

Z-Blok® Refractory Fiber Modules



Material Type: Refractory Fiber Blankets in Modular Block Form.

Classification Temperature

Cerablanket® : 1260 °C
 Cerachem® Blanket : 1425 °C
 Cerachrome® Blanket : 1425 °C

Description

Z-Blok® refractory fiber modules are lightweight, insulating linings made in block form for direct attachment to industrial furnace and kiln shells.

Z-Blok® modules are designed to simplify and speed up furnace lining installation while providing a wide range of significant operating benefits. Z-Blok® refractory fiber modules are formed from three basic components:

- An insulating portion consisting of an accordion-pleated, continuous piece of Thermal Ceramics refractory fiber materials: Cerablanket, Cerachem or Cerachrome Blanket.
- Stainless steel reinforcement and mounting hardware made up of beams positioned within the folds and connected by tabs to a channel on the cold face of the Z-Blok® module. The channel is designed to slide freely on stainless steel clip which is attached to the furnace shell.
- Compression banding to restrain the block in a 12" x 12" (305 x 305 mm) dimension.

After attachment to the furnace shell in a parquet pattern, the compression restraints are removed and the refractory fiber expands. This produces a tight, gap-free insulating furnace liner with all metal parts isolated from high temperatures because of their position adjacent to the cold face.

Available Forms

Z-Blok® refractory fiber modules are furnished in a number of different configurations depending on service requirements.

Material Selection

The choice of the type of blanket used in the construction of Z-Blok® modules should be determined by the characteristics and operation of the furnace equipment to be lined. Operating temperature (steady or cyclic), nature of ware, energy used (electricity or type of gas or oil), furnace atmosphere, etc. are some of the factors that must be taken into account.

We would recommend, for the optimum blanket selection that the Thermal Ceramics expert, and/or local representative, be consulted in the initial stages of lining design.

Standard Dimensions

Z-Blok® modules measure 12" x 12" (305 x 305 mm).

They are available in the following thicknesses:

| | | | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| inches : | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| mm : | 102 | 127 | 152 | 178 | 203 | 229 | 254 | 280 | 305 |

Z-Blok® Refractory Fiber Modules

Advantages

Z-Blok® furnace offers the furnace user, as well as the builder, many advantages:

Fast Installations

Installation is quickly and easily completed by contractors or plant personnel who have received basic training. New Z-Blok® linings can be installed in significantly less time than is required for layered blanket or brick linings.

Efficient Attachment Design

The completely mechanical, integral mounting components supplied with Z-Blok® modules are located close to the cold face of the lining. This eliminates the problem of catalysis at elevated temperatures.

Gap-free Lining

The compression of the accordion-pleats, released after installation provides a very tight seal between adjacent blocks. Coupled with the parquet installation pattern, this counteracts shrinkage that occurs at operating temperatures and helps prevent joints from opening up in service.

Immediately Available for Operation

No special start-up procedures such as curing, drying, thermal conditioning, complicated heating schedules, or cold weather precautions are required.

Light Weight

A refractory fiber lining will weigh up to 75 % less than a lining of insulating firebrick and 90 % to 95 % less than a dense-refractory lining. Thus, the structural steel requirements for a furnace or a kiln are reduced.

Low Heat Storage

Heat storage is roughly proportional to the weight of the furnace lining. Low heat storage means that the heat-up and cool-down stages of furnace or kiln operating cycles can be greatly accelerated, thus increasing the production capacity. Low heat storage also reduces the amount of fuel necessary to bring the furnace up to temperature at the start of an operation.

Thermal Shock Resistance

Z-Blok refractory fiber modules are exceptionally resistant to damage due to extreme and rapid temperature fluctuations. A furnace can be heated and cooled just as rapidly as the ware or load being fired can tolerate.

Mechanical Shock Resistance

Refractory fiber felt and blankets are flexible and resilient. They are not easily damaged by abuse prior to installation, by shock abuse to a completed furnace, or by vibration from over-the-road transportation. Refractory fiber is ideal for shop-fabricated units shipped with the lining already in place.

Resiliency

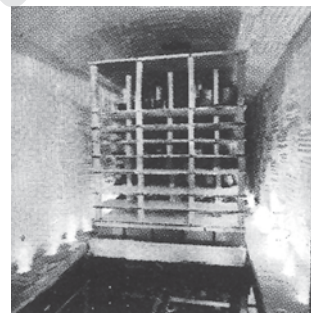
Since the lining will withstand differential movement, the furnace or kiln structural steel need not be totally rigid. This provides an opportunity for innovative furnace and kiln designs.



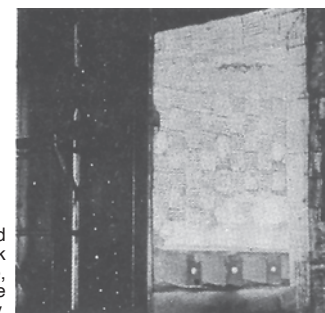
Z-Blok® modules improved thermal efficiency and increased productivity in this annealing furnace.



Z-Blok® modules dramatically improved the efficiency of this ladle heat shield, reduced maintenance.



Z-Blok® lining reduced fuel use by 15-20 % in this envelope kiln, shortened cycle times and increased output.



Z-Blok® lining eliminated recurring problems in brick wall of ethylene furnace, reducing maintenance considerably.

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Z-Blok® Module Components

The Z-Blok® module is composed of accordion-pleated Cerablanket, Cerachem or Cerachrome Blanket, with 8 pleats, and an attachment system.

Below is an schematic view of the components of the attachment system which forms an integral part of the Z-Blok® module.

- Clips and channels are Type 304 stainless steel.
- Support beams are Type 321 titanium reinforced and completely encased in pleats of refractory fiber.
- Tabs are attached to beams and penetrate pleats.
- Tabs are attached to channel on outside of the block.
- There are two types of attachment clips that are fastened to furnace shell:
 - Rectangular clip
 - Washer
- Channel slides into the clip. Channel slides over the washer.

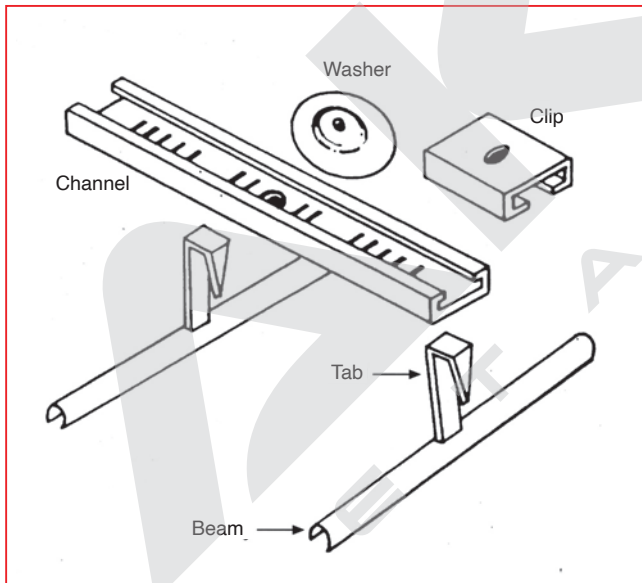
Installation

The Z-Blok® system speeds refractory fiber blanket installation because the blanket is pre-fabricated into modules that attach to the furnace in one step.

Z-Blok® modules are installed by simply sliding them into place, passing the channel at the back of the Z-Blok® module through the attachment clip or washer previously positioned on the shell of the equipment being lined.

There are several acceptable ways to fasten the attachment clip to a furnace shell:

- 1- Powder-actuated fasteners
 - 2 -Welded fasteners - studs of cotter key-life pins
 - 3 -Bolts and nuts, self-tapping screws or pop rivets.
- These require the shell to be pre-drilled.



Attachment components

The values given herein are typical average values obtained in accordance with standard test methods and subject to normal manufacturing variations. They are supplied as technical data and may change without notice. Contact our company to obtain detailed information.

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