



Pyro-Stack™ and Pyro-Fold™ Cerachem® and Cerablanket® Modules

Product Data Sheet

Product Description

Cera® fibre based Pyro-Fold and Pyro-Stack Modules feature exceptional thermal and physical properties. Manufactured from our Cerachem Blanket and Cerablanket they are optimised for improved handleability with excellent tensile strength, low thermal conductivity and high-temperature performance stability.

Pyro-Fold and Pyro-Stack Modules based from Cerablanket, are made from a high purity oxide of alumina and silica based fibre, which can achieve a classification temperature of 1260°C (2300°F). Modules based from Cerachem Blankets are made from an alumina-silica-zirconia base and are designed to resist excessive shrinkage at elevated temperatures rated to 1430°C (2600°F).

These Modules are designed to offer superior thermal characteristics in a wide variety of applications and are resistant to most types of chemical attack. They are lightweight, strong and feature a low heat storage capacity for effective energy savings and excellent thermal shock resistance for use in difficult environments.

Cera based Pyro-Fold and Pyro-Stack Modules come standard with a Y-Anchor or M-Anchor system for easy installation and affixing to furnace, boiler or kiln linings.

Please review the best internal anchoring hardware options with your regional Morgan Advanced Materials - Thermal Ceramics Sales Representative and Applications Engineering team. Additionally, we recommend following the Pyro-Fold and Pyro-Stack Design and Installation Guidelines for either Y-Anchor or M-Anchor hardware.

Features

Excellent thermal stability results in reliable and consistent thermal insulating performances;

- Immune to thermal shock.
- Binder or lubricant free.
- Thermal stability.
- Low heat storage.
- High erosion resistance no damage up to 50 m/sec tested at 1260°C (2300°F) and 1430°C (2600°F).
- Excellent resistance to chemicals and pollutants, especially alkali metals.
- Excellent tensile strength.
- Good sound absorption.

Applications

- Power generation especially HRSG stack and duct insulation.
- Petrochemical and Refinery applications;
 - Ethylene Cracking Furnaces.
 - Ammonia, Hydrogen and Methanol Reformers.
 - Delayed Cokers and Refinery Heaters.
 - Flare Stacks.
- Industrial Furnace, Boiler and Heater linings;
 - Iron & Steel.
 - Ceramics.

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Properties	<u>Pyro-Stack Modules</u>	<u>Pyro-Fold Modules</u>	<u>Pyro-Stack Modules</u>	<u>Pyro-Fold Modules</u>	
	<u>Cerafiber® / Cerablanket /</u>	<u>Cerafiber / Cerablanket /</u>	<u>Cerachem / ZR Grade</u>	<u>Cerachem / ZR Grade</u>	
	<u>R Grade</u>	<u>R Grade</u>			
Colour	White	White	White	White	
Classification Temperature, °C (°F), EN 1094-1 (2008)	1260 (2300)	1260 (2300)	1430 (2600)	1430 (2600)	
Continuous Use Temperature, °C (°F)	1180 (2150)	1180 (2150)	1315 (2400)	1315 (2400)	
Density, kg/m³ (pcf), EN 1094-1 (2008)	160, 192 (10, 12)	170 (10.6)	160, 192 (10, 12)	170 (10.6)	
Specific heat capacity, kJ/kg·K (BTU/lb·°F), 1000°C (2000°F)	1.13 (0.27)	1.13 (0.27)	1.13 (0.27)	1.13 (0.27)	
Chemical Analysis, %					
	Alumina, Al ₂ O ₃	42-48	42-48	33-37	33-37
	Silica, SiO ₂	52-58	52-58	48-52	48-52
	Zirconia, ZrO ₂	-	-	13-17	13-17
	Other	trace	trace	trace	trace

	<u>Pyro-Stack Modules</u>	<u>Pyro-Fold</u>	<u>Pyro-Stack Modules</u>	<u>Pyro-Fold</u>		
	<u>Cerafiber / Cerablanket / R Grade</u>	<u>Modules</u>	<u>Cerachem / ZR Grade</u>	<u>Modules</u>		
		<u>Cerafiber / Cerablanket / R Grade</u>		<u>Cerachem / ZR Grade</u>		
Thermal Conductivity, W/m·K, ASTM C201						
<u>Density, kg/m³ (pcf)</u>	<u>160 (10)</u>	<u>192 (12)</u>	<u>170 (10.6)</u>	<u>160 (10)</u>	<u>192 (12)</u>	<u>170 (10.6)</u>
200°C	0.07	0.07	0.07	0.07	0.07	0.07
400°C	0.11	0.09	0.12	0.11	0.09	0.11
600°C	0.18	0.15	0.20	0.17	0.15	0.18
800°C	0.27	0.23	0.29	0.26	0.23	0.27
1000°C	0.40	0.34	0.41	0.36	0.33	0.37
1200°C	0.54	0.48	0.55	0.49	0.44	0.50
Thermal Conductivity, BTU·in/hr·ft²·°F, ASTM C201						
500°F	0.60	0.54	0.56	0.54	0.50	0.55
1000°F	1.08	0.88	1.18	1.03	0.93	1.08
1500°F	1.96	1.63	2.08	1.82	1.62	1.89
1832°F	2.78	2.36	2.84	2.50	2.22	2.57
2000°F	3.23	2.79	3.25	2.91	2.56	2.98
2200°F	3.85	3.37	3.80	3.43	3.02	3.50

Product Availability

Pyro-Fold and Pyro-Stack Modules are manufactured and available globally, but packaging, density and thickness availability will vary by region.

Please contact your regional Morgan Advanced Materials - Thermal Ceramics representative to support providing specific packaging availability for your local business needs.

Whilst the values and application information in this datasheet are typical, they are given for guidance only. The values and the information given are subject to normal manufacturing variation and may be subject to change without notice. Morgan Advanced Materials – Thermal Ceramics makes no guarantees and gives no warranties about the suitability of a product and you should seek advice to confirm the product's suitability for use with Morgan Advanced Materials - Thermal Ceramics.