ALUMINA MAT
TYPE RSMAT-3000

GENERAL INFORMATION

ZRCI Type RSMAT-3000 is a high purity, high temperature, flexible form composed of continuous 97% alumina ceramic fibers designed for use to **1650°C (3002°F)**. Type RSMAT-3000 contains little shot and has a higher alumina content than any other ceramic fiber mat or blanket. Type RSMAT-3000 is lightweight, has low thermal conductivity and low heat capacity, and is immune to thermal shock. It is ideal for vacuum, reducing atmospheres and other applications where silica cannot be tolerated, such as powder metal sintering, stainless steel bright annealing and many fuel cell applications.

Type RSMAT-3000 demonstrates excellent resistance to chemical attack and is not affected by oil or water. It's thermal and physical properties are restored after drying. It is, however, affected by hydrofluoric acid, phosphoric acid and strong alkalis. Type RSMAT-3000 contains no organic binders and will produce no smoke or odors when heated. It's non-needled layered construction allows the user to easily peel apart the mat to achieve thinner layers if desired.

ADVANTAGES

- Resistance to Chemical Attack
- Non-RCF Fibers
- High alumina, fiber index and purity
- Low Thermal Conductivity
- Low Shrinkage up to 1500°C
- Outstanding high temperature stability
- Thin, flexible, high temperature insulation
- Easily die-cut to form complex shapes for high temperature gasketing
- Conforms easily to complex shapes
- Excellent high temperature parting agent
- Excellent high temperature backup and expansion joint material

The Fibers used in RSMAT-3000 were designed with the expert advice of toxicologists to minimize the potential for biological activity. They are produced in a spinning process from a viscous aqueous solution to give a narrow diameter distribution. They are all then subjected to a controlled heat treatment to develop a polycrystalline microstructure. An extensive series of toxicological tests were carried out on the fiber, involving inhalation, injection and feeding studies. All results were negative, with no fibrogenic, carcinogenic or other toxic effects found.

Low silica levels ensure that there is no possibility of Cristobalite formation after exposure to high temperature. Type RSMAT-3000 fibers are not subject to European regulatory constraints and do not require a hazard warning label or special handling procedures for installation or disposal after use.

APPLICATIONS

- High temperature gaskets and seals
- Refractory back-up insulation
- Appliance insulation
- Separating media for heat treating metals
- High temperature filtration
- High temperature expansion joint packing
- Glassware separating media
- Parting agent for brazing operations
- Hot face and backup lining for lab furnaces
- Fuel cell reformer and stack insulation
- Super alloy ingot mold lining and hot tapes

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CHARACTERISTICS & PROPERTIES

Nominal composition, wt%	
Al_2O_3	97
SiO_2	3
Trace elements	<0.5
Calcium, ppm	525
Sodium, ppm	875
Color	White
LOI, % after 2 hrs @ 800°C(1472°F)	0
Fiber Diameter, Micron	3 - 5
Shot Content (Non-fibrous material)	Negligible
Thickness, mm*in)	35(1.33)
Bulk Density, g/cc(pcf)	0.035(2.2)
Maximum Use Temp. *, C(F)	1650(3002)
Melting Temp., C(F)	2036(3700)
Specific Heat, J/kg °K (BTU/lb °F)	1047(0.25)
Tensil Strength, kPa(psi)	35(5)
Young's Modulus, Mpa (pso)	3.2×10^5 (47×10^6)
Hardness of Fiber, Mohs scale	6
Linear reheat shrinkage, %‡	
24 hrs. at 1260°C(2300°F)	0
24 hrs. at 1425°C(2600°F)	2.2
24 hrs. at 1535°C(2800°F)	3
24 hrs. at 1650°C(3002°F)	4
Thermal Conductivity**,	
ASTM C177	
W/mK(BTU/hr ft^2 ^oF/in.)	
315°C(599°F)	0.07(0.50)
540°C(1000°F)	0.09(0.77)
760°C(1400°F)	0.13(1.03)
980°C(1796°F)	0.17(1.33)
1200°C(2192°F)	0.23(1.65)
1425°C(2597°F)	0.30(2.15)

* Maximum use temperature is dependent on variables such as stresses, both thermal and mechanical, that the sheet product experiences.
** Properties expressed parallel to thickness.
^ Properties expressed perpendicular to thickness.

AVAILABILITY

Item #	Description
NS95	RSMAT-3000, 24" X 24" X 1.33"
NS96	RSMAT-3000, 24" X 96" X 1.33"
NS97	RSMAT-3000, 24" X 48.5' X 1.33"

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

ZRCI REFRACTORY COMPOSITES

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