

## Foamfrax® HD Insulation

Foamfrax® HD Insulation is a monolithic thermal management product developed by Unifrax Corporation. This product is a four-component system of specially conditioned bulk ceramic fibers, an inorganic binder, an organic foaming binder, and a clay additive.

The Foamfrax installation process combines the bulk fiber material with the inorganic and organic binders in a patented mixing mechanism. Within the mixing chamber, the fibers and binders are combined to create a homogeneous foam/fiber mixture. The Foamfrax installation machinery propels this mixture through a feed hose and nozzle, and the material is then gunned onto the target surface. The proprietary Foamfrax HD binder system and patented installation method completely encapsulate the fibers with the foaming binder, significantly reducing airborne fiber levels during installation. Foamfrax HD Insulation is available in three fiber grades: Foamfrax HD Grade I Fiber (2300°F Refractory Ceramic Fiber), Foamfrax HD Grade II Fiber (2600°F Refractory Ceramic Fiber), and Foamfrax HD Grade III Fiber (2800°F Ceramic Fiber).

Foamfrax HD is easily installed. The interlocking network of fibers provides a strong, uniform monolithic structure having excellent thermal insulating properties, very low heat storage, and excellent resistance to thermal shock. Foamfrax HD Insulation is unaffected by most chemicals except hydrofluoric acid, phosphoric acid, and concentrated alkalis.

Foamfrax HD Insulation is used to insulate metal, refractory, or ceramic fiber surfaces at temperatures up to 2800°F. It can be installed at rates several times faster than conventional insulating products, to solve a wide range of thermal management problems.

A principal application of Foamfrax HD Insulation is to make high-strength ceramic fiber shapes using the Foamfrax process. This method features extremely quick fabrication and inexpensive mold design. Foamfrax HD Insulation is also very well suited for potential erosion or physical abuse areas. This product is completely immune to thermal shock and must be dried to a minimum temperature of 300°F for 24 hours to achieve its final product form.

Foamfrax HD Insulation has the following outstanding characteristics:

- Speed and ease of installation
- Low rebound
- Low thermal conductivity
- Low thermal shrinkage
- Low heat storage
- Excellent thermal shock resistance
- Good chemical resistance
- Good sound absorption



Foamfrax HD Insulation

### Principal Applications

- Furnace linings (reformers, boilers, kilns, heat treating furnaces, etc.)
- Vessel Linings
- Incinerators, Flues, Ducts and Stacks
- Low mass kiln car decks
- High-velocity applications
- Composite Lining Systems
- Refractory Shapes



Foamfrax Equipment

Refer to the product Material Safety Data Sheet (MSDS) for recommended work practices and other product safety information.

The Foamfrax Technology is protected under the following U.S. Patents: 4,978,252, 5,131,590 and 4,768,710.

## Typical Product Properties

	Foamfrax HD Grade I Fiber	Foamfrax HD Grade II Fiber	Foamfrax HD Grade III Fiber
Color (Fired)	White	White	White
Melting Point	3200° F (1760° C)	3200° F (1760° C)	3200° F (1760° C)
Temperature Grade	2300° F (1260° C)	2600° F (1430° C)	3000° F (1649° C)
Recommended Operating Temperature <sup>(1)</sup>	2150° F (1175° C)	2450° F (1345° C)	2800° F (1538° C)
Installed Wet Density	32 pcf (512 kg/m <sup>3</sup> )	32 pcf (512 kg/m <sup>3</sup> )	24 pcf (384 kg/m <sup>3</sup> )
Installed Fired Density	16 pcf (256 kg/m <sup>3</sup> )	16 pcf (256 kg/m <sup>3</sup> )	12 pcf (192 kg/m <sup>3</sup> )
Loss On Ignition (LOI)	.75%	.75%	.75%
Moisture (At Installation)	50%	50%	50%
Shrinkage (24 hrs. @ Operating Temperature)	<3%	<3%	<3%

(1) The recommended operating temperature of Fiberfrax® Products is determined by irreversible linear change criteria, not melting point.

Data are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

For additional information about product performance or to identify the recommended product for your application, please contact the Unifrax Application Engineering Group at 716-278-3888.

