid using brooms and compressed air.

Protection of the respiratory system: The ACGIH (American Conference of Governmental Industrial Hygienists) has established a maximum limit value of inhalation for the fibres (Threshold limit Values) TLV = 10 mg/m^3. For dust concentration below the exposure value, respiratory protective equipment is not required but respiratory FFP2 may be used on a voluntary basis. For short term operations where excursions above the exposure limit value are less than a factor of ten, use FFP3 respirators. In case of high concentrations, consult the supplier.

Eye and Skin Protection: Wear safety glasses and overalls which are loose fitting at the neck and wrists. Wash work clothing separately. After handling, rinse the exposed skin with water. Wear safety glasses with side shields in case of over head working.

9. Physical and Chemical Properties

Physical state	Solid
Aspect	Fibre
Color	White
Odor	None
Oxidizing properties	None
Melting Point	Min 1650 °C
Flammability	None
Explosive properties	None
Length weighted geometric mean diameter	min 1.5 µm

10. Stability and reactivity

Chemical stability: stabile when supplied

Decomposition products : continuous use of the product at a temperature of approximately 900° C, may lead to the formation of several crystalline phases. If crystalline silica is present, follow the hygiene standards and national regulations. Be informed on the decomposition of other components.

11. Toxicological information

Irritant properties: When tested using approved methods directive 67/548/CE, Annex 5, Method B4, this material gives negative results. All man-made mineral fibers, like some natural fibers, can produce a mild irritation to the skin resulting in itching or reddening. Other reactions to the skin are not due to allergies or chemical irritants, but are caused by mechanical irritants.

Studies on health effects

Human respiratory: No known diseases associated with exposure to refractory ceramics even though these fibres have been under observation for approximately 40 years. Pulmonary morbidity studies were carried out amongst workers in Europe and the United States. The American studies demonstrated pleural plaques were reported in 2.9% of workers examined. Plaques do not cause any symptoms and do not develop into disease.

12. Ecological Information

Inert materials that remains stabile over time.

13. Disposable Considerations

Waste from these materials is not classified as hazardous waste and may generally be disposed of at normal tipping sites which have been licensed for the disposal of industrial waste. Unless wetted,

the dusty waste should be properly sealed in labeled containers for disposal.

If the product has been used, the user must evaluate the possibility that the materials were not modified following eventual impregnations caused by the use and therefore must follow the procedure of disposal specifically for new situations not foreseen by the supplier.

In Italy the principle tool of regulation for waste is D.L. vo n° 22 dated the 5th of February 1997 (decree Ronchi) and the revision acknowledges three norms of the European Community:

- DIR. 91/156/CEE concerning waste
- DIR. 91/689/CEE concerning hazardous waste
- DIR. 94/62/CEE concerning packaging and waste of packaging.

Consult the local regulations (regional, provincial,) for disposal.

14. Transport Information

Ensure that dust is not wind blown during transportation. Labelling must be done according to the classification. See point 15.

15. Regulatory Information

Fibre Classification and marking: Directive 97/69/CE:

Carc. Cat. 2

T

R 49 – Inhalation may cause cancer

Xi

R 38 – Skin irritation

S 53 – Avoid exposure obtain special instructions before use

S 45 – In case of an incident or ailment immediately consult a doctor (if possible demonstrate the label)

Protection of workers: Council Directive 90/394/EEC "on the protection of workers from risks related to exposure to cancinogens at work.

16. Other Information

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The user is however obliged to verify the suitability and completeness of said information on the basis of the specific use if the product is in question.

SCHEDA DI SICUREZZA
MATERIAL SAFETY DATA SHEET

According to Directive 2001/58/CE

1. Identification of the product and of the company:

A 55 K - A 60 K - A 60 S - CL 2 - ST 60 - ST SG 60 S - ST U 62 - UNI 62 M - UNI MCL 60 B

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Tel.: +39 010 57699 - Fax: +39 010 591949
tech@unistara.com

2. Composition / Information on ingredient

Product: andalusite and andalusite-bauxite based shaped brick

Components:

Components	N° CAS	Risk Phrases
Aluminosilicates	-	-
Aluminium Oxides	1344-28-1	-

3. Hazards identification

The product is not dangerous as supplied.

It is a fired brick.

The dust produced during cutting, grinding, breaking etc. will contain a mixture of aluminosilicates.

Overexposure to this kind of dust may irritate eyes and upper respiratory systems.

Crystalline silica may be found frequently in refractory linings, pay special attention during their dismantling.

4. First aid measures

Exposure ways	Symptoms	Immediate measures to adopt
Inhalation:	cough, irritation or sore throat or nose	Go outside in fresh air, rinse your mouth with water and blow your nose for removal of inhaled dust. Seek medical advice if necessary.
Skin contact:	Temporary irritation	Wash the skin with mild soap and clean water
Eyes contact:	temporary irritation or inflammation	Wash you eyes with plenty of water. Seek medical advice if necessary
Ingestion:	Unknown	Drink plenty of water. Seek medical advice.
Other information:		Consult a physician every time the symptoms persist.

5. Fire fighting measures

This product is not combustible or explosive as supplied.

Compatible with all standard methods of extinguishing.

Use fire prevention equipment appropriate for the type of surrounding combustible materials and packing materials.

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Revisione 10
del 05/04/06
anna berti

6. Accidental release measures

Personal precautions:	see section 8
Environmental precautions:	unknown risks for the environment. No special precautions required. Always prevent from entering the natural water courses.
Product removal methods:	remove the materials with shovels, mechanical equipment and/or aspirators.

7. Handling and storage

Handling:	a small amount of dust is possible during handling
Storage:	the product is stable. Store in dry and ventilated areas not to damage the packaging.

8. Exposure controls/ personal protection

Substance	Reference	Limit Value
Aluminosilicates	ACGIH - TWA	10 mg/m^3
Aluminium Oxides	ACGIH - TWA	10 mg/m^3

Protection of the respiratory system:	protective respiratory equipment is required for dust created by cutting, breaking or handling.
Hand protection:	Non slippery and anti-cut gloves
Eye protection:	safety glasses with side shields are required if dust or splinters are formed by cutting, breaking or handling.
Skin protection:	overalls (in case of working/removal)
Other:	accident prevention footwear during handling

9. Physical and chemical properties

Physical state:	Solid
Aspect	Shape
Color	Yellow / beige
Odor	None
Density	2400 kg/m^3
Melting point	> 1800 °C
Boiling point	N.A.
Vapor density	N.A.
Solubility	N.A.
pH:	
Flammability	None
Self-combustion	None
Explosive properties	None

10. Stability and reactivity

Materials to avoid	Unknown
Chemical Stability	stabile when supplied and at high temperature
Decomposition products	none

11. Toxicological information

General:

No hazardous health effects deriving from the product as supplied are known.

The greatest hazard is the possibility of accidental and prolonged exposure to high concentrations of dust during cutting, grinding and demolition.

12. Ecological information

Inert material as supplied.

13. Disposal consideration

The unused product may be disposed of at special solid waste sites. It can be recycled.

If the product has been used, the user must evaluate the possibility that the materials were not modified following eventual impregnations caused by the use and therefore must follow the procedure of disposal specifically for new situations not foreseen by the supplier.

Please consult local regulations and statuary European Union provisions.

14. Transport information

Labelling not required.

15. Regulatory information

TLV information: see current local regulation

European Directives 93/112/CE, 88/379/CE, 91/155/CE

PRE regulations concerning health, safety and environment for the users of refractory products PRE/R50 95.

16. Other Information

The information and recommendations indicated above are the best available at the date of publication of this Material Safety Data Sheet. This refers to the indicated product only and cannot be considered as applicable if said product is mixed with other products or contaminated by extraneous substances during use. This data sheet does not guarantee the implicit or explicit chemical / physical characteristics of the product described above.

The user is however obliged to verify the suitability and completeness of said information on the basis of the specific use of the product.

SCHEDA TECNICA
DATA SHEET

SGQ P02 Mod.05

ST 60

Formato denso a base di Mullite. *Dense shaped based on Mullite*

Caratteristiche fisiche - *Physical properties*

Peso volume *Bulk density*	2.2 - 2.3	Kg/dm^3
Porosità apparente *Apparent porosity*	< 21	%
Resistenza alla compressione a freddo *C.C.S.*	350 - 400	Kg/cm^2
Refrattarietà *Refractoriness*	35 - 36	CS
Variazione lineare temporanea a 1350°C *Temporary espansion at 1350°C*	0.6	%

Analisi chimica - *Chemical analysis*

$Al_2O_3 + TiO_2$	59 - 61	%
Fe_2O_3	0.8 - 1.1	%
SiO_2	35 - 36	%

I valori dichiarati rappresentano la media della produzione corrente e non possono essere usati come limiti garantiti. *The data are current production averages. They cannot be used as limits for a specification.*

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Ghersi Davide