

TR[®] Structural Block Insulation

Datasheet Code US: 10-14-100

SDS: TR503 / 250

Product Description

TR-19 and TR-19HS Block are asbestos-free insulation products, manufactured from vermiculite granules and high-temperature bonding materials. TR-20 Block is made from diatomaceous silica with a hydraulic binder.

TR-19 Block is an economical, energy saving insulation. It exhibits minimal shrinkage at its 1900°F (1040°C) temperature limit, and will not readily decompose even when exposed directly to flame or cryolite vapor conditions.

TR-19HS Block is a high strength structural insulation material, suitable particularly where mechanical loads are present. This block product has very low shrinkage to its 1900°F (1040°C) operating temperature limit and is resistant to cryolite vapor conditions.

TR-20 Block is a superior, high-temperature insulation for service to 2000°F (1095°C). Long, maintenance-free service and maximum operating efficiency is assured by TR-20's unique combination of low conductivity and high stability.

TR-20 is also very low in sulfur and iron, making it highly resistant to attack from atmospheric conditions and greatly reducing the possibility of product contamination.

These TR Block products can be manufactured in special shapes to fit customer specifications, saving money on both installation and energy costs.

TR-19, TR-19 HS, and TR-20 Curved Block Insulation is designed primarily for interior and exterior use on bustle pipes, hot air pipes, stacks and other curved or circular equipment. TR Curved Block insulation are available in standard 6" or 12" widths. Special sizes of blocks curved to a specific radius can also be manufactured.

Features

- Low thermal conductivity
- Block construction 36" x 12"
- Good high temperature strength
- Available in a variety of thicknesses up to 7"
- Resistant to cryolite vapors

Applications

- Side and end wall insulating material in carbon baking pits
- Backup insulation in aluminum pot cells, reheat and pusher furnaces, copper reverberatory furnaces, and oil-fired water tube boilers
- Interior and exterior use on bustle pipes, hot air pipes, stacks and other curved or circular equipment

Product Name	TR-19	TR-19 HS	TR-20
Chemical Analysis, % weight basis after firing			
Alumina, Al ₂ O ₃	12	12	4.3
Silica, SiO ₂	38	38	80
Calcium oxide, CaO	22	22	11
Magnesium oxide, MgO	12	12	0.8
Ferric Oxide, Fe ₂ O ₃	9.5	9.5	1.6
Titanium Oxide, TiO ₂	1.6	1.6	0.2
Alkalies as Na ₂ O and K ₂ O	4.0	4.0	1.5

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Product Name	TR-19	TR-19 HS	TR-20
Material Class	Crystalline Silica		
Physical Properties			
Color	beige	beige	off-white
Continuous Use Temperature, °F	1900	1900	2000
Continuous Use Temperature, °C	1038	1038	1093
Porosity, ASTM C493, %	93	85	91
Specific heat, BTU/lb•°F	0.2	0.2	0.24
Specific heat, J/kg•°C	0.8	0.8	1
Density, ASTM C303, pcf			
dried	25	35	29
1900°F	24.5	33	-
2000°F	-	-	30
Density, ASTM C 303, kg/m ³			
dried	400	561	465
1038°C	392	529	-
1093°C	-	-	481
Cold crushing strength, ASTM C 165, psi			
dried	175	250	180
fired 24 hours @ continuous use limit	65	-	180
Cold crushing strength, ASTM C 165, MPa			
dried	1.2	1.7	1.2
fired 24 hours @ continuous use limit	0.5	-	1.2
Modulus of Rupture, MOR, ASTM C 203, psi			
dried	110	175	110
fired 24 hours @ 1900°F	100	-	105
fired 24 hours @ 2000°F	-	-	216
Modulus of Rupture, MOR, ASTM C 203, MPa			
dried	0.8	1.2	0.8
fired 24 hours @ 1038°C	0.7	-	0.7
fired 24 hours @ 1093°C	-	-	1.5
Permanent Reheat Shrinkage, ASTM C356, fired 24 hours, %			
1900°F (1038°C)	2	1.5	-
2000°F (1093°C)	-	-	4

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 local Morgan Advanced Materials office to obtain current information.

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Product Name	TR-19	TR-19 HS	TR-20
Thermal Conductivity, BTU·in/hr·ft², per ASTM C201			
Density, pcf	<u>25</u>	<u>35</u>	<u>29</u>
500°F	0.72	1.1	0.68
1000°F	0.83	1.16	0.79
1500°F	0.99	1.2	0.96
1900°F	1.14	1.35	-
2000°F	-	-	1.16
Thermal Conductivity, W/m·K, per ASTM C201			
Density, kg/m ³	<u>400</u>	<u>561</u>	<u>465</u>
260°C	0.11	0.16	0.09
538°C	0.13	0.17	0.11
816°C	0.15	0.17	0.14
1038°C	0.17	0.2	-
1093°C	-	-	0.17

Size and Availability

Product	<u>Length x Width, in</u>
TR-19	36 x 12
TR-19 HS	<u>Length x Width, mm</u>
TR-20	914 x 304

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