

Anchor-Loc[®] 3 Insulating Fiber Modules

Product/System Description

The Anchor-Loc[®] 3 Insulating Fiber Module is designed to meet a wide range of application requirements in many types of heat-processing equipment. Each Anchor-Loc 3 module is supplied with a D-2 threaded fastening system to attach the module to the surface of heat-processing vessels.

Typically, Anchor-Loc 3 modules are installed in a pre-engineered layout pattern. Once the threaded stud is welded to the casing, the module is secured in place with a hex nut.

The Anchor-Loc 3 module may also be installed with a self-contained weld-on attachment or a bolt-on fastener for installation over expanded metal grating. Please contact the Unifrax Application Engineering Group at (716) 278-3888 for additional details about module attachment options, design recommendations and installation drawings.

Application Advantages Provided by the D-2 Fastening System

- Stud welds can be torque tested and visually inspected before modules are installed.
- Compatible with shell coatings, foil vapor barriers or back-up insulation blanket.
- The D-2 fastening system features an alignment tool that guides the hex nut on to the threaded weld stud. This system eliminates cross threading, increasing installation speed and assuring reliable attachment of the module to the casing.
- Simple to install and replace.

Application Problems Solved

- Compatible with dirty fuel fired units.
- Provides reliable service under continuous operation conditions.



- Ease of replacement on door seals, covers and other areas of mechanical wear.
- Extends service life in applications where vibration is present.

Typical Lining Applications

- Feed heaters
- Reformers
- Ethylene Furnaces
- Boilers
- Reheat Furnaces
- Steel Soaking Pit Covers
- Ladle Preheat Covers
- Forge Furnaces
- Incinerators
- Stacks, Ducts
- Doors, Covers
- Ceramic Kilns
- Personal Protective Shield

Industries/Markets Served

- Chemical and petrochemical
- Refining
- Iron and Steel
- Ceramic

ANCHOR **Loc3**
Insulating Fiber Modules

Advantages Over Refractory

- Low heat loss
- Low heat storage
- Thermal shock resistance
- Fast thermal cycling (heat up/cool down)
- Energy savings (less fuel used)
- Easy to install
- Requires less maintenance

The Anchor-Loc 3 Module

Anchor-Loc 3 modules are made from a continuous “S” fold of fiber insulation blanket. A variety of refractory ceramic fiber and biosoluble fiber chemistries may be used to construct Anchor-Loc 3 modules.

The insulating blankets used to fabricate the Anchor-Loc 3 modules are made from inorganic spun fibers. These fibers are cross-linked in a needling process to produce a blanket with high tensile strength and excellent physical integrity. At maximum operating temperatures, the inherent shrinkage in the insulating fiber blanket causes the material at the “S” fold to seal together, preventing heat flow to the furnace casing.

Two ceramic fiber blanket chemistries are used for Anchor-Loc 3 construction. Durablanket® HPS and Durablanket 2600 with temperature grades of 1316°C (2400°F) and 1427°C (2600°F) respectively.

The Anchor-Loc 3 module is also constructed from biosoluble insulating blankets. For applications where operating temperatures may reach 1100°C (2012°F), the Anchor-Loc 3 is fabricated from Insulfrax® S Blanket. For continuous operating temperatures up to 1260°C (2300°F), Isofrax® 1260C soluble fiber blanket is selected for module construction.

A variety of module densities and thicknesses are available to meet a wide range of application needs.

Each cold face fold of the module blanket is supported by two alloy tubes which secure the insulating blanket to the stainless steel module anchor. An access tube extends from the module anchor to the hot face surface of the module. This removable tube provides access to the module anchor for ease and speed of installation.

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Installation Over Casing Plate

Tools Required

- Stud Arc Welding Equipment for 8mm diameter studs
- Torque Wrench to test welds (optional)
- One of the following:
 - a) 3/8" drive ratchet
 - b) 3/8" drive speed wrench
 - c) Electric screwdriver
- 13mm D-2 installation socket, Unifrax Part # 779988889
- D-2 hex nut alignment tool, Unifrax Part # 779988890
- Tape measure
- Chalk line
- Utility knife (to trim modules and cut module banding)
- Tamping board
- Garden Sprayer (to moisten module surface prior to tamping)
- 8mm x 1.25 die and die stock (to remove weld splatter)

Installation Tools



D-2 installation socket, D-2 hex nut alignment tool, speed wrench, die and diestock

Installation Procedure

Note: Anchor-Loc 3 insulating fiber modules may be installed in a unidirectional or parquet pattern. Parquet installation is recommended for service temperatures below 1093°C (2000°F). Unidirectional installation is recommended for service temperatures up to 1343°C (2450°F).

- 1 Lay out the installation pattern on the furnace casing:

Horizontal (For both Unidirectional and Parquet module installation patterns.)

153mm (6") – 305mm (12") – 305mm (12") –
305mm (12") – (305mm (12")) repeating

Vertical (For Unidirectional module installation. This example is based on 160 kg/m³ [10 pcf] lining density and single folded 128 kg/m³ [8 pcf] batten strips.)

15.9mm (7.5") – 28.6mm (13.5") – 28.6mm (13.5") –
28.6mm (13.5") – (28.6mm (13.5")) repeating

Vertical (For Parquet module installation.)

152mm (6") – 305mm (12") – 305mm (12") –
305mm (12") – (305mm (12")) repeating



- 2 Spot grind or sandblast the casing if necessary. Weld locations must be free of rust, scale, oil and dirt to accept an arc weld.

- 3 Weld Anchor-Loc D-2 studs (8mm x 32mm studs supplied with modules) to furnace casing. If modules are to be installed with a vapor barrier system, or over back-up blanket, the optional longer stud (8mm x 67mm) should be supplied on the order.



- 4 Place an 8mm x 1.25 hex nut on the stud and test the weld with a torque wrench (optional).



- 5 Cover the studs with tape, plastic caps or straws.*
- 6 Apply stalastic coating to casing, as directed by manufacturer.*

***Steps used when furnace casing coatings are desired.**

- 7 To install each module, thread the D-2 alignment over the pilot thread on the end of the D-2 stud.



- 8** Align the hole in the module base bar over the end of the D-2 alignment tool. Next, slide the module over the weld stud, seating the module to the casing/back-up insulation.



- 9** Place an 8mm x 1.5 hex nut in the D-2 installation socket. With the hex nut centered over the alignment tool, slide the socket through the module access tube until the nut contacts the end of the weld stud. The design of the D-2 stud facilitates alignment between the nut and stud, eliminating cross-threading and facilitating fast and accurate installation.



- 10** Thread the hex nut onto the D-2 stud. (It may be necessary to start the nut by making the first turn of the socket in reverse to align the threads.)
- 11** Finish tightening the nut until it is firmly seated against the base bar, seating the perimeter of the module to the casing (back-up insulation).



- 12** After all the modules have been installed, cut the plastic band around each module. Remove the bands, cardboard endplates and cardboard guide tubes, allowing each module to fully expand.



- 13** Close any visible opening in the module lining. Dampen the surface of the lining with clean water from the garden sprayer to control dust generation during tamping.



- 14** Finally, tamp the entire surface of the Anchor-Loc 3 lining to tighten all joints and close any gaps.

