

**ZIRCAR Refractory Sheet Type RSLE-56 Moldable** is a high silica fiber reinforced ceramic composite material that is easily cut and formed into a wide variety of shapes. When dried, RSLE-56 Moldable becomes a hard-rigid structure. Further heat treatment or exposure to process temperatures significantly increases the physical strength of this material.

**Type RSLE-56 exhibits a very low thermal coefficient of expansion ( $0.5 \times 10^{-6} \text{ }^{\circ}\text{C}$ )** which provides remarkable resistance to the thermal shock up to **1200°C (2192°F)** in an oxidizing atmosphere and permits its use with rapid variation in temperature in that zone. Beyond 1200°C (2192°F) it begins to transform into a crystalline structure. RSLE-57 maintains its properties up to 1650°C (3002°F) providing that there is no significant fall in temperature. At these elevated temperatures, this material will exhibit surface glazing, but will retain its strength and integrity.

Engineered and produced with low thermal expansion raw materials, Type RSLE-56 exhibits greater thermal shock resistance than alumina matrix composites. Its binder is locked in place and will not separate from its supporting fiber reinforcement resulting in a homogeneous structure throughout the material. Type RSLE-56 is 100% inorganic, and once dried, undergoes little or no outgassing.

Types RSLE-56 exhibits exceptional non-wetting properties when used in contact with molten non-ferrous alloys making it useful in numerous molten metal contact applications. RSLE-56 is 100% organic free and contains no refractory ceramic fiber. It is readily machined to precision tolerances with conventional tooling.



### SUGGESTED APPLICATIONS

- Induction Coil Liners
- Glass Furnace Repairs
- Hot Flue Linings
- Hot Press Insulation
- Hot Face Insulation Where Gas Velocity is of Concern
- Casting Table and Trough Liners

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**Technical Data**  
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# SILICA MOLDABLE BLANKETS

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**ZIRCAR Silica Moldable Type RS-SI Moldable** is a wet blanket that is a combination of high purity amorphous silica fibers and inorganic silica binder. The fibers are 6-9 um in diameter and are considered non-respirable. Upon drying, Type RS-SI Moldable becomes a rigid structure with useful properties to temperatures of **1100 °C (2012°F)**.

Type RS-SI Moldable exhibits good wet handleability. It is easily cut with scissors or a knife and can be applied directly to equipment with complex contours. It can also be used to fabricate flat sheets or boards. Drying can be accomplished in an oven, with a hot air gun or torch, or by exposure to heat in the application. Drying results in a strong, rigid, low density shape that can be re-wet to restore the original moldability. Baking irreversibly removes the moldability, leaving Refractory Sheet Type RS-SI Moldable unaffected by moisture.

Type RS-SI Moldable exhibits excellent resistance to attack by most chemicals except for caustics. It will tolerate all acids except hydrofluoric acid. It is not wet by molten aluminum. **RS-SI Moldable is 100% organic free and contains no refractory ceramic fiber.** It is readily machined to precision tolerances with conventional tooling.



## SUGGESTED APPLICATIONS

- Trough and launder liners
- Furnace repair
- Transport of molten non-ferrous metals
- Furnace door linings and seals
- Expansion joint seals
- Glass furnace crown insulation
- Insulation wrap for high temperature piping
- High temperature gasketing
- High temperature kiln and furnace insulation
- Self-supporting mold wrap
- Fabrication into rigid fiber boards and cylinders
- Useful where RCF's are not desired



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## PHYSICAL PROPERTIES AND CHARACTERISTICS

TYPE	RSLE-56	RS-SI
Nominal Composition, wt%		
SiO <sub>2</sub>	99	99
Al <sub>2</sub> O <sub>3</sub>	<1	<1
Other Metal Oxides	<1	<1
Organic content	0	0
Thermal Expansion, RT-800°C(1472°F)	0.5 x10 <sup>-6</sup> /°C	
Density, gm/cc(pcf)	1.36(84)	0.64(40)
Porosity, %	36	-
Color	White	White
Flammability	Nil	Nil
Hardness, Durometer "D" Dry, at room temp.	80	
Charpy Impact Strength, ft-lb		
Compressive Strength**, MPa (psi), 2% consolidation as received	9(1260)	-
at 10% compression	-	28(4000)
Modulus of Rupture**, MPa(psi) as received (dry)	8(1100)	5.5(801)
8 hrs. at 370°C(698°F)	11(2300)	
8 hrs. at 1000°C(1832°F)	18(3800)	
Linear Shrinkage‡, % after 24 hrs. at 800°C(1472°F)	2	2
after 24 hrs. at 1000°C(1832°F)	1	-
after 24 hrs. at 1200°C(2200°F)	-	7
Drying Shrinkage, % Length / Width	2 / 3	0
Thickness	3	0
Thermal Conductivity, W/m°K(BTU/hr. ft <sup>2</sup> °F/in)		
200°C(392°F)	0.54(3.8)	-
400°C(752°F)	0.64(4.4)	-
500°C(932°F)	-	0.20(1.4)
600°C(1112°F)	0.61(4.2)	-
800°C(1472°F)	0.67(4.6)	-
1000°C(1832°F)	0.75(5.2)	-

\* Max. use temperature is dependent on variables such as stresses, both thermal and mechanical, and the chemical environment that the material experiences.

\*\* Properties expressed parallel to thickness.

‡ Properties expressed perpendicular to thickness.

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**Refractory Sheet Type RSLE-56 Moldable** is a wet blanket shipped rolled up on a plastic tube, separated and wrapped in plastic. Type RSLE-56 Moldable can be shaped and molded prior to drying and firing, permitting the fabrication of complex shapes as well as flat sheets.

**To make a flat board:** Open plastic covering and unroll the desired amount of RSLE-56 Moldable. Cut to size with a knife. Dry on a rigid glass, wood or metal plate separated by a layer of plastic, cloth or paper. Dry at 140°F until dry. A 1/2" thick sheet of RSLE-56 Moldable will dry completely in 16 to 24 hours. Prevent warping by either restraining or flipping over to allow drying from both sides. RSLE-56 Moldable can be dried at much higher temperatures without adverse impact upon the product.

**To make a cylinder:** Select a smooth mandrel of the desired size and shape. Wrap mandrel with plastic sheet. Cut enough RSLE-56 Moldable off roll to make the desired shape. Cut a bevel on the leading edge of the RSLE-56 Moldable with a knife. Wrap the RSLE-56 Moldable around the mandrel to achieve the desired wall thickness. Work joints together with a tool such as a knife, spatula or screwdriver to achieve as much fiber to fiber interlocking as possible. Wrap wet cylinder with porous cloth to hold the moldable in place while drying. Dry at 140°F until dry.

**To make complex shapes:** Make a mold, (plaster will work), with sufficient draft to allow the removal of the formed RSLE-56 Moldable. Form the sheet into or onto the mold, or form by hand by working the material to achieve both complete contact with the mold and the desired surface texture. Dry at 140°F until dry. Large complex shapes can be made by joining sheets of RSLE-56 Moldable together achieving as much fiber to fiber interlocking as possible. RSLE-56 Moldable adheres to itself well during drying.

**Other Information:** Once dried, RSLE-56 Moldable becomes permanently rigid. Reseal packaging around unused material. Do not allow RSLE-56 Moldable to freeze. Freezing will cause the silica matrix to separate from its fiber reinforcement. RSLE-56 Moldable exhibits a shelf life of approximately 120 days. After 120 days RSLE-56 Moldable will become stiff and will break upon flexing. Firing RSLE-56 Moldable will increase its physical strength. Dried and fired RSLE-56 Moldable can be sanded, drilled and cut with conventional tools.

## AVAILABILITY

Item #	Description	Item #	Description
HS50	RS-SI, 24" X 36" X 1/8"	HS30	RSLE-56 MOLDABLE SHEET, 24" X 36" X 1/8"
HS51	RS-SI, 24" X 36" X 1/4"	HS31	RSLE-56 MOLDABLE SHEET, 24" X 36" X 1/4"
HS52	RS-SI, 24" X 36" X 1/2"	HS32	RSLE-56 MOLDABLE SHEET, 24" X 36" X 1/2"
HS53	RS-SI, 24" X 36" X 3/4"	HS33	RSLE-56 MOLDABLE SHEET, 24" X 36" X 3/4"
HS54	RS-SI, 24" X 36" X 1"	HS34	RSLE-56 MOLDABLE SHEET, 24" X 36" X 1"

Note: These products can be further processed to provide finished sizes. Processes such as slitting, cutting, die punching and CNC machining are available upon request. Larger sizes are available.

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