

# UL Evaluation Report

## UL ER14229-01

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UL Category Code: **ULFZ**

CSI MasterFormat®

DIVISION: 23 00 00 – HEATING, VENTILATION, AND  
AIR CONDITIONING (HVAC)

Sub-level 2: 23 07 00 – HVAC Insulation

Sub-level 3: 23 07 13 – Duct Insulation

Sub-level 4: 23 33 33 – HVAC Accessories

DIVISION: 07 80 00 – Fire and Smoke Protection

Sub-level 2: 07 84 00 – Firestopping

### COMPANY:

Thermal Ceramics, Inc.  
2102 Old Savannah Road  
Augusta, GA 30906  
[www.morganthermalceramics.com](http://www.morganthermalceramics.com)  
[Clay.Booth@MorganPLC.com](mailto:Clay.Booth@MorganPLC.com)

### 1. SUBJECT

FireMaster FastWrap XL and Pyroscat DuctWrap XL flexible blankets used to construct zero-clearance fire-resistance-rated grease duct assemblies serving Type I kitchen hoods. These blankets may also be used to meet the requirements for a shaft enclosure.

### 2. SCOPE OF EVALUATION

Compliance with the following codes:

- 2006, 2009, and 2012 *International Mechanical Code*® (IMC)
- 2006, 2009, and 2012 *International Building Code*® (IBC)
- 2006, 2009, and 2012 IAPMO *Uniform Mechanical Code* (IAPMO UMC)
- NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations (2015)



## The products were evaluated for the following properties:

- Durability
- Fire resistance
- Noncombustibility
- Surface Burning Characteristics

### 3. REFERENCED DOCUMENTS

- ANSI/ASTM E2336, Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems
- ANSI/UL1479, (ASTM E814), Fire Tests of Through-Penetration 233Firestops
- ANSI/UL 723, (ASTM E84), Standard for Test for Surface Burning Characteristics of Building Materials

### 4. USES

#### 4.1 General

FireMaster FastWrap XL and Pyroscat DuctWrap XL are flexible blankets used to construct zero-clearance, fire-resistance-rated grease duct enclosure assemblies serving Type I kitchen hoods. The duct wrap materials comply with the 2012, 2009 or 2006 IMC Section [506.3.1.1](#), and are an alternative to the one and two hour fire-resistance-rated (shaft) enclosure requirements of the 2012 IBC section [713.4](#), 2009 IBC Section [708.4](#), 2006 IBC Section [707.4](#), and IAPMO UMC Section 510.7.1, when installed in accordance with Section 6 of this Report.

### 5. DESCRIPTION

#### 5.1 FireMaster FastWrap XL and Pyroscat DuctWrap XL Insulating Blankets:

The FireMaster FastWrap XL and Pyroscat DuctWrap XL are high temperature resistant calcium magnesium silicate fiber blankets encapsulated with a polypropylene/aluminum foil scrim. The blankets are nominally 1-1/2 in. (38 mm) thick, and are provided in rolls of 25 ft (7.6 m) long by 2 or 4 ft. (610 or 1219 mm) wide. The blankets have a nominal density of 6 pcf (96 kg/m<sup>3</sup>) with a Flame-Spread Index of 25 or less and a Smoke Developed Index of 50 or less when tested in accordance with UL723 (ASTM E84).

#### 5.2 Duct System:

Grease ducts serving Type I hoods must be constructed of minimum 0.059 in. (1.5 mm) thick, No. 16 gauge carbon steel. Joints and seams of grease ducts must comply with 2012, 2009, or 2006 IMC Section [506.3.2](#) or IAPMO UMC Section 510.1.7, as applicable, and section 6.2.3 of this Report. When the duct system penetrates a floor/ceiling assembly required to be protected in accordance with 2012 IBC Section [713](#), 2009 IBC Section [708](#), or 2006 IBC Section [707](#), as applicable, the duct system must be supported as described in Fig. 1. Maximum duct size is 24 in. (610 mm) by 48 in. (1219 mm) or maximum diameter of 36 in. (914 mm).

#### 5.3 Duct Wrap Tape:

Pressure-sensitive aluminum foil tape, a minimum of 3 in. (76.2 mm) wide is used to seal cut edges of the blanket material. Optional high performance filament tape, typically 3/4 in. (19 mm) wide may be used to secure the blanket material in place prior to permanent affixing using banding or pinning materials as referenced in Section 5.4 of this Report.

## **5.4 Securement Materials:**

**5.4.1** Banding material must be minimum 0.015 in. (0.38 mm) thick carbon steel or Type 304 stainless steel used in conjunction with minimum 1 in. (25.4 mm) long stainless steel crimp clips. The banding is a minimum 1/2 in. (12.7 mm) wide. Banding materials are spaced a maximum of 12 in. (305 mm) on center and 1-1/2 in. (38 mm) from the transverse joints of the duct wrap.

**5.4.2** Pinning material must be minimum No. 12 gauge steel insulation pins with 1-1/2 in. speed clips. When used, pins have a maximum spacing of 12 in. (305 mm) along the width of the duct and 12 in. (305 mm) along the length of the duct.

## **5.5 Firestop Sealant:**

The following sealants are used for through-penetration firestops described in Section 6.3.

### **5.5.1 Tremco Inc.**

- Fyre-Sil
- FyreCaulk
- TREMstop Acrylic (GG) Gun Grade Acrylic Firestopping Sealant
- TREMstop Intumescent Acrylic Sealant
- TREMstop IA

### **5.5.2 3M Co.**

- Barrier 1000 NS

### **5.5.3 Specified Technologies Inc. (STI)**

- Pensil Pen300
- SpecSeal Series SIL300
- SpecSeal Series 300
- SpecSeal Series SSS
- SpecSeal LC150
- SpecSeal LCI
- SpecSeal LC600

### **5.5.4 Rectorseal**

- Metacaulk 835
- FS900
- FS 1900

### **5.5.5 EGS Nelson Firestop**

- FSP Putty
- ES1399
- LBS3

### 5.5.6 Hilti Construction Chemicals, Div. of Hilti Inc.

- FS ONE Sealant
- FS One MAX intumescent Sealant
- CFS-S SIL GG
- CFS-S SIL SL

### 5.5.7 Thermal Ceramics

- FireMaster Putty

## 5.6 Prefabricated Access Doors:

Prefabricated access doors, shown in Table 2 may be used in lieu of field-fabricated access doors, when installed as described in Section 6.2.2.3 of this report. The doors and their components are sized for the clean-out opening and are provided with threaded rods and wing nuts for securing the insulation blanket. The Ultimate Door system includes an appropriately sized outer insulation plate and must use the DuctMate supplied 2300°F gasket.

## 6. INSTALLATION

### 6.1 General:

FireMaster FastWrap XL and Pyroscat DuctWrap XL duct wrap are installed with zero clearance from the ducts, and may be installed with zero clearance from the insulating material to combustible construction. The systems are permitted to penetrate fire-resistance-rated assemblies when the through-penetration is protected in accordance with Section 6.3 of this report. The system complies with the requirements of 2012, 2009 and 2006 IMC Section [602.2.1](#) and section 602.2 of the IAPMO UMC for installation into plenums.

### 6.2 Two-hour Fire-resistance-rated Grease Duct Assembly:

Refer to the UL Fire Resistance Certification information for File R14229 (HNKT) for applicable details of the Grease Duct fire-resistance-rated assembly covered by this report and shown in Table 1. Fire resistance ratings are only applicable when the assembly is constructed in accordance with the published assembly number. Refer to Fig. 1 for installation details.

**TABLE 1 – Grease Duct Assemblies**

Product Designation	UL Grease Duct Assembly No.
FireMaster FastWrap XL or Pyroscat DuctWrap XL	<a href="#">G-18</a>

## 6.2.2 Grease Duct Access Doors:

### 6.2.2.1 General:

Installation of grease duct access doors must comply with 2012, 2009 and 2006 IMC Section [506.3.8](#) or IAPMO UMC Section 510.3, as applicable. Grease duct access doors must be protected with either FireMaster FastDoor insulation cover assembly or three layers of FireMaster FastWrap XL or Pyroscat DuctWrap XL blanket material.

### 6.2.2.2 Field-fabricated Access Doors:

Each access door assembly has four threaded rods, one welded to each corner of the door opening. Each threaded rod measures 1/4 in. (6.4 mm) in diameter and 4-1/2 to 5 in. (114 to 127 mm) in length. Four inch long (102 mm) hollow steel tubes fit over the threaded rods and act as protective sleeves for the blanket material when the door is fastened. In addition, four copper-coated steel insulating pins, with either No. 10 or No. 12 gauge diameter and lengths of 4 to 5 in. (102 to 127 mm), are welded to the steel door panel for blanket insulation. Two layers of the blanket material are installed over the welded insulation pins, with the second layer having a perimeter of 1-1/2 in. (38 mm) wider than the first. The third layer of blanket material is cut in a similar manner and installed over the second layer. Each subsequent layer must have a minimum overlap of 1-1/2 in. (38 mm) around the perimeter of the door and any previous blanket layers. The blanket layers are held in place with 1-1/2 in. (38 mm) square or round speed clips and wing nuts for 1/4 in. (6.4 mm) diameter rod. Access door labels must be applied to all access doors. See Fig. 2 for details of protection for field-fabricated access doors.

### 6.2.2.3 Prefabricated Access Doors:

Prefabricated access doors may be provided for field installation into field-fabricated grease duct assemblies and must be installed in accordance with the access door manufacturer's installation instructions. Access Doors used to provide access to the inner duct for inspection and maintenance are installed in accordance with 2012 IMC Section [506.3.12](#). The access doors shown in Table 2 may be used in the assemblies described in this report. Refer to Fig. 2 for assembly details.

**TABLE 2 – Hood and Duct Accessories**

Duct Access Door Manufacturer	Access Door Designation	UL Grease Duct Assembly No.
Thermal Ceramics Inc.	FireMaster FastDoor	<a href="#">G-18</a>
DuctMate Industries Inc	Ultimate Door	<a href="#">G-18</a>

When installing access doors, room shall be provided to allow physical access to remove and reinstall the access doors. The panel shall be marked with the wording, "ACCESS DOOR. DO NOT OBSTRUCT."

### 6.2.3 Duct Support:

Horizontal or vertical duct assemblies with maximum dimensions of 24 in. (610 mm) by 48 in. (1219 mm) or maximum 36 in. (914 mm) in diameter are supported with minimum 3/8 in. (9.5 mm) diameter, all-thread steel rods and 2 in. (51 mm) by 2 in. (51 mm) by 1/8 in. (3.2 mm) steel angles spaced a maximum of 60 in. (1524 mm) on center along the length of the duct. A maximum clearance of 6 in. (152 mm) is permitted between the edge of the protected duct and steel rod. See Fig. 1 for details.

### 6.3 Through-Penetration Fire-Stop Systems (Concrete Wall and Floor/Ceiling):

#### 6.3.1 General:

Where the systems penetrate fire-resistive assemblies, the through-penetration must be protected with one of the through-penetration firestop systems described in Section 6.3.2 and 6.3.3 of this report.

#### 6.3.2 Wall Assemblies – Two hour F- and T-rated Through-Penetration Firestop Assembly:

Where the grease duct protected with FireMaster FastWrap XL or Pyroscat DuctWrap XL blanket penetrates a fire-resistance-rated concrete or concrete masonry wall assembly complying with 2012 IBC Table [721.1 \(2\)](#), 2009 IBC Table [720.1\(2\)](#), or 2006 IBC Table [720.1\(2\)](#), as applicable, and the penetration requires protection, the annular space of the penetration must be protected as described by one or more of the UL Through-Penetration Firestop System Nos. shown in Table 3A. Refer to Fig. 3 for details.

**TABLE 3A - Through-Penetration Firestop Systems – Wall Assemblies**

Model (Series) Designation	UL Through-Penetration Firestop System No.
FireMaster FastWrap XL	<a href="#">W-L-7099</a> , <a href="#">W-L-7121</a> , <a href="#">W-L-7158</a>
Pyroscat DuctWrap XL	<a href="#">W-L-7099</a> , <a href="#">W-L-7121</a> , <a href="#">W-L-7158</a>

#### 6.3.3 Floor/Ceiling Assemblies – Two hour F- and T-rated Through-Penetration Firestop Assembly:

Where the grease duct protected with FireMaster FastWrap XL or Pyroscat DuctWrap XL blanket penetrates a fire-resistance-rated concrete or concrete masonry floor/ceiling assembly complying with 2012 IBC Table [721.1 \(2\)](#), 2009 IBC Table [720.1\(3\)](#), or 2006 IBC Table [720.1\(2\)](#), as applicable, and the penetration requires protection, the annular space of the penetration must be protected as described by one or more of the UL Through-Penetration Firestop System Nos. shown in Table 3B. Refer to Fig. 3 for details.

**TABLE 3B – Through-Penetration Firestop Systems – Floor/Ceiling Assemblies**

Model (Series) Designation	Through-penetration Firestop System No.
FireMaster FastWrap XL	<a href="#">C-AJ-7018</a> , <a href="#">C-AJ-7021</a> , <a href="#">C-AJ-7098</a> , <a href="#">C-AJ-7151</a> , <a href="#">F-C-7036</a>
Pyroscat DuctWrap XL	<a href="#">C-AJ-7018</a> , <a href="#">C-AJ-7021</a> , <a href="#">C-AJ-7098</a> , <a href="#">C-AJ-7151</a> , <a href="#">F-C-7036</a>

## 7. CONDITIONS OF USE

**7.1** The products must be manufactured, identified, and installed in accordance with this report, the manufacturer's published installation instructions, and the applicable code. If there is a conflict between the manufacturer's published installation instructions and this report, this report governs.

**7.2** All assemblies shall be built in accordance with the applicable published UL designs, or as otherwise described within this report.

**7.3** See UL's Online Certifications Directory under UL file R14299 for Batts and Blankets ([HNMF](#)) products evaluated as a part of fire-resistance-rated assemblies in accordance with ANSI/ASTM E2336-04.

**7.3** See UL's Online Certifications Directory under UL file R14299 for Duct Wrap Materials ([XHHD](#)) evaluated as a part of fire-resistance-rated assemblies in accordance with ANSI/UL1479.

**7.4** See UL's Online Certifications Directory under Grease Duct Assemblies, HNKT. [G-18](#) evaluated as follows:

- UL Classified in accordance with the SBCCI Public Safety Testing and Evaluation Services Inc. Evaluation Guide on Fire Resistance Construction (Flexible Duct Wrap Enclosure Systems), dated January 1, 1998 as an alternate to 2 Hr fire resistance rated shaft enclosures with a minimum zero clearance to combustibles.
- UL Classified in accordance with ICBO Evaluation Services, Inc. Acceptance Criteria for Grease Duct Enclosure Systems, dated April 2001 as an alternate to 2-Hr fire resistance rated shaft enclosures with a minimum zero clearance to combustible.
- UL Classified in accordance with the requirements of ASTM E2336-04, "Standard Test Methods For Fire Resistive Grease Duct enclosures."

**7.5** Models FireMaster FastWrap XL and Pyroscat DuctWrap XL are manufactured by Thermal Ceramics, Inc., located at the manufacturing locations named below, under the UL LLC Classification and Follow-Up Service Program, which includes inspections in accordance with the quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC10.

Manufacturing locations:

1. Thermal Ceramics, Inc.  
2102 Old Savannah Rd.  
Augusta, GA 30906-2133
2. Grupo Industrial Morgan SA de CV  
Fraccionamiento Industrial La Paz  
Cerrada de la Paz 101  
42092 Pachuca  
HGO Mexico

## **8. SUPPORTING EVIDENCE**

- 8.1** Manufacturer's product literature and quality documentation.
- 8.2** UL Classification reports in accordance with ASTM E2336. See UL Product Certification Category, Batts and Blankets ([HNMF](#)).
- 8.3** UL Classification reports in accordance with UL1479 (ASTM E814). See UL Product Certification Category, Duct Wrap Materials ([XHHD](#)).
- 8.4** UL Classification reports in accordance with UL723 (ASTM E84). See UL Product Certification Category, Batts and Blankets ([BKNV](#)).
- 8.5** Documentation of quality system elements described in AC10.

## **9. IDENTIFICATION**

Types FireMaster FastWrap XL and Pyroscat DuctWrap XL as described in this evaluation report, are identified by markings bearing the report holder's name (Thermal Ceramics, Inc.), the plant identification, the product designation, the UL Classification Mark, and the evaluation report number UL ER14229-01. The validity of the evaluation report is contingent upon this identification appearing on the product.

## **10. USE OF UL EVALUATION REPORT**

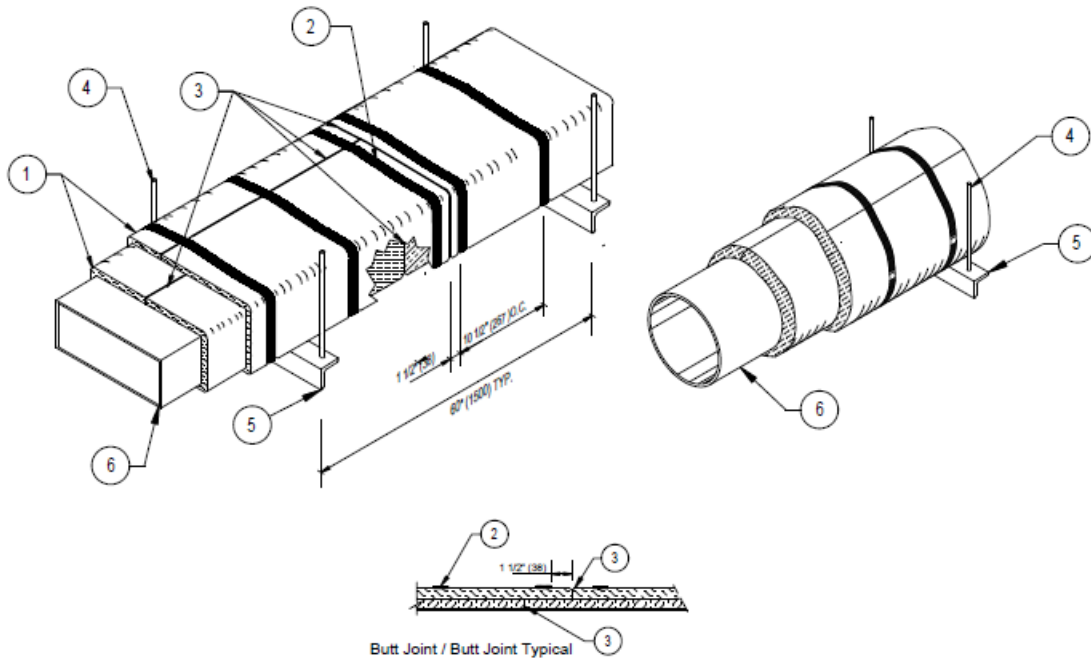
- 10.1** The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 10.2** UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 10.3** The current status of this report, as well as a complete directory of UL Evaluation Reports may be found at [UL.com](#) via our Online Certifications Directory:



FIGURE 1



Grease and HVAC Duct Enclosure System

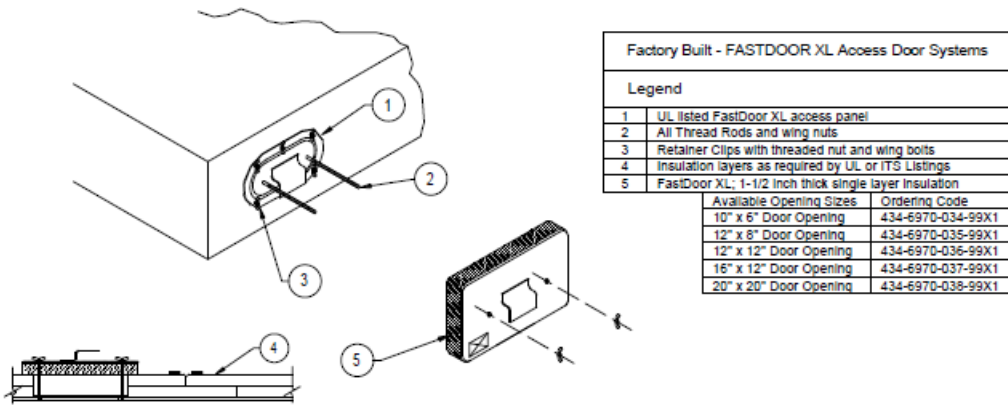


TWO LAYER INSTALLATION. (Grease Duct per ASTM E2336)

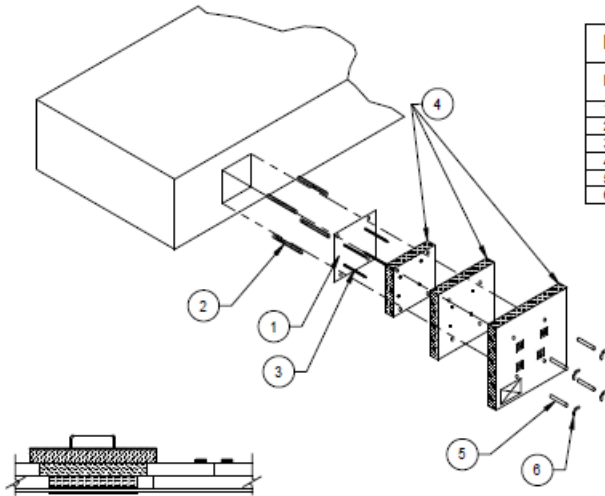
LEGEND	
1	Two Layers of XL Insulation for ASTM E2336
2	Steel banding minimum 1/2" (13) wide by 0.015" (0.4) thick.
3	Tight butt joints (no overlap) at perimeter and longitudinal joints, both layers
4	Hangers
5	Trapeze Supports
6	Steel Rectangular or Round Duct

FIGURE 2

**Morgan**  
**ThermalCeramics**  
 Access Door Systems



Factory Built - FASTDOOR XL Access Door Systems	
Legend	
1	UL listed FastDoor XL access panel
2	All Thread Rods and wing nuts
3	Retainer Clips with threaded nut and wing bolts
4	Insulation layers as required by UL or ITS Listings
5	FastDoor XL: 1-1/2 inch thick single layer insulation
Available Opening Sizes      Ordering Code	
10" x 6" Door Opening	434-6970-034-99X1
12" x 8" Door Opening	434-6970-035-99X1
12" x 12" Door Opening	434-6970-036-99X1
16" x 12" Door Opening	434-6970-037-99X1
20" x 20" Door Opening	434-6970-038-99X1

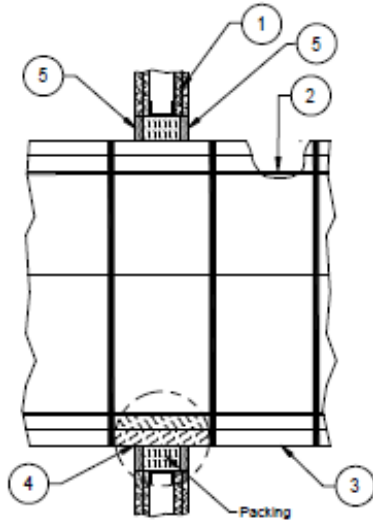


Field Fabricated Door System	
LEGEND	
1	Code compliant field built door, or UL 1978 Listed Door
2	5/16" All Thread Rods.
3	Installation Pins with Speed Clips.
4	Three Layers of XL Insulation with Min 1" (25) Overlaps
5	Spool Pieces for Threaded Rods
6	Wing Nuts and Washers

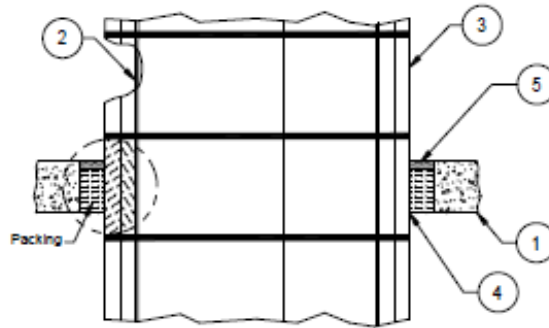
FIGURE 3



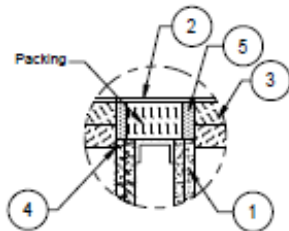
Through Penetration Firestop Systems



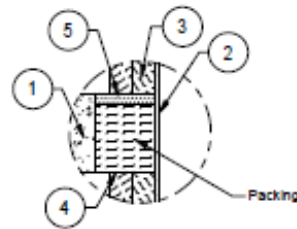
XL Insulation continuous through rated wall assembly



XL Insulation continuous through rated floor/ceiling assembly



XL Insulation terminated on both sides of the rated wall assembly



XL Insulation terminated at the top and bottom surface of the floor/ceiling assembly

Firestop Design Guide per ASTM E814 / UL 1479 - Consult UL Directories for System Details						
UL Listing	F- & T-Rating	(1) Floor/Wall	(2) Penetrant	(3) Enclosure Per	(4) Termination	(5) Firestop Sealant Details
C-AJ-7021	2-hour	Concrete/CMU	49x24; 16 Ga Duct	HNKT G18	terminate at	1/4 In; STI; Tremco
C-AJ-7098	2-hour	Concrete/CMU	49x24; 16 Ga Duct	HNKT G18	wrap through	1/4 In; STI; Hilti; Rectorseal; Tremco
C-AJ-7014	3-hour	Concrete/CMU	36x12; 16 Ga Duct	HNKT G18	wrap through	1/2 In; STI; Tremco
F-C-7036	1 or 2-hour	Wood/Gyp Floor	24x12; 16 Ga Duct	HNKT G18	wrap through	1/4 In; STI; Hilti; Rectorseal; Tremco
W-L-7121	1 or 2-hour	Gyp Wall	30x30; 16 Ga Duct	HNKT G18	wrap through	1/4 In; STI; Hilti; Rectorseal; Tremco

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