

FyreWrap® Elite™ 1.5 Duct Insulation – Ventilation Air Duct (VAD) System

Introduction

Unifrax's FyreWrap® Elite™ 1.5 Duct Insulation is a single-layer flexible duct wrap enclosure for 1- and 2-hour fire-rated ventilation air ducts (VAD). Typical duct types include smoke control, stairwell and vestibule pressurization, ventilation, heating and air conditioning supply/return, and commercial dryer exhaust, as well as refuse and linen chutes. This slim, compact design is an alternate to code prescribed fire-rated shafts and results in significant weight, space and labor savings when compared to traditional shafts.

FyreWrap Elite 1.5 Duct Insulation VAD System offers the following features:

- 1- and 2-hour fire-rated enclosure
- Zero clearance to combustibles at all locations on blanket wrap
- Alternate to fire-rated shaft
- Saves weight, space, labor
- Thin, lightweight single-layer system
- High-temperature, biosoluble insulation
- Durable foil-scrim covering
- GREENGUARD listed for Microbial Resistance

Typical Product Parameters

Thickness	1.5"
Nominal Density	6pcf
Standard Product Form	Scrim Encapsulated
Product Availability	1.5" x 24" x 25LF 1.5" x 48" x 25LF

Product Components

Core Material: FyreWrap Elite 1.5 Duct Insulation incorporates Insulfrax® Thermal Insulation as its core material. Insulfrax is a high-temperature insulation made from calcia, magnesia, silica chemistry designed to enhance biosolubility. It provides excellent insulation in a noncombustible blanket form.

Encapsulating Material: The core insulation is completely encapsulated in an aluminum foil, fiberglass-reinforced scrim covering. This scrim provides additional handling strength as well as protection from tearing and moisture absorption.



FyreWrap® Elite™ 1.5 Duct Insulation

Typical Product Properties

Intertek Testing Services	File No. 14870
Design Listings	UNI/FRD 120-15, UNI/FRD 120-21, (previously OPL) UNI/FRD 120-23, UNI/FRD 120-24
Fire Endurance Rating	ISO 6944 – Type A Duct
Stability	2 Hours
Integrity	2 Hours
Insulation	2 Hours
Through-Penetration	2-hour Fire
Firestop Test	Endurance Rating
Per ASTM E119	F-rating = 2 hrs; T-rating = 2 hrs.
Per ASTM E814	F-rating = 2 hrs; T-rating = 2 hrs.
ASTM E84/UL723	Encapsulated
Flame Spread/	Blanket = 25/50
Smoke Ratings	Unfaced Blanket = 0/0
ASTM E136	Pass
Non-combustibility	
ASTM C411 Hot	Pass
Surface Performance	
ASTM C518 Durability	Pass
ASTM C518 Thermal	R-Value = 6.19 (4.13 per inch)
Resistance	
ASTM D6329-03	Resistant to Mold Growth
Microbial Resistance	
California State Fire	No: 240-1478:100
Marshal Listing	



Installation

FyreWrap Elite 1.5 Duct Insulation VAD Systems consists of a single-layer applied directly on to the duct surface. Only encapsulated blanket should be utilized to ensure the outer surface of the insulation is protected. The insulation system may be installed at zero clearance to combustibles at all locations on the wrap – at material overlaps and in the field between overlaps. Install insulation with a 3" minimum overlap on all joints. Seal cut edges with pressure-sensitive aluminum foil tape. The perimeter transverse overlap of adjacent blanket may be installed using any of the following three techniques. See Figure 1 for details.

Telescope Overlap Wrap Technique –

This wrap technique is the most common method of installing FyreWrap Elite 1.5 where each adjacent blanket has one edge exposed and one edge covered by the next blanket.

Checkerboard Overlap Wrap Technique –

This installation uses a 3" overlap pattern with both edges of each alternating blanket covered by each adjacent blanket whose edges are exposed. The overlap joints in alternate layers of blanket resemble a checkerboard pattern in the completed installation. This technique is often utilized when a small section of duct wrap must be repaired.

Butt Splice with Collar Wrap Technique –

This wrap technique permits installation with the blanket edges butted together and a 6" wide collar of blanket that is centered over the butt splice, overlapping each adjacent blanket 3". The collar can be field fabricated from FyreWrap Elite 1.5 rolls or purchased separately.

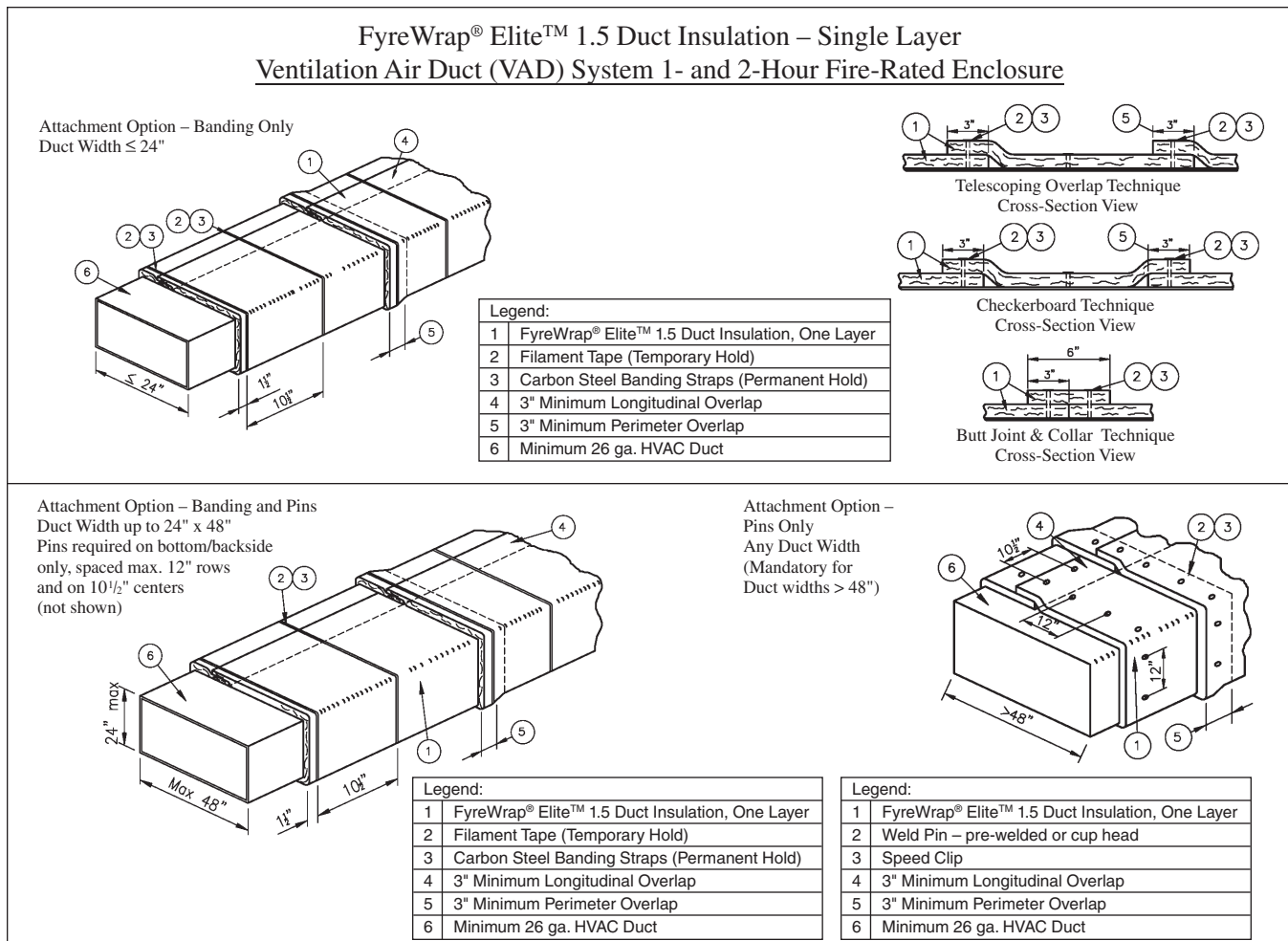


Figure 1. FyreWrap Elite™ 1.5 Duct Installation – VAD System Installation Techniques

Attachment Options

Three attachment options are available for installers. The choices are limited by the duct width dimension. Details on each are provided below and shown in Figure 1.

Banding Only: For Duct Widths 24" or Less

To temporarily secure the insulation, optional use of filament tape is permitted. Place carbon steel or stainless steel bands (min. 1/2" wide, nom. 0.015" thick) over material joints and within the field between. Locate bands 1 1/2" from the edge of each blanket overlap. Place an additional band(s) between overlaps, spaced 10 1/2" on center. Tighten banding to firmly hold the wrap system in place but not so tight as to cut or damage the blanket. Pins are NOT required when the duct size falls within the above dimensions and this banding technique is used.

Banding and Pins: For Duct Widths Up to 24" x 48"

Weld 12-gauge steel insulation pins to the underside of horizontal runs and backside (side of duct having largest dimension) of vertical duct runs. Place pins at maximum 12" rows and on maximum 10 1/2" centers. To temporarily secure the insulation, optional use of filament tape is permitted. Impale FyreWrap Elite 1.5 over the pins and secure with 2 1/2" square or 1 1/2" round galvanized steel speed clips (washers). Turn down or cut off exposed ends of pins to eliminate safety

hazards. Locate carbon steel or stainless steel bands (min. 1/2" wide, nom. 0.015" thick) 1 1/2" from the edge of each overlap joint. Locate an additional band(s) between overlaps, spaced 10 1/2" on center. Tighten banding to firmly hold the wrap system in place but not so tight as to cut or damage the blanket. Cup head style pins are also permitted and shall be located at the same spacing as pre-welded pins.

Pins Only: Mandatory For Ducts Widths > 48", Optional For Any Duct Width

Weld 12-gauge steel insulation pins on all sides of the duct. Place insulation pins at maximum 12" rows and on maximum 10 1/2" centers. Pins in each row are maximum 6" from each duct edge. Locate insulation overlaps so they are centered on the pins. Impale FyreWrap Elite 1.5 over the pins and hold in place with 2 1/2" square or 1 1/2" round galvanized steel speed clips (washers) to keep the blanket from sagging. Turn down or cut off exposed ends of pins to eliminate safety hazards. Cup head style pins are also permitted and shall be located at the same spacing as pre-welded pins.

Supports

The duct support system shall be designed as required by IMC or SMACNA requirements and that will support the load of the ventilation air duct and the additional weight of the FyreWrap Elite 1.5 Duct Insulation VAD System under a fire load.

Attachment Options (Summary Chart):

Duct Dimension	Banding Only	Banding & Pins (Pins on Bottom)	Pins Only (All Four Sides)
Width ≤ 24"	●	●	●
Width Up To 48"		●	●
Width > 48"			●

Firestop Systems

Where ducts insulated with FyreWrap Elite 1.5 pass through fire-rated walls and floors, the penetration opening shall be firestopped to maintain the fire rating of the assembly. Firestop systems tested per ASTM E119 and ASTM E814 are provided below. Additional Tested and Listed firestop systems may be available for use. Contact Unifrax Application Engineering at 716-278-3888 for details and assistance or search the test laboratory web site directly for the latest documentation.

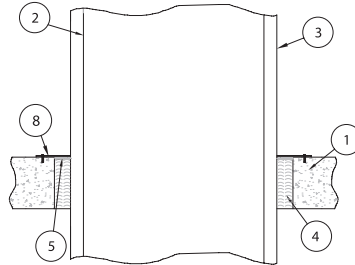
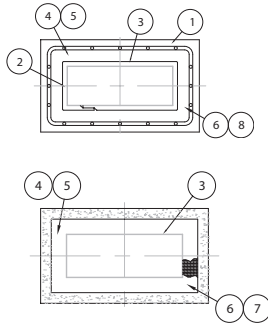
Intertek Design Nos. UNI/FRD 120-21, UNI/FRD 120-23, UNI/FRD 120-24

1- and 2-Hour VAD Duct – The 26-gauge HVAC duct shall have a maximum 1296 in² area with a maximum 54 inch width. The annular space on each side of the duct shall range from 1 inch to 2 inches. Tightly pack unfaced FyreWrap Elite 1.5 blanket into the opening. Cut the blanket into 9-inch strips, then fold the blanket into a "U" shape, compress it approximately 33%, and insert into the opening. Recess the packing material minimum 1/4" inch from the top surface of the floor to accommodate the firestop sealant. Apply STI SpecSeal SSS sealant to a 1/4" depth in the recess and overlap 3/4" on to the concrete and duct insulation. Additional duct reinforcement is required for firestop compliance to ASTM E814 and ASTM E119. See Figure 2 for details.

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FyreWrap® Elite™ 1.5 Duct Insulation
Through Penetration Firestop Systems
Intertek Design Nos. UNI/FRD 120-21,
UNI/FRD 120-23, UNI/FRD 120-24
Per ISO 6944, ASTM E814, ASTM E119
F-Rating = 2 hours, T-Rating = 2 hours



Legend:	
1	Concrete Floor Assembly, 4½" depth.
2	HVAC duct, min. 26 gauge, 1296 in² area, max. 54" width.
3	FyreWrap® Elite™ 1.5 Duct Insulation, One Layer.
4	Unfaced FyreWrap® Elite™ 1.5 Blanket, 4¼" depth. Compressed 33%.
5	STI SpecSeal SSS, ¼". Plus ¾" Overlap On Concrete and duct insulation.
6	Annular Space, 1" to 2".
7	Duct Reinforcement: ¼" thk. steel angle (1" tall vertical leg x horizontal leg dim. at least equal to width of annular space). Attach using ¼" dia. steel pop-rivets. Spaced max 6" O.C.
OR	
8	Min. ¼" thk. steel plate over the firestop sealant (compressing ductwrap ¼" and extending onto floor surface 2"). Attach with ¼" dia. concrete screws, spaced 6" O.C.


Figure 2.



Unifrax has a wide range of FyreWrap fire protection materials available to provide passive fire protection solutions in a variety of applications in the commercial building, industrial facility and transportation industries.

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

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



**OMEGA POINT
LABORATORIES**
US

APPLIED FIRE PROTECTION

UNIFRAX I LLC
New Carlisle, IN

FyreWrap® Elite™ 1.5 Duct Insulation
Nominal Density: 6 pcf

Listed
W/N 14870

Reference
*Directory of Listed
Building Products, Materials
& Assemblies
for Specifics*

Tested Per:
ASTM E119 - Fire Resistance Rating: 2 hour
ANSI/ASTM E814 - T-Rating: 2 hr F-Rating: 2 hour
ASTM E2336
UL 1978 (June 2002) - Sec. 14 & 15 - Passed
UL 2221
AC 101 (Engulfment) - Passed
AC 101 (Internal) - Passed
ISO 6944 - Duct Type: A

FyreWrap products offer solutions in applications such as:

- Grease, HVAC Ducts
- Railroad Tank Cars
- Cable Trays, Conduits
- Transit Cars
- Control System Covers
- Ships
- Above Ground Storage Tanks
- Expansion Joints
- Marine Bulkheads, Decks
- Fire Door Seals
- Structural Steel
- Chimney Liners
- Construction Joints
- Ceiling Air Diffusers
- Curtain Walls/Safing
- Hazardous Material Storage Containers
- Circuit Protection

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