**CERAMIC FIBER MODULES AND ENGINEERED SYSTEMS**

Thermal Ceramics manufactures a complete line of Ceramic Fiber Module Systems featuring the widest variety of:

- refractory ceramic fiber compositions
- attachment anchoring systems
- construction design services available for lining industrial furnaces

**Pyro-Bloc® Modules**

Thermal Ceramics’ Pyro-Bloc modules are the only “monolithic” ceramic fiber modules on the market. Manufactured from monolithic ceramic fiber logs, they are available in three grades, R Grade, ZR Grade and C Grade and in uncompressed module densities up to 15 pcf. Pyro-Bloc modules combine the insulating material advantages of ceramic fiber with rapid furnace installation. The monolithic fiber is easy to cut to fit around openings and modify in the field. In addition, these modules are lightweight, have low heat storage and provide durable service.

**Pyro-Bloc Y™ and Y²™ Modules**

The industry leader, the Pyro-Bloc Y module is the first “one-shot” module design and still the easiest to install. The Y modules are edge-grain orientation modules complete with internal support and stud attachment hardware. In one easy step the module is positioned against the furnace shell and securely welded into place using the Pyro-Bloc Stud Gun. The edge-grain fiber in the Pyro-Bloc Y modules can be compressed in all directions, which allows for maximum module-to-module and module-to-shell compression, reducing the likelihood of shrinkage gaps during service.

<table>
<thead>
<tr>
<th>Pyro-Bloc Y Module</th>
<th>Pyro-Bloc Y² Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 12” x 12” Format</td>
<td>• 16” x 16” Larger Format</td>
</tr>
<tr>
<td>• Easy to Install</td>
<td>• Cost Effective Lining</td>
</tr>
</tbody>
</table>

**Pyro-Bloc E™ and E²™ Modules**

These modules are manufactured from 8 PCF R grade Pyro-Log Fiber into 12” x 16” Pyro-Bloc E modules and 16” x 16” Pyro-Bloc E² modules. This larger format allows for economical linings in lower temperature applications.

- Y module type attachment system
- Furnace linings up to 1800°F
- Edge-grain construction
Pyro-Packing and Pyro-Log™
Pyro-Packing and Pyro-Log are uncompressed monolithic ceramic fiber manufactured in three temperature grades: R, ZR and C, with fiber densities up to 15 PCF. Pyro-Log fiber is produced in 6” and 8” thickness and can be used in areas such as kiln cars and floors that require ceramic fiber insulation without an attachment system. Pyro-Packing is used to fill smaller areas or voids in the ceramic fiber linings to eliminate special shapes.

Pyro-Bloc Stud Gun - “the industry standard”
Specially designed for easy installation of the Pyro-Bloc Y, Y², E and E² modules, the Pyro-Bloc Stud Gun is a lightweight, low cost, portable control unit consisting of the gun and control box. It can easily be connected to your welding power source. With the Pyro-Bloc Stud Gun you can weld and tighten a Pyro-Bloc module to your furnace shell in just a few seconds.

Pyro-Bloc M Module
- 12” x 12” Format
- Center mounted
- Uncompressed densities 10 to 15 pcf

Pyro-Bloc M² Module
- 16” x 16” Large Format
- Fewer to weld
- Faster installation per SF

Pyro-Bloc Accessories

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Pyro-Bloc Special Modules

Pyro-Bloc Electric Element Support System™
The EES System is an engineered system of supporting electric heating elements from Pyro-Bloc Y modules. The EES system features rod overbend and ribbon heating elements secured to the modules by ceramic element supports suspended from ceramic tubes placed within the modules. The result is a strong, lightweight and reliable electric heating system.

Pyro-Bloc HS™ Module
The Pyro-Bloc HS Module is a unique innovation in ceramic fiber module systems. This module uses a proprietary-hardening agent that enhances hardness and strength with minimal firing, yet allows the module to remain compressible during installation. Pyro-Bloc HS module is the best choice for applications requiring resistance to high mechanical abuse.

Pyro-Bloc Plus™ Module
This is another innovative weld-on module system and just what the name implies: a dual component design consisting of a Pyro-Bloc module as the base with a high temperature fiber veneering module attached to the hot face. This two-layer arrangement provides high temperature capability up to 3000°F, at a lower cost than a system using all high temperature fiber.
Pyro-Fold™ Modules
The Pyro-Fold module is an accordion-folded blanket module that uses the Pyro-Bloc hardware and anchoring systems. The Pyro-Fold Y Module is used without a stud layout, while the Pyro-Fold M module is designed for high temperature applications that require corrosion barriers, back-up layers or pre-layout of a stud system. These modules are available in standard thicknesses from 4” to 12” and in 8 and 9.3 PCF densities.

Pyro-Stack™ Modules
These modules are similar to the Pyro-Fold modules with the blanket cut and stacked edge-grain rather than continuously folded. Pyro-Stack modules can be manufactured from Superwool 607, Superwool 607 MAX, Maftec, and Saffil blanket in addition to all of our standard blankets. The most typical attachment systems are the Y module system and the T-Bar system.

Pyro-Bloc Burner Bloc
Pyro-Bloc Burner Bloc start with 15 pcf monolithic Pyro-Bloc module in edge-grain orientation. A vacuum-formed sleeve is mounted in the center of the module. This sleeve is available in several temperature grades and sized to the specific burner requirements. The end result is the Pyro-Bloc burner bloc, a lightweight, thermally efficient, thermal shock resistant product that has proven to give excellent service in tough flat flame burner block applications.

Pyro-Bloc Corner Bloc
The Pyro-Bloc module system offers an incredible advantage when it comes to solving the problems of insulating external corners and other irregularities in a furnace. These monolithic Corner Bloc are cut into special shapes to go into flues, furnace openings or around corners. Typical attachment systems are the Y module system and the T-Bar system.

Pyro-Bloc T-Bar Module
Pyro-Bloc T-Bar Module, like the M modules are designed for high temperature furnaces that require pre-welded studs or back-up insulation. This edge-grain module installs quickly and reliably and is the recommended attachment system for Corner Blocs used with the M modules. The attachment system is inserted between the module during installation compared to Y and M modules that contain center mounting hardware.

Pyro-Bloc Eyebolt Module
This Pyro-Bloc module is designed for convenient attachment through a metal shell or through expanded metal mesh. Each module is supplied with a secured eyebolt to allow for flexibility and high compression during installation.

Kaowool® Modules
Thermal Ceramics has a family of weld-on modules that has evolved over the years. These modules incorporate all the advantages of our standard ceramic fiber blanket products in a precompressed modular form and offer non-exposed anchoring, economical installation and a positive mechanical attachment. They are produced in various densities and thicknesses using Cerablanket (2400°F rated), Cerachem (2600°F rated), and Cerachrome (2600°F rated) fiber grades.
Z-Blok® Modules
The Z-Blok modules are folded modules available in two design configurations. Z-Blok I has a slide channel that runs perpendicular to the folds, it slides onto a disc or clip that has been attached to the steel casing. Z-Blok II has a C-Channel that runs parallel to the module folds. This C-Channel is typically attached to the steel casing with a welded stud and nut. A variety of additional attachment options are available.

Unibloc® Modules
Unibloc are the most economical folded modules offered by Thermal Ceramics. Made from a variety of ceramic fiber blankets, Unibloc modules are supplied with or without one of the positive anchor systems or using a planned layout. The most typical practice is to impale the Unibloc module directly onto a Unilok anchor that has been welded to the shell.

Unisystem™ Veneering Modules
The Unisystem Family is a full-line veneering system offering a range of modules, cements and coatings to suit the customer’s needs. Designed for hot face application over the surface of existing refractory linings, they produce a significant increase in furnace lining efficiency. Unisystem modules feature properties such as low shrinkage, long-term adherence and durability in a variety of severe applications.

### Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Module Type</th>
<th>Pyro-Bloc E</th>
<th>Pyro-Bloc Y, M, and T-Bar</th>
<th>Pyro-Fold Y &amp; M, Z-Blok, Unibloc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiber Grade</td>
<td>R-Grade Pyro-Log Fiber</td>
<td>R-Grade Pyro-Log Fiber</td>
<td>ZR-Grade Pyro-Log Fiber</td>
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<tr>
<td>Color</td>
<td>white</td>
<td>white</td>
<td>white</td>
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<tr>
<td>Density, pcf</td>
<td>8</td>
<td>8</td>
<td>10,12,15</td>
</tr>
<tr>
<td>Thickness, in, standard</td>
<td>3,4,5, &amp; 6</td>
<td>3 to 12</td>
<td>3 to 12</td>
</tr>
<tr>
<td>Maximum temperature rating, ºF</td>
<td>2400</td>
<td>2400</td>
<td>2600</td>
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<td>Continuous use limit, up to ºF</td>
<td>1800</td>
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<td>2450</td>
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<td>Melting point, ºF</td>
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<td>3200</td>
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<td>47</td>
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<td>Silica, SiO₂</td>
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<tr>
<td>Zirconia, ZrO₂</td>
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<td>15.5</td>
<td>15.5</td>
</tr>
<tr>
<td>Chromium Oxide, Cr₂O₃</td>
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<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Maftec is a registered trademark of Mitsubishi Chemical Corporation
Saffil is a registered trademark of Saffil, Ltd.

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