

FireMaster® FastWrap® XLS Ventilation Duct Installation and Design Guidelines

Thermal Ceramics



Release Date: August 2021



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FireMaster FastWrap XLS Introduction

Air Ventilation Duct Enclosure System

1. Product Description

FireMaster® FastWrap™ XLS is the newest development in our portfolio of industry leading fire-rated duct passive fire protection from Morgan Advanced Materials. This new 1.5" thick (38 mm) matte black colored duct wrap design features a 25% lighter material weight than existing comparable duct wraps, making it the lightest weight system available in the market, tested and listed for use in 2 and 3-hour fire resistive enclosure protection of ventilation ducts, including smoke control, hazardous exhaust, stairwell pressurization, clothes dryer exhaust, and laboratory chemical fume duct applications. FireMaster FastWrap XLS is tested and listed for both Duct A and Duct B applications. In addition, FireMaster FastWrap XLS is also Intertek listed at 1.25" thickness (32 mm) for these same 2-hour ventilation duct (Duct A) applications, providing a 40% weight reduction over competitive 2-hour systems.

FireMaster FastWrap XLS lightweight system will reduce potential installer fatigue, decrease potential for accidents at job sites, and assist in reducing installation time. The flexible blanket system is composed of high temperature fibers classified for applications up to 2192°F (1200°C). It is fully encapsulated in a matte black, durable fiberglass reinforced foil facing for improved aesthetics, ease of handling and installation.

The core fibers in FireMaster FastWrap XLS are manufactured using Thermal Ceramics' patented Superwool® fiber, a low bio persistent fiber. FireMaster FastWrap XLS is under Intertek's Follow-Up Service Program to ensure consistent quality essential to this life-safety application.

2. Product Features

- Provides a 2-hour fire resistance rating and firestop system for ventilation ducts
- Intertek Listed duct installation
- Tested to ASTM E2816
- Listed for 2-hour Duct A and Duct B applications
- Alternate to fire-rated shaft
- Lightest weight wrap system available, at 4.4 pcf (70 kg/m³) density
- UL Environment validated as a 'Low VOC Emitting Material' and 'Mold Resistant'
- Provides a 2-hour fire rated enclosure based on a single layer (Duct A)
- Listed for both 1.25" (32 mm) and 1.5" (38 mm) thicknesses for providing a 2-hour rating (Duct A)
- Provides a 3-hour fire rated enclosure with a single layer (for vertical Duct A, at 1.5" (38 mm) thickness)
- Complies with IMC, IBC, NFPA 92, NFPA 101
- Encapsulated in a fiberglass reinforced, matte black foil facing for improved aesthetics
- Contours easily to complex duct designs
- Cuts easily with less dust for clean jobsite installation

3. Specifications - Division 23 07 13 – Duct Insulation

FireMaster FastWrap XLS is a flexible high temperature insulation rated to 2192°F (1200°C) that is fully encapsulated in a matte black fiberglass reinforced foil facing. Installation shall

be in strict accordance with manufacturer's published installation instructions, Intertek Listings, and shop drawings. The duct enclosure system shall be listed by Intertek per ASTM E2816 for a 2-hour rating and zero clearance to combustibles and tested per ASTM E84 or UL 723 for a flame/ smoke rating less than 25/50. Insulation shall have a nominal thickness of 1.5" (38 mm) or 1.25" (32 mm) and density of 4.4 pcf (70 kg/m³).

4. Physical Characteristics and Performance

Availability:	1.5" x 24" x 25' Rolls (38 x 610 x 7620 mm) 1.25" x 24" x 25' Rolls (32 x 610 x 7620 mm)
Density:	4.4 pcf (70 kg/m ³)
Thickness:	1.5" (38 mm) 1.25" (32 mm)
Color:	Matte black foil facing with silver text
Surface Burning:	< 25/50 (per ASTM E84)
R Value (at 75°F)	6.5 per layer (per ASTM C518)
Low VOC's	Validated, per CA Section 01350
Mold Resistant	Validated, per ASTM C1338

5. Ventilation Duct Listings

The following design listings are available for FireMaster FastWrap XLS:

Description	Laboratory	Listing Number
ASTM E2816, 2-Hour Fire Resistant Ventilation Air Duct – Condition A & Condition B (Duct A)	Intertek	TC/BI 120-02
ASTM E2816, 2-Hour Fire Resistant Ventilation Air Duct – Condition C & Condition D (Duct B)	Intertek	TC/BI 120-03
ASTM E2816, 3-Hour Fire Resistant Ventilation Air Duct – Condition B (Duct A)	Intertek	TC/BI 180-01
ASTM E814, 2-Hour Through Penetration Firestops – Condition A & Condition B (Duct A)	Intertek	TC/BI 120-02
ASTM E814, 2-Hour Through Penetration Firestops – Condition C & Condition D (Duct B)	Intertek	TC/BI 120-03
ASTM E814, 3-Hour Through Penetration Firestops – Condition B (Duct A)	Intertek	TC/BI 180-01

6. Codes and Test Standards

FireMaster FastWrap XLS has been tested in accordance with the following, as required for compliance with ventilation duct certification:



ASTM E2816	Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems
ASTM C518	Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
ASTM E84	Test Method for Surface Burning Characteristics of Building Materials
ASTM E119	Test Methods for Fire Tests of Building Construction and Materials
ASTM E136	Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C
ASTM E814	Test Method for Fire Tests of Penetration Firestop Systems
ASTM C411	Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
International Mechanical Code (IMC)	2012 – 2021 Editions
International Building Code (IBC)	2012 – 2021 Editions
NFPA 92 Standard for Smoke Control Systems	2015 – 2021 Editions
NFPA 101 Life Safety Code	2015 – 2021 Editions

7. Storage

FireMaster FastWrap XLS is supplied in corrugated cardboard cartons. It must be stored in a dry warehouse environment on pallets. Pallets should not be stacked. Do not store in outside conditions.

8. Installation

FireMaster FastWrap XLS shall be installed by a qualified contractor in accordance with manufacturer’s instructions and

laboratory design listings.

a) Materials and Equipment

- FireMaster FastWrap XLS
- Aluminum foil tape, foil scrim tape or UL 181 tape (black recommended)
- Glass filament reinforced tape (optional)
- Carbon steel or stainless-steel banding material, minimum 1/2" (13 mm) wide, minimum 0.015" (0.4 mm) thick, with steel banding clips
- Hand banding tensioner and crimping tool
- Minimum 12 gage (3 mm) steel insulation pins; steel speed clips, minimum 2-1/2" (63 mm) square or 2-1/2" (63 mm) diameter, or equivalent sized cup-head pins
- Capacitor discharge stud gun
- Approved firestop sealant

b) General

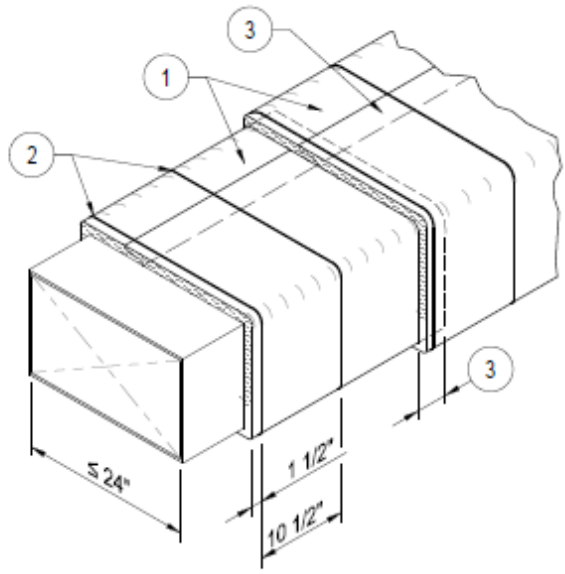
Cut edges of the blanket shall be taped with an approved tape to prevent exposed edges of the insulation from absorbing condensation or becoming contaminated by any other external factor. Overlaps are used to block heat transfer in the event of duct deformation resulting from thermal expansion. Filament tape is suggested to hold the blanket in place until steel banding or pinning is installed to permanently secure the blanket. All edges of insulation blanket should be protected with tape.

c) Installation in 1-layer for 2-hour HVAC Ducts (Duct A)

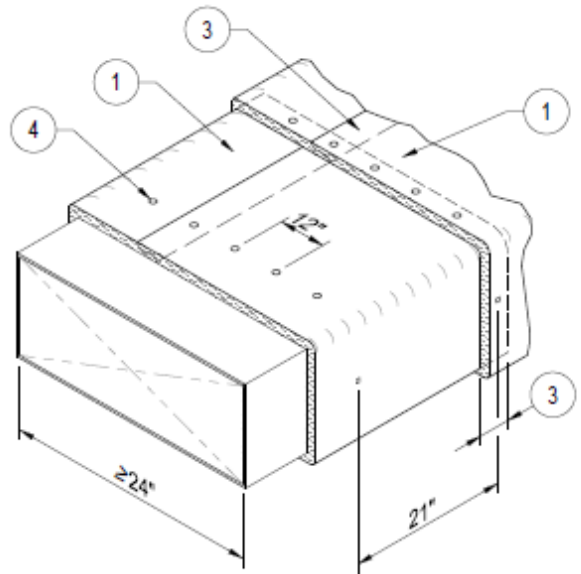
System requires one layer of insulation applied directly to the duct with 3" (75 mm) overlaps at all seams. The insulation is cut to a length sufficient to wrap around the duct and provide a 3" (75 mm) overlap where the blanket ends meet. Adjacent blankets are installed to provide a minimum overlap of 3" (75 mm). Pinning and/or banding is used to permanently secure the insulation to the duct. See Figure 1 for installation details.



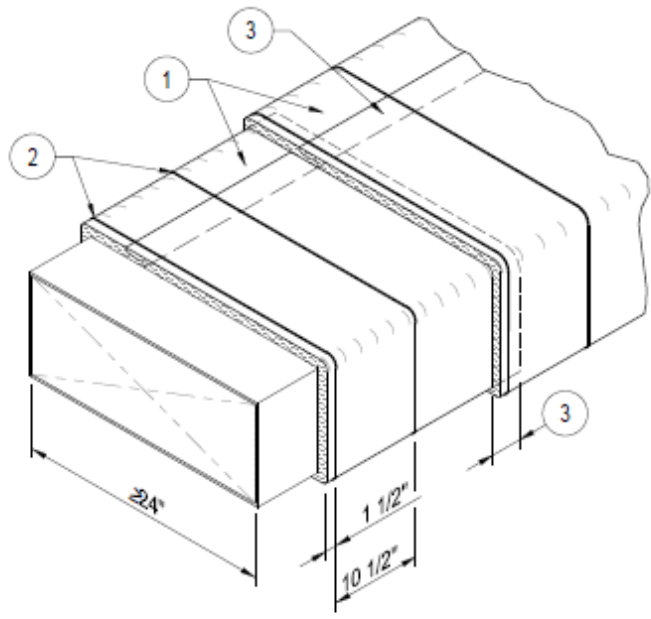
Figure 1: FireMaster FastWrap XLS Air Ventilation Duct Enclosure System, 2-Hour Fire Rated Enclosure



Attachment Option – Banding Only, Duct Width ≤24"



Attachment Option – Pins Only, Duct Width ≥24"



Attachment Option – Banding and Pins, Duct Width ≥24"

Note: Pins required on Bottom of Horizontal ducts & Wide side of Vertical Ducts only. Spaced max. 12" transverse, max 21" OC.

LEGEND	
1	One Layer of FireMaster FastWrap XLS Insulation for ASTM E2816 Air Ventilation Duct Enclosure (Duct A).
2	Steel banding minimum 1/2" wide by 0.015" thick.
3	3" minimum overlaps on all joints.
4	Weld pins and Clips.

The integrity of Firemaster duct systems is limited to the quality of the installation.

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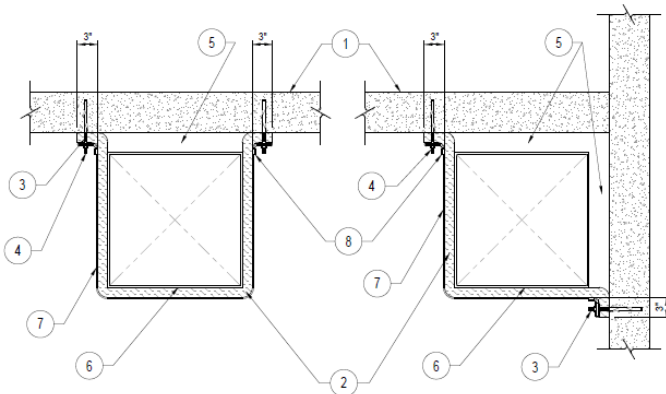


i) 2 & 3-Sided Wrap Installation (Figure 2)

When space does not allow for a complete wrap applied to the duct

on all four sides, FireMaster FastWrap XLS may be used for 2 or 3-sided installations with mechanical attachment to a rated concrete or CMU assembly. (See Figure 2 for installation details.)

Figure 2: FireMaster FastWrap XLS Air Ventilation Duct Enclosure System Shaft Alternative / Zero Clearance to Combustibles 2 and 3-Sided Wrap Detail for Attaching to Walls and/or Ceilings.



LEGEND	
1	Rated concrete floor/ceiling or wall, with minimum 2-hour rating.
2	1-layer of FireMaster FastWrap XLS insulation for ASTM E2816 Air Ventilation Duct Enclosure
3	Concrete fastener system
4	3/16" (5mm) thick x 2" (75mm) wide bar stock perforated 12" (305mm) OC.
5	8" (203mm) maximum air gap
6	Ventilation duct
7	Steel banding minimum 1/2" (13mm) wide x 0.015" (0.4mm) thick.
8	Banding clip

The integrity of Firemaster duct systems is limited to the quality of the installation.

Note: Ducts must be independently supported per code

*The integrity of FireMaster duct systems is limited to the quality of the installation

ii) Attachment Methods

- Banding Only** (Ducts smaller than 24" (610 mm)): Minimum 1/2" (13 mm) wide carbon steel or stainless-steel banding, 0.015" (0.4 mm) thick, is placed around the entire perimeter of the insulated duct on maximum 10.5" (270 mm) centers and 1.5" (38 mm) from each collar edge or 1.5" (38 mm) from each collar edge when using the butt joint and collar method. The banding is placed around the blanket and tightened to firmly hold the FireMaster FastWrap XLS in place against the duct, but not cause any cutting or damage to the blanket.
- Pinning Only:** For ducts larger than 24" (610 mm). When applicable, 12-gage (3 mm) copper-coated, steel pins are installed on 12" (305 mm) centers along the width of the duct and 21" (535 mm) centers along the length of the duct. Pins that extend beyond the outer blanket layer shall be turned down or the excessive length cut off to prevent sharp edges. Secure blanket using 2.5" (63 mm) x 12 gage (3 mm) galvanized steel clips.
- Pinning & Banding:** For ducts wider than 24" (610 mm). Pinning is required on the bottom of horizontal duct runs and on a wide side of vertical duct runs (in addition to steel banding). Transverse overlaps should be held in place by

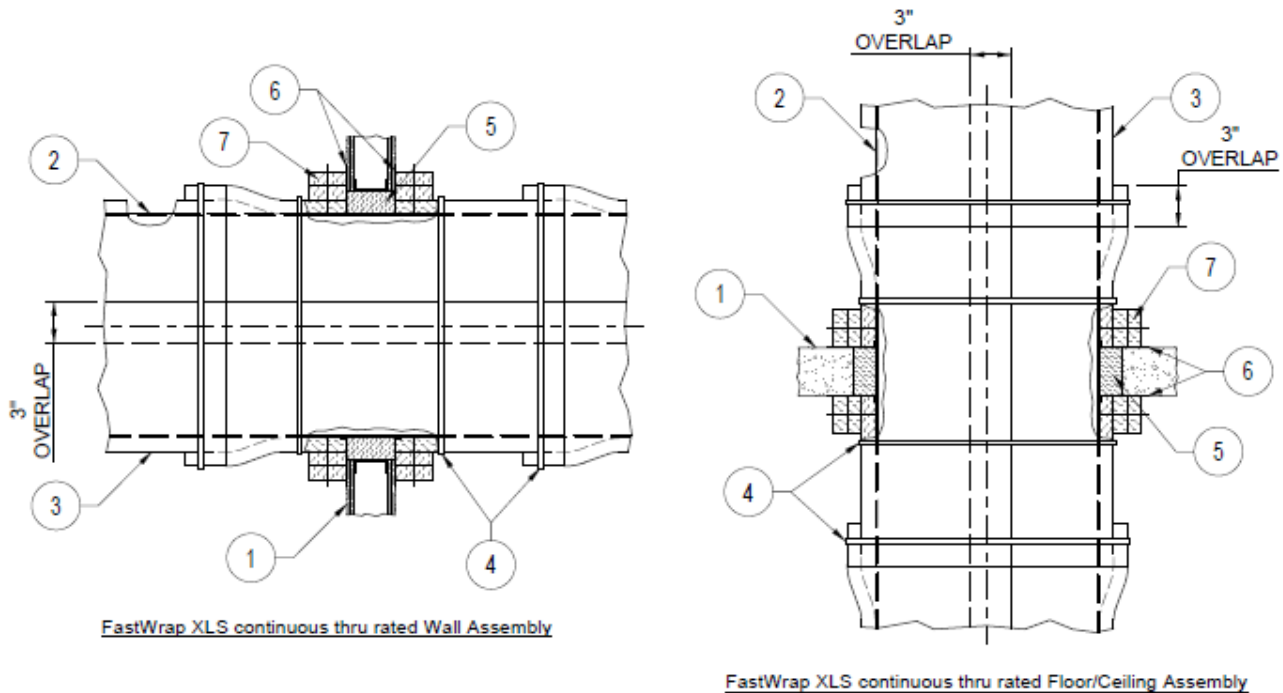
pins and be located in a corner of the duct. Banding, pins and clips should meet the specifications described previously.

iii) Through Penetration Firestop System

When the duct penetrates a fire rated assembly, a firestop system must be employed to maintain the rating of the assembly. Firestops that are listed for use with FireMaster FastWrap XLS per Listing TC/BI 120-02 are provided in Figure 3. Prior to installing any firestop system, the surfaces of all openings and penetrating items must be clean and dry. For nominal 2.5" (63 mm) annular space around the duct, cut 3 layers of 4" (100 mm) wide x 1.5" (38 mm) thick FireMaster FastWrap XLS or 4 layers of 4" (100 mm) wide x 1.25" (32 mm) thick FireMaster FastWrap XLS unencapsulated blanket to fill entire annular space. Secure minimum 1" (25 mm) x 4.5" (115 mm) x 18-gage steel flashing using appropriate anchors for the construction, installed maximum 8" (203 mm) OC. Use silicone sealant between flashing and duct; and between flashing and supporting construction. Install 2 ea. 6" (150 mm) wide collars made of FireMaster FastWrap XLS adjacent to the penetration; secure with a row of pins spaced maximum 12" (305 mm) OC.



Figure 3: FireMaster FastWrap XLS Air Ventilation Duct Enclosure System Through Penetration Firestop Systems



Note: Ducts must be independently supported per code

LEGEND	
1	Rated Floor/Ceiling or Wall Assembly
2	Ventilation Duct
3	One Layer of FireMaster FastWrap XLS
4	Steel Banding
5	FireMaster FastWrap XLS packing material
6	Steel Flashing
7	FastWrap XLS Collars, 6" wide

The integrity of Firemaster duct systems is limited to the quality of the installation.

iv) Support Hanger Systems

Trapeze support hangers shall be spaced on maximum 60" (1500 mm) centers. Hanger rods shall be anchored with steel drop in or wedge expansion type masonry anchors. Threaded rods should be spaced a minimum of 1" (25 mm) and maximum of 6" (150 mm) from the insulated duct. No additional protection is required for hangers and supports meeting the requirements of the Table below.

Hanger Cross Section	Maximum Duct Perimeter, in (mm)	Trapeze Support (or equivalent Yield Strength), in (mm)
3/8" (10 mm) threaded rod	55" (1400 mm)	1.5" x 1.5" x 3/16" angle (38 x 38 x 5 mm)
3/8" (10 mm) threaded rod	218" (5540 mm)	3" x 3" x 1/4" angle (76 x 76 x 6 mm)

d) Installation in 2-layers for 2-hour HVAC Ducts (Duct B)

For installation instructions for 2-hour Duct B ventilation systems, please contact Morgan Advanced Materials.

9. Maintenance and Repair

No maintenance is required when installed in accordance with Morgan Advanced Materials' installation instructions. If damage is limited to the foil facing, approved tape can be used to repair the foil facing. If an area of blanket is found to be damaged the following procedure must be incorporated: If the damaged area is larger than 8" x 8" (203 x 203 mm), the entire wrap section must be removed and replaced according to Morgan Advanced Materials installation instructions. If the damaged area is small (less than 8" x 8" (203 mm x 203 mm), the damaged area must be cut away and replaced with a new section 1" (25 mm) larger in length and



width than the cut out, such that the new section can be compressed tightly into the cut-out area. All cut edges of the new section must be taped and sealed with an approved tape. The new section must be held in place with either pinning or banding per Morgan Advanced Materials installation instructions.

10. Limitations

Morgan Advanced Materials FireMaster FastWrap XLS shall be installed in accordance with these installation instructions and appropriate laboratory design listings. The integrity of FireMaster

FastWrap XLS systems is limited to the quality of the installation.

* For personal protective equipment recommendations, please see Morgan Advanced Materials SDS Number 350.

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Morgan Advanced Materials

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