Inorganic RCF Vacuum Formed Products

Datasheet Code US: 5-14-701 SDS: RP200 / RP230 / RP231

Product Description

I-2100 is an economical insulating material produced by blending natural kaolin based aluminosilicate fibers with high purity silica fibers. The high temperature capability is enhanced by employing ammonia stabilized colloidal silica rather than a sodium stabilized product.

I-2300 is an insulating material produced by blending high purity, synthetic alumina-silica fibers with high purity silica binders. The high temperature capability is enhanced by employing ammonia stabilized colloidal silica rather than a sodium stabilized product.

I-2600 is an insulating material produced by blending aluminosilicate fibers, alumina fibers and silica fibers with high purity silica binders. The alumina fibers form a matrix within the material, and give it high temperature capability.

I-2800 is an insulating material produced by blending aluminosilicate fibers, alumina fibers and silica fibers with high purity silica binders. The polycrystalline alumina fibers form a matrix within the material, and give it high temperature capability. The high temperature capability is further enhanced by employing ammonia stabilized colloidal silica rather than sodium stabilized product.

I-A5 is an economical, ultra high temperature insulating material produced by blending alumina-silica fibers, alumina fibers and silica fibers with high purity silica binders. The alumina fibers form a matrix within the material, and give it high temperature capability. The high temperature capability is further enhanced by employing ammonia stabilized colloidal silica rather than sodium stabilized product.

Features

- To further enhance the mechanical characteristics of our inorganic vacuum formed shapes, we offer several post treatments using ultra-high purity ammonia stabilized colloidal silica:
  - R is a light rigidizing of the base product in ammonia stabilized colloidal silica. The resulting shape is hard and durable on the outside, while the core material remains fibrous.
  - H is a full saturation of the base product in ammonia stabilized colloidal silica. Using our proprietary binder migration control technology, we are able to completely stop binder migration during drying, which results in a highly uniform, dense shape.
  - HR is a combination of the above treatments for the most discerning of customers. This treatment coupled with our CNC precision machining, results in very high tolerance geometries that are dust free and high strength.
  - Alfibond is a rigidizing of the base product in colloidal alumina. Our proprietary formulation ensures consistent penetration into the product and the best solution for high temperature and high flow environments. See our Alfibond product data sheet for more information.
- No organic binders
- Complex shape capability
- Low thermal conductivity and minimal heat storage
- High resistance to thermal shock and spalling
- Low shrinkage
- Light weight

Applications

- Bullnose tiles
- Burner blocks
- Combustion chamber construction
- Diffusion furnaces
- Flue and exhaust stack liners
- Furnace components
- General molten metal contact
- Peep door frames and plugs
- Heat shields
- High temperature gaskets and seals
- Hot tops for super alloy casting
- Molten aluminum contact
- Semiconductor processing equipment
- Shapes for laboratory furnaces
- Shapes in ammonia reformers

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Boards and Shapes Vacuum Formed Product Name	I-2100	I-2300	I-2600	I-2800	I-A5
Fiber Class	RCF	RCF	RCF	RCF	RCF
Fiber Grade	Inorganic	Inorganic	Inorganic	Inorganic	Inorganic
Physical Properties					
Color	light beige	off-white	white	white	white
Continuous Use Temperature, °F	2100	2300	2600	2800	2950
Continuous Use Temperature, °C	1149	1260	1427	1538	1621
Melting Temperature, °F	3200	3200	3200	3200	3200
Melting Temperature, °C	1760	1760	1760	1760	1760
Density, pcf	17	17	16	16	16
Denisty, kg/m^3	272	272	256	256	256
Modulus of Rupture, MOR, psi	75	56	72	66	60
Modulus of Rupture, MOR, MPa	0.52	0.39	0.5	0.46	0.41
Compressive strength @ 5% deformation, psi	9	7	19	10	10
Compressive strength @ 5% deformation, Mpa	0.06	0.05	0.13	0.07	0.07
Compressive strength @ 10% deformation, psi	12	9	25	16	12
Compressive strength @ 10% deformation, Mpa	0.08	0.06	0.17	0.11	0.08
Gas velocity, recommended maximum, ft/sec	200	200	200	200	200
Gas velocity, recommended maximum, m/sec	61	61	61	61	61
Specific heat, BTU/lb•°F	0.27	0.27	0.27	0.27	0.27
Specific heat, J/kg•°C	1130	1130	1130	1130	1130
Permanent Linear Shrinkage, %, 24 hours					
1500°F (816°C)	0.8	0.3	-	-	0.1
1800°F (982°C)	2	1.9	0.3	0.1	0.1
2000°F (1093°C)	3.2	2.7	0.8	0.8	0.3
2200°F (1204°C)	-	3.4	1.2	0.9	0.2
2400°F (1316°C)	-	-	1.6	1.2	0.5
2600°F (1426°C)	-	-	1.6	1.5	0.5
2800°F (1538°C)	-	-	-	1	0.6
Chemical Analysis, % weight basis after firing					
Alumina, Al_2O_3	30	32	35	40	45
Silica, SiO_2	68	68	65	60	55
Other	1.5	<1	<1	<1	<1
Loss of Ignition, LOI	1.3	1.3	1.3	1.3	1.3

The values given herein are typical average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Therefore, the data contained herein should not be used for specification purposes. Check with your Morgan Advanced Materials office to obtain current information.

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Thermal Conductivity, BTU•in/hr•ft^2, per ASTM C201					
500°F	0.48	0.48	0.45	0.44	0.46
1000°F	0.72	0.72	0.67	0.64	0.68
1500°F	1.03	1.03	1.01	0.93	1.02
2000°F	1.52	1.52	1.49	1.34	1.52
2500°F	-	-	-	-	2.21
Thermal Conductivity, W/m•K, per ASTM C201					
260°C	0.07	0.07	0.06	0.06	0.07
538°C	0.1	0.1	0.1	0.09	0.1
816°C	0.15	0.15	0.15	0.13	0.15
1093°C	0.22	0.22	0.21	0.19	0.22
1371°C	-	-	-	-	0.32