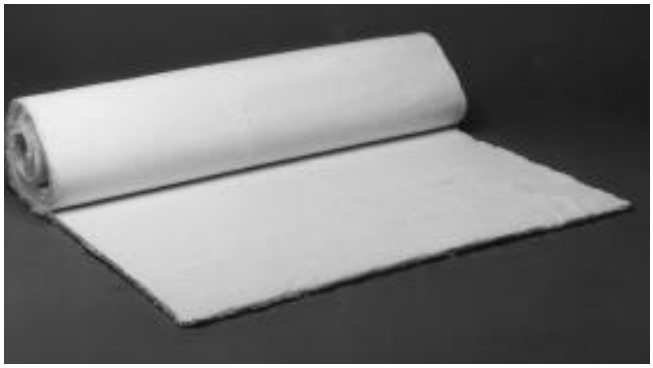
MOLDABLE BLANKETS

Types RS-A, RS-B, RS-C, RS-CH and SI MOLDABLE

ZIRCAR's Refractory Sheet Type RS-A Moldable is a tough ceramic fiber reinforced insulation which contains no asbestos. Developed for induction coil liners and molten metal transport, Refractory Sheet Type RS-A Moldable is ideally suited for a wide range of high temperature, high thermal shock applications. It is also used for brazing separators and fixtures for jewelry making, as well as a high temperature gasket material. Its high Alumina (Al_2O_3) content makes it resistant to sticking in many environments, including molten metals, and it has a maximum operating temperature of **1450°C (2642°F).**

Refractory Sheet Type RS-A Moldable is a wet blanket that can be easily formed into a wide variety of simple and complex shapes. Drying results in a strong rigid shape that can be re-wet to restore the original moldability. Baking irreversibly removes the moldability, leaving Refractory Sheet Type RS-A Moldable rigid and unaffected by moisture. Refractory Sheet Type RS-A Moldable can be frozen and thawed repeatedly with no loss in moldability or other properties.

Refractory Sheet Type RS-A Moldable can be dried rapidly, either with a torch or by applying directly to a hot furnace, to make quick repairs of cracks, or to replace missing refractories.



Standard roll of Refractory Sheet Type RS-A Moldable.

SUGGESTED APPLICATIONS

- Induction furnace components such as channel melter components, coil liners, coreless induction components, splash and coil shields
- Brazing separators and fixtures for jewelry making as well as other industrial applications
- High temperature gasketing material
- Non-ferrous metal handling and transport as spouts, troughs, and casting tips

FORMING INSTRUCTIONS FOR RS-A MOLDABLE

To Make a Flat Board:

1. Open plastic covering and unroll the desired amount of Refractory Sheet Type RS-A Moldable.
2. Cut to size with a knife.
3. Dry on a rigid glass, wood or metal plate separated by a piece of plastic, cloth or paper.
4. Prevent warping by either restraining or flipping over to allow drying from both sides.

To Make a Cylinder:

1. Select a smooth mandrel of the desired size and shape.
2. Wrap mandrel with a plastic sheet.
3. Cut enough Refractory Sheet Type RS-A Moldable off roll to make desired shape.
4. Cut a bevel on the leading edge of the Refractory Sheet Type RS-A Moldable with a knife.
5. Wrap Refractory Sheet Type RS-A Moldable around mandrel.
6. Work joints together with a tool, such as a screw driver or knife to achieve as much fiber to fiber interlocking as possible.

To Make Complex Shapes:

1. Make a plaster mold with sufficient draft to allow for the removal of the formed part.
2. Form Refractory Sheet Type RS-A Moldable onto or into mold by hand.
3. Dry until firm, then remove from mold and complete drying.
4. Large complex shapes can be made on any sort of removable form by joining sheets together with a screwdriver or knife to achieve as much fiber to fiber interlocking as possible.

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MOLDABLE BLANKETS

Types RS-A, RS-B, RS-C, RS-CH and SI MOLDABLE

ZIRCAR Alumina-Silica Moldable Blankets Types RS-B Moldable and RS-C Moldable are composed of long, high strength ceramic fibers, with an inorganic alumina binder/rigidizing agent. They are wet blankets that are shipped rolled up and sealed in a plastic bag to preserve their moldability.

When dried, these moldable blankets form a strong, rigid, low density insulation. **Type RS-B Moldable** is ideal for applications up to **900°C (1652°F). Type RS-C Moldable** is ideal for applications to **1260°C (2300°F) and Type RS-CH** for applications to **1450°C (2642°F).** They are 100% inorganic, non-combustible and will not smoke upon initial heat up. They are ideal for insulation of complex shapes and can be cut to any size with a knife, scissors, or steel rule die.

These moldable blankets possess excellent strength for ease of installation. A unique process of locking in the binder ensures that it will not migrate. The result is a uniform homogenous structure throughout the entire material. They exhibit excellent erosion resistance under conditions of high, hot gas velocity or molten non-ferrous metal flow. They can be further rigidized by using ZIRCAR Alumina Coat. However, Type RS-B, RS-C and RS-CH Moldables do not adhere to themselves. They can be cemented using ZIRCAR's RS-Cemcoat

They will normally air dry in 24 to 48 hours, with all the properties of a pre-fired insulation. Curing can be accomplished with a hot air gun or torch, or by immediate temperature exposure in the application.

SUGGESTED APPLICATIONS

- Hot gas duct, stack and flue liners
- Custom molded valve enclosures
- Small appliance insulation
- Hot-face insulation where gas velocity is of concern
- Liners and back-up insulation for molten metal transport troughs
- High temperature pipe insulation – internal and external
- Combustion chamber liners
- Self-supported mold wraps
- Custom fabricated insulation parts
- Exhaust manifold insulation
- Asbestos lagging replacement

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.

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MOLDABLE BLANKETS

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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

CHARACTERISTICS & PROPERTIES OF RS MOLDABLES

Type,	**RS-A**	**RS-B**	**RS-C**	**RS-SI**
Typical Composition, %				
Al_2O_3	90	33	66	<0.1
SiO_2	10	41	34	99+
Other Oxides	0	26	0	<0.1
Density, g/cc(pcf)	1.6(100)	0.3(19)	0.46(29)	0.64(40)
Solid Content, % by weight	65	-	-	53
Maximum Use Temp.*, C(F)	1450(2642)	900(1600)	1260(2300)	1100(2012)
Melting Temp, C(F)	1900(3452)	1500(2732)	1900(3452)	1698(3000)
Modulus of Rupture**, MPa(psi)				
as received and dried	3.45(500)	0.5(78)	0.5(78)	5.5(801)
after 24 hrs at 1010°C(1850°F)	5.5(800)			
Compressive Strength**, MPa (psi)				
at 10% compression	69(10,000)	0.07(10)	0.2(30)	28(4000)
Linear Shrinkage‡, %				
Drying length & width/thickness	<1 / 18	0 / 3	0 / 0	0 / 0
after 24 hrs. at 800°C(1472°F)	0	2		2
after 24 hrs. at 1200°C(2200°F)	4	-	-	7
Thermal Conductivity**, W/m K(BTU/hr. ft °F/in)				
500°C(932°F)	0.53(3.8)	0.07(0.46)	0.13(0.91)	0.20(1.4)

* 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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MOLDABLE BLANKETS

Types RS-A, RS-B, RS-C, RS-CH and SI MOLDABLE

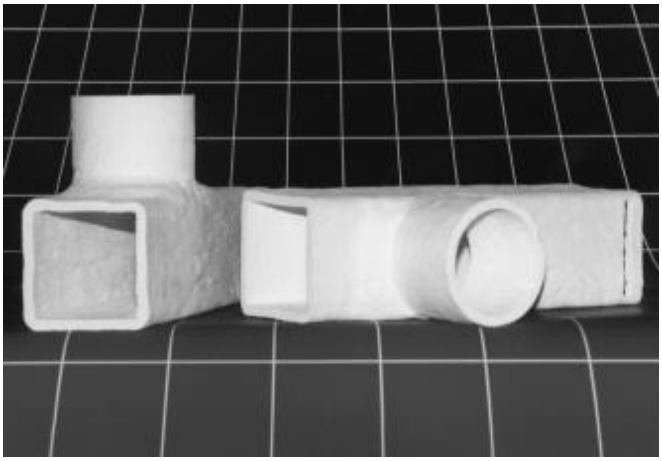
ZIRCAR Type RS-A is also available as prefabricated parts made to customer specifications. These parts are available in 3 varieties:

Type RS-A1 is dried to a constant weight at 100°C (212°F). This product can be remoistened to impart moldablity. It is ideal for use as high temperature die cut gaskets.

Type RS-A2 is fired for 3 hours at 600°C (1112°F) and fully cured. It is unaffected by moisture and is remains permanently rigid.

Type RS-A3 is fired, hardened with ZIRCAR AL-Hard at 5% pickup, and refired. This treatment increases RS-A3 density and strength. These products have the same technical properties of dried RS-A Moldable except where listed below.

Our manufacturing process allows a wide range or forms to be made. Please contact ZIRCAR with your requirements.



Custom furnace components made using Refractory Sheet Type RS-A Moldable.

CHARACTERISTICS & PROPERTIES RS-A PARTS

TYPE	RS-A1	RS-A2	RS-A3
Density, gm/cm^3(lb/ft^3)	1.6(100)	1.6(100)	1.7(105)
Porosity, %	40	40	38
Modulus of Rupture,** MPa(psi)	3.4(500)	3.9(560)	9.1(1330)
Compressive Strength,** MPa(psi) at 10% deflection	6.9(1000)	9.7(1400)	17.2(2500)
Hardness, Durometer "D"	50	55	70
Pullout Strength (lbs on #10 sheet metal screws)	30	50	90
Moisture Content, %	10	2	2
Linear Shrinkage‡, 16 hrs soak at 1200°C(2192°F)	4	0	0

AVAILABILITY

Item #	Description
KS01	RS-A MOLDABLE, 24" X 72" X 1/4"
KS02	RS-A MOLDABLE, 48" X 96" X 1/4"
KS03	RS-A MOLDABLE, 24" X 36" X 1/4"
KS11	RS-A MOLDABLE, 24" X 72" X 1/2"
KS12	RS-A MOLDABLE, 48" X 96" X 1/2"
KS13	RS-A MOLDABLE, 24" X 36" X 1/2"

Item #	Description
HS50	RS-SI, 24" X 36" X 1/8"
HS51	RS-SI, 24" X 36" X 1/4"
HS52	RS-SI, 24" X 36" X 1/2"
HS53	RS-SI, 24" X 36" X 3/4"
HS54	RS-SI, 24" X 36" X 1"

Item #	Description
KS49	RS-C MOLDABLE, 24" X 60" X 1/8"
KS50	RS-C MOLDABLE, 24" X 60" X 1/4"
KS51	RS-C MOLDABLE, 24" X 60" X 1/2"
KS52	RS-C MOLDABLE, 24" X 60" X 3/4"
KS53	RS-C MOLDABLE, 24" X 60" X 1"
KS60	RS-CH MOLDABLE, 24" X 60" X 1/4"
KS61	RS-CH MOLDABLE, 24" X 60" X 1/2"
KS62	RS-CH MOLDABLE, 24" X 60" X 1"

Item #	Description
KS20	RS-B MOLDABLE, 24" X 60" X 1/4"

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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