

REFRACTORY BLANKETS

Type RSBL-SOL and Type SB-2000

ZIRCAR Refractory Composites, Inc. insulating blankets are non-woven inorganic fiber-based products that contain no asbestos. They are engineered for use as thermal barrier materials in high temperature applications up to **1260°C (2300°F)**. Commonly used in molten metal casting and heat-treating industries, ZRCI materials are also used as specialty gasketing in the fuel cell, nuclear, glass and electronic industries, as well as many other applications which require high temperature stability and low thermal conductivity.

They offer excellent corrosion resistance and unique handling strength for easy die-cutting, wrapping and forming.

Silica-Magnesia Fiber Blanket

ZRCI Silica-Magnesia Blanket Type RSBL-SOL is made from soluble **NON RCF fiber** formed into a mechanically needled flexible blanket capable of withstanding continuous operating temperatures up to **1260°C (2300°F)**. It is designed to have enhanced in-vitro solubility characteristics. The fibers are soluble in body fluids and offer users an alternative to refractory ceramic fiber blankets. Type RSBL-SOL Blankets meet European regulatory requirements (Directive 97/69/EC).

Type RSBL-SOL is an inorganic, needled insulating blanket which is manufactured using 1260°C spun fibers. These extra-long spun fibers, cross-locked through a unique forming process, produce a blanket with good handling strength. It has excellent chemical stability and is unaffected by most chemicals except hydrofluoric and phosphoric acids and concentrated alkalis. If wet by water or steam, thermal and physical properties remain unaffected after drying. Type RSBL-SOL Blankets also provide superior resistance to attack from molten aluminum alloys at high temperatures. Type RSBL-SOL Blankets provide solutions to a variety of heat processing problems. They are available in a variety of thicknesses and densities. They are ideal for use as furnace insulation in sintering, heat treating and chemical thermal process systems. They can be layered between rigid insulation, wrapped around process piping or fabricated into folded modules. They are also useful as insulation packing in furnace spaces, around furnace sight tubes & ports and fill in expansion joints and masonry cracks.



ZRCI Type RSBL-SOL Blanket are available in various densities and thicknesses.

Advantages:

- High temperature stability
- Low thermal conductivity
- Meet European Regulatory Requirements
- Flexibility
- Easy to wrap, shape, or cut
- Highest melting point of any soluble fiber.
- Ideal for applications where RCF are not desired.

Insulating Values: The following table summarizes the insulating characteristics of RSBL-SOL (8 pcf density).

| Insulation Thickness | 25mm (1") | 51mm (2") | 102mm (4") | 203mm (8") | 254mm (10") |
|----------------------|------------------|-----------|------------|------------|-------------|
| Hot Face | Cold Face °C(°F) | | | | |
| 650°C(1202°F) | 171(340) | 119(246) | 82(181) | 59(138) | 53(128) |
| 870°C(1598°F) | 248(479) | 174(346) | 119(247) | 82(180) | 73(164) |
| 1100°C(2012°F) | 338(640) | 243(470) | 168(335) | 114(238) | 101(214) |

All heat flow calculations are based on a surface emissivity factor of 0.90, an ambient temperature of 27°C(80°F) and 0 km/h (mph) wind velocity, unless otherwise stated.

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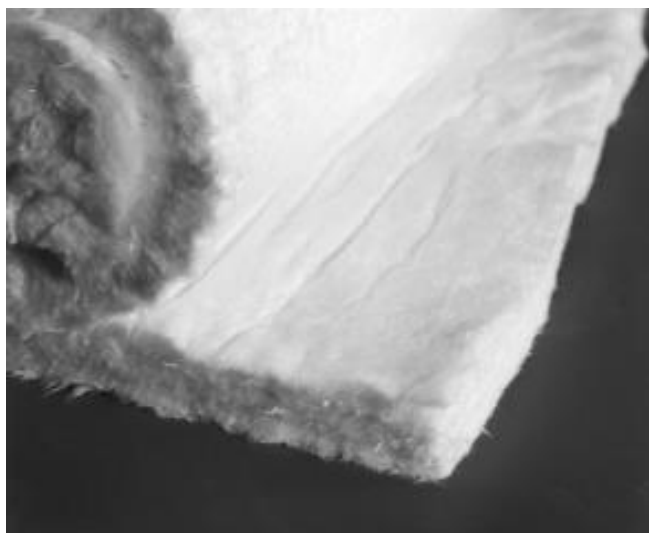
Silica Fiber Blanket

ZRCI Silica Blankets Type SB-2000 is a high temperature insulating blanket produced from mechanically interlocked amorphous silica fibers. The high purity, shot free amorphous silica fibers are needled into a strong, durable product with useful properties to temperatures of **1100°C (2012°F)**. Type SB-2000 Blankets are non-hazardous as they contain no asbestos or Refractory Ceramic Fiber (RCF). The non-respirable fibers are between 6 to 9 microns in diameter and between 2"- 4" in length and pose no health risk associated with Refractory Ceramic Fibers. Type SB-2000's physical strength, resistance to hot air erosion and vibrational degradation makes it superior to refractory ceramic fiber insulation in many applications. Type SB-2000 blankets exhibits excellent thermal shock resistance, low thermal conductivity and heat storage. It is highly resistant to attack by most chemicals and harsh atmospheres. Exceptions include strong bases and hydrofluoric acid.

Type SB-2000 is easily cut with a knife, scissors or die punch and can be installed without gloves. It is soft to the touch and not itchy or irritating.

Advantages:

- **High temperature stability.**
- **Excellent thermal conductivity.**
- **Low shrinkage up to use temperature.**
- **Flexibility.**
- **Easy to wrap, shape, or cut.**
- **Highly durable, with multiple re-use.**
- **Non-respirable fiber, (6 - 9 microns in diameter)**
- **Contains no shot or unfiberized particles.**
- **Ideal where RCF's are not desired.**



ZRCI SB-2000 Silica Blanket is has much greater strength than refractory ceramic blankets.

Uses Include:

- Annealing Cover Seals.
- Flexible High Temperature Pipe Insulation.
- Furnace, Kiln, Reformer and Boiler Lining.
- Furnace Door Linings and Seals.
- Investment Casting Mold Wrap.
- Expansion Joint Seals.
- High Temperature Filtration.
- Nuclear Insulation Applications.
- Glass Furnace Crown Insulation.
- Useful When Refractory Ceramic Fibers Are Not Desired.
- Thermal Reactor Insulation.
- Soaking Pit Seals.
- Reusable Insulation for Field Stress Relieving Welds.
- Insulation for Primary Reformer Header.
- High Temperature Gasketing.
- High Temperature Kiln and Furnace Insulation.
- Fire Protection for Pressure and Cryogenic Vessels.
- Lining for Incineration Equipment and Stack.



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Physical Properties and Characteristics

| TYPE | RSBL-SOL6 | RSBL-SOL8 | SB-2000 |
|--|----------------|----------------|--------------------|
| Nominal composition, wt% | | | |
| SiO ₂ | 72 - 77 | 72 - 77 | 95-97 |
| MgO | 19 - 26 | 19 - 26 | - |
| TiO ₂ | - | - | - |
| Al ₂ O ₃ | - | - | 2-4 |
| CaO | - | - | - |
| B ₂ O ₃ | - | - | - |
| Other oxides | 0 - 4 | 0 - 4 | 1 |
| Color | Bluish White | Bluish White | White |
| Bulk Density, g/cc(pcf) | 0.09(6) | 0.128(8) | 0.14(9) - 0.16(10) |
| Maximum Use Temp. *, C(F) | 1260(2300) | 1260(2300) | 1100(2012) |
| Melting Temp., C(F) | >1500(2730) | >1500(2730) | 1698(3000) |
| Fiber Diameter, Micron | 3 - 5 | 3 - 5 | 6 - 9 |
| Linear reheat shrinkage, %‡ | | | |
| 24 hrs. at 760°C(1400°F) | 2.1 | 2.1 | 6 |
| 24 hrs. at 982°C(1800°F) | 2.8 | 2.8 | 8 |
| 24 hrs. at 1100°C(2012°F) | 2.8 | 2.8 | 12.5 |
| 24 hrs. at 1260°C(2300°F) | 3 | 3 | - |
| 24 hrs. at 1300°C(2372°F) | 6 | 6 | - |
| Thermal Conductivity**, ASTM C177 W/mK(BTU/hr ft ² °F/in.) | | | |
| 92°C(198°F) | See front page | See front page | 0.045(0.31) |
| 203°C(397°F) | - | - | 0.059(0.41) |
| 316°C(600°F) | - | - | 0.076(0.53) |
| 537°C(999°F) | - | - | 0.124(0.85) |
| 649°C(1200°F) | - | - | 0.156(1.08) |
| Thermal Resistance, ASTM C177 m ² · K/W(hr-F-ft ² BTU) | | | |
| 92°C(198°F) | - | - | 0.48(2.73) |
| 203°C(397°F) | - | - | 0.37(2.08) |
| 316°C(600°F) | - | - | 0.28(1.60) |
| 537°C(999°F) | - | - | 0.18(0.99) |
| 649°C(1200°F) | - | - | 0.14(0.79) |
| Tensile Strength, kPa(psi) | 35(5) | 42(6) | 50(7) |

* Maximum 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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TYPE RSBL-SOL, SILICA-MAGNESIA BLANKET ROLLS

6 PCF BLANKET

| ITEM # | TYPE | NOMINAL THICKNESS | WIDTH | ROLL LENGTH | SQ FT |
|--------|----------|-------------------|-------|-------------|-------|
| NS20 | RSBL-SOL | 1/2" | 24" | 25' | 50 |
| NS21 | RSBL-SOL | 1/2" | 48" | 25' | 100 |
| NS22 | RSBL-SOL | 1" | 24" | 25' | 50 |
| NS23 | RSBL-SOL | 1" | 48" | 25' | 100 |
| NS24 | RSBL-SOL | 1 1/2" | 24" | 12.5' | 25 |
| NS25 | RSBL-SOL | 1 1/2" | 48" | 12.5' | 50 |
| NS26 | RSBL-SOL | 2" | 24" | 12.5' | 25 |
| NS27 | RSBL-SOL | 2" | 48" | 12.5' | 50 |

TYPE RSBL-SOL, SILICA-MAGNESIA BLANKET ROLLS

8 PCF BLANKET

| ITEM # | TYPE | NOMINAL THICKNESS | WIDTH | ROLL LENGTH | SQ FT |
|--------|----------|-------------------|-------|-------------|-------|
| NS30 | RSBL-SOL | 1/2" | 24" | 25' | 50 |
| NS31 | RSBL-SOL | 1/2" | 48" | 25' | 100 |
| NS32 | RSBL-SOL | 1" | 24" | 25' | 50 |
| NS33 | RSBL-SOL | 1" | 48" | 25' | 100 |
| NS34 | RSBL-SOL | 1 1/2" | 24" | 12.5' | 25 |
| NS35 | RSBL-SOL | 1 1/2" | 48" | 12.5' | 50 |
| NS36 | RSBL-SOL | 2" | 24" | 12.5' | 25 |
| NS37 | RSBL-SOL | 2" | 48" | 12.5' | 50 |

TYPE SB-2000 SILICA BLANKET ROLLS

| ITEM # | NOMINAL THICKNESS | ROLL WIDTH | ROLL LENGTH |
|--------|-------------------|------------|-------------|
| NS11 | 1/8" | 9" | 130' |
| NS05 | 1/8" | 36" | 130' |
| NS06 | 1/4" | 36" | 105' |
| NS07 | 1/2" | 36" | 66' |
| NS10 | 3/4" | 36" | 39' |
| NS08 | 1" | 36" | 33' |

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.

TYPE SB-2000 SILICA BLANKET SHEETS, 36" X 5'

| ITEM # | NOMINAL THICKNESS |
|--------|-------------------|
| NS01 | 1/8" |
| NS02 | 1/4" |
| NS03 | 1/2" |
| NS09 | 3/4" |
| NS04 | 1" |

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