

# 3M™ Fire Barrier Duct Wrap 615+

## Product Data Sheet and Installation Guide

Commercial Kitchen Grease and Ventilation Air Ducts



# Confidence Even Under Fire

FIRE BARRIER

FLEXIBLE WRAP



ICC-ES ESR-1255



BATTS AND BLANKETS  
FOR USE IN FIRE RESISTIVE DUCT ASSEMBLIES  
SEE UL FIRE RESISTANCE DIRECTORY  
90G9

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CSFM  
LISTING No.  
2440-0941:112





# 3M™ Fire Barrier Duct Wrap 615+

## Product Data Sheet and Installation Guide

**1. Product Description** 3M™ Fire Barrier Duct Wrap 615+ is a flexible fire-resistant wrap consisting of an inorganic fiber blanket encapsulated with a scrim-reinforced foil. The product is 1-1/2" thick, 6 pcf density.<sup>1</sup> It is used to fire rate commercial kitchen grease ducts as well as ventilation ducts. 3M™ Fire Barrier Duct Wrap 615+ is a proven alternative to 1- or 2-hour fire-resistant rated shaft enclosures for grease ducts (ICC-ES ESR-1255). With its excellent insulating capabilities, low weight and thin profile, it is an ideal choice for a duct enclosure system. This non-asbestos<sup>2</sup> wrap installs easily due to its high flexibility and strength.

<sup>1</sup> In accordance with the tolerances in ASTM C 892 Standard Specification for High-Temperature Fiber Blanket Thermal Insulation.  
<sup>2</sup> These fibers are not biopersistent and are therefore non-carcinogenic per Note Q of EU Directive 67/548/EEC (guideline 97/69/EG).



Flexible and lightweight with a thin profile for easier application and reduced space requirements

### Product Features

- Two-layer wrap for grease ducts rated as a shaft alternative per ASTM E 2336
- Zero clearance to combustible throughout the entire enclosure system
- Butted inner layer in 2-layer grease duct applications
- One-layer wrap for fire-resistive ventilation ducts per ISO 6944
- High flexibility for installation ease
- Foil encapsulated for blanket protection, less dust, and high wrap strength
- Wide range of penetration seal systems
- Available in: 24" x 25 ft. (609.6mm x 7.62m) and 48" x 25 ft. (1219.2mm x 7.62m) rolls
- Blanket adhered to foil scrim helps prevent wrap from slumping

**2. Applications** 3M™ Fire Barrier Duct Wrap 615+ is an ideal fire resistive enclosure for commercial kitchen grease ducts and ventilation air ducts. It is a proven alternative to a 1- or 2-hour fire-resistant rated shaft enclosures for grease ducts and provides zero clearance to combustible construction throughout the entire enclosure system (per ICC-ES ESR-1255). 3M™ Fire Barrier Water Tight Sealant 1000 NS, 3M™ Fire Barrier Water Tight Sealant 1003 SL or 3M™ Fire Barrier Silicone Sealant 2000+ is used in combination with 3M™ Fire Barrier Duct Wrap 615+ to firestop the duct when the duct penetrates fire-rated floor or wall assemblies. 3M™ Fire Barrier Duct Wrap 615+ also provides a firestop solution where a T-rating is required for penetrations located outside wall cavities or outside fire-resistance rated shaft enclosures.

**Two-layer grease duct applications:** 3M™ Fire Barrier Duct Wrap 615+ meets the criteria of ASTM E 2336 Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems.

**Single-layer ventilation duct applications:** 3M™ Fire Barrier Duct Wrap 615+ has passed ISO 6944-1985 Fire Resistance Tests – Ventilation Ducts.

**T-rating for metallic through-penetrating items:** 3M™ Fire Barrier Duct Wrap 615+ is used in conjunction with 3M Fire Barrier sealants to achieve up to 2-hour equal F & T-ratings in ASTM E 814 (UL 1479) tested through-penetrations.

**3. Specifications** Installation shall be in strict accordance with manufacture's written instructions, as shown on the approved shop drawings. 3M™ Fire Barrier Duct Wrap 615+ shall be a high-temperature fibrous thermal insulation blanket encapsulated in a fiberglass-reinforced aluminized polyester foil. Duct Wrap density shall be nominal 6 pcf (96 kg/m<sup>3</sup>) and have a nominal 1-1/2" (38.1mm) thickness. The fiber blanket shall have a continuous use limit of 1000°C (1832°F). The blanket thermal resistance (R-value) at ambient temperature shall be minimum  $6.3 \frac{^{\circ}F \cdot ft^2 \cdot hr}{Btu}$ .

Smoke Developed Index and Flame Spread Index of the bare blanket, and of the foil encapsulated blanket shall be 0/0. The foil encapsulation shall be bonded to the core blanket material.

For technical support relating to 3M™ Fire Protection Products and Systems, call: 1-800-328-1687  
 For more information on 3M™ Fire Protection Products, visit: [www.3M.com/firestop](http://www.3M.com/firestop)

FIRE BARRIER

FLEXIBLE WRAP

ICC-ES ESR-1255

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Intertek

FIRE RESISTANT DUCT  
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CLASSIFIED

BATTS AND BLANKETS  
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## 4. Performance & Typical Physical Properties

|  |  |
|--|--|
| <b>Scrim Color:</b>  | Aluminum with Black Text   |
| <b>Blanket Color:</b>  | White  |
| <b>Blanket Weight:</b>   | 0.9 lbs/ft. <sup>2</sup> (4.38 kg/m <sup>2</sup> )                           |
| <b>Surface Burning:</b>  | Foil Encapsulated Blanket (ASTM E 84)<br>Flame Spread 0, Smoke Development 0 |
| <b>Single layer R-Value of 3M™ Fire Barrier Duct Wrap 615+ at 77°F (25°C):</b> |  |

$$6.38 \frac{^{\circ}F - ft^2 - hr}{Btu}$$

**Single layer R (SI) Value of 3M™ Fire Barrier Duct Wrap 615+ at 77°F (25°C):**

$$0.89 \frac{m^2 - K}{W}$$

|                              |                 |   |                     |
|------------------------------|-----------------|---|---------------------|
| <b>Thermal Conductivity:</b> | <b>Temp.</b>    | $\frac{Btu - in.}{hr - ft^2 - ^{\circ}F}$ | $\frac{W}{m^2 - K}$ |
|                              | 500°F (260°C)   | 0.60                                      | 0.09                |
|                              | 1000°F (537°C)  | 1.15                                      | 0.17                |
|                              | 1500°F (815°C)  | 1.93                                      | 0.28                |
|                              | 1800°F (982°C)  | 2.51                                      | 0.36                |
|                              | 2000°F (1093°C) | 2.94                                      | 0.43                |

**Linear Shrinkage** (24 hrs at 2012°F (1000°C)): 1.2%

**Noise Reduction Coefficient** (ASTM C 423): 0.80

## 5. Design Listings

### Grease Duct Listings – ASTM E 2336 / ICC-ES AC101

| Fire Resistive Rating | Enclosure System                            | Third-Party Testing Services Design Listing                           | Description                         |
|-----------------------|---|---|-------------------------------------|
| 1- and 2-hour         | 2 layers of 3M™ Fire Barrier Duct Wrap 615+ | ICC-ES ESR-1255<br>Intertek 3MU/FRD 120-18<br>Intertek 3MU/FRD 120-19 | Rectangular<br>Rectangular<br>Round |

### Ventilation Duct Listings – ISO 6944-85

| Fire Resistive Rating | Enclosure System                           | Third-Party Testing Services Design Listing   | Description   |
|-----------------------|--|---|---|
| 1- and 2-hour         | 1 layer of 3M™ Fire Barrier Duct Wrap 615+ | Intertek 3MU/DI 60-01<br>Intertek 3MU/DI 120-01<br>Underwriters Laboratories HNLJ.V-27<br>Underwriters Laboratories HNLJ.V-31 | Rectangular/Round (1 hour)<br>Rectangular/Round (2 hour)<br>Rectangular (2 hour)<br>2- & 3-sided Rectangular (2 hour) |

This document only contains a partial list of Design Listings. For the latest information go to [www.3M.com/firestop](http://www.3M.com/firestop) or speak to your authorized 3M distributor or sales representative at (800) 328-1687.

## 6. Codes & Test Standards

### 3M™ Fire Barrier Duct Wrap 615+ has been tested in accordance with the following:

|              |   |
|--------------|---|
| ASTM E 2336  | Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems  |
| ICC-ES AC101 | Acceptance Criteria for Grease Duct Enclosure Assemblies  |
| ASTM E 119   | Standard Test Methods for Fire Tests of Building Construction   |
| ASTM E 814   | Standard Test Method for Fire Tests of Penetration Firestop Systems   |
| ASTM E 136   | Standard Test Method for Behavior of Material in a Vertical Tube Furnace at 750°C (1382°F)                      |
| ASTM C 518   | Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus |
| ASTM E 84    | Standard Test Method for Surface Burning Characteristics of Building Materials                                  |
| ISO 6944-85  | Fire Resistance Tests – Ventilation Ducts   |

### 3M™ Fire Barrier Duct Wrap 615+, when installed per ASTM E 2336 tested Grease Duct Design Listings, addresses the following code requirements:

|                                |                             |
|--------------------------------|-----------------------------|
| New York City OTCR             | Buildings Bulletin 2010-021 |
| NFPA 96                        | 2008/2011                   |
| International Mechanical Code® | 2003/2006/2009/2012         |
| Uniform Mechanical Code        | 2003/2006/2009/2012         |

### 3M™ Fire Barrier Duct Wrap 615+, when installed per ISO 6944 tested Ventilation Duct Design Listings, can help to satisfy the following code requirements:

|                                |   |
|--------------------------------|---|
| New York City OTCR             | Buildings Bulletin 2012-011   |
| NFPA 92A                       | Standard for Smoke-Control System Utilizing Barriers and Pressure Differences, 2009 Edition – Section 6.6.2 |
| NFPA 92B                       | Standard for Smoke Management Systems in Malls, Atria, and Large Spaces, 2009 Edition – Section 7.5.2       |
| International Mechanical Code® | 2006/2009/2012 – Section 513.10.2   |
| International Building Code®   | 2006/2009/2012 – Section 909.10.2   |

## 7. Packaging, Storage, Shelf Life

3M™ Fire Barrier Duct Wrap 615+ rolls are packaged in corrugated cardboard boxes. Product is stable under normal storage conditions. Normal stock and stock rotation practices are recommended. 3M™ Fire Barrier Duct Wrap 615+ shelf life is indefinite when stored in original unopened packaging in a dry warehouse environment. Pallets should not be stacked. 3M™ Fire Barrier Water Tight Sealant 1000 NS or 1003 SL or 3M™ Fire Barrier Silicone Sealant 2000+ must be also stored in a dry warehouse environment.

## 8. Grease Duct Installation Techniques

3M™ Fire Barrier Duct Wrap 615+ should be installed per the application design listing in accordance with the following basic installation instructions.

- Material and Equipment**
- 24" or 48" wide\* by 1-1/2" (38.1mm) thick\*\* by 25 ft. (762cm) standard length 3M™ Fire Barrier Duct Wrap 615+ blanket (60.96cm or 121.92cm by 38.1mm by 762cm)
  - 3M™ FSK Facing Tape 3320 (aluminum foil, fiberglass scrim, kraft paper backing with acrylic adhesive or equivalent)
  - Minimum 3/4" (19mm) wide filament tape (Scotch® Filament Tape 898 recommended)
  - Stainless steel or carbon steel banding material, minimum 1/2" (12.7mm) wide and minimum 0.015" (0.38mm) thick with banding clips of the same material
  - Hand banding tensioner, crimping tool and banding cutter
  - Minimum 12 gauge copper-coated steel insulation pins used with minimum 2-1/2" (63.5mm) square galvanized steel or stainless steel clips or 1-1/2" (38.1mm) dia. round or equivalent sized insulated cup-head pins
  - Capacitor discharge stud gun
  - Access door hardware: four galvanized steel threaded rods, 1/4" diameter by minimum 6" long (6.35mm by 152.4mm) with 1/4" (6.35mm) wing nuts and 1/4" (6.35mm) washers
  - 4" (102mm) long steel hollow tubing to fit threaded rods
  - Minimum 4 pcf (64kg/m<sup>3</sup>) density mineral wool or scrap pieces of 3M™ Fire Barrier Duct Wrap 615+
  - 3M™ Fire Barrier Water Tight Sealant (1000 NS or 1003 SL) or 3M™ Fire Barrier Silicone Sealant 2000+

\* Note: 48" (121.92cm) wide blanket helps to maximize coverage since the 3" (76.2mm) longitudinal overlaps occur less frequently.

\*\* In accordance with the tolerances in ASTM C 892 Standard Specification for High-Temperature Fiber Blanket Thermal Insulation.

### Preparatory Work

3M™ Fire Barrier Duct Wrap 615+ is installed with common insulation tools, such as knives, banders and capacitor discharge guns for applying insulation pins. In order to install the duct firestop system, the surfaces of all the openings and penetrating items need to be clean, dry, frost free and free of dust.

### 2-Layer Grease Duct Method (ASTM E 2336)

Note: This general instruction for applying 3M™ Fire Barrier Duct Wrap 615+ details a two-layer wrap installation of 3M™ Fire Barrier Duct Wrap 615+ blanket applied directly to a grease duct. To minimize waste, the 3M™ Fire Barrier Duct Wrap 615+ material should be rolled out tautly before measuring. The first layer of 3M™ Fire Barrier Duct Wrap 615+ blanket is wrapped around the perimeter of the duct and is cut to a length to either butt to itself or overlap itself not less than 3" (76.2mm). The interface between adjacent blankets forms the "longitudinal" joint. Inner layer longitudinal joints can be tightly butted joints or they should overlap onto adjacent blankets with a min. 3" (76.2mm) overlap. Aluminum foil or FSK tape is used to seal all cut edges of the blanket and any tears in the foil scrim. This first layer is temporarily held in place using filament tape. The first layer does not require steel banding.

The second layer of 3M™ Fire Barrier Duct Wrap 615+ is wrapped around the perimeter of the previously installed first layer of 3M™ Fire Barrier Duct Wrap 615+. The other layer perimeter (lateral) joints should be offset a minimum 3" (76.2mm) from the inner layer perimeter joints. The perimeter joints should be a minimum 3" (76.2mm) overlap. Offset the outer layer longitudinal joints a minimum 10.5" (26.7cm) from the inner layer longitudinal joints. The outer layer longitudinal joints should be a minimum 3" (76.2mm) overlap. The one exception to this rule is the "Butt Joint with Collar Method" where it is permissible for the longitudinal joints to be tightly butted and then covered with a minimum 6" wide collar centered over it. These are available pre-made (3M™ Fire Barrier Duct Wrap 615+ Collar). The second layer of wrap can be temporarily held in place using filament tape. The second layer of wrap requires permanent fastening with stainless (or carbon) steel banding, or with rows of weld pins (impaling or cup-head style).

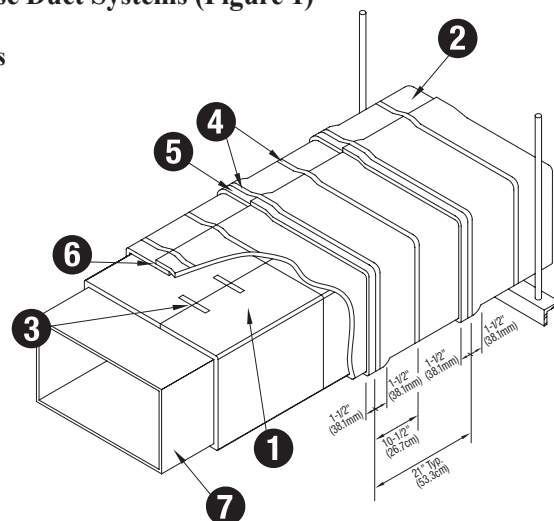
### 3M™ Fire Barrier Duct Wrap 615+ Commercial Kitchen Grease Duct Systems (Figure 1)

#### 1- or 2-Hour Shaft Alternative Zero Clearance to Combustibles Telescoping Wrap Technique With Banding For Ducts 24" (60.9cm) or Less

1. First layer 3M™ Fire Barrier Duct Wrap 615+
2. Second layer 3M™ Fire Barrier Duct Wrap 615+
3. 3/4" (19mm) wide filament tape
4. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
5. Longitudinal joint butt or min. 3" (76.2mm) overlap on inner layer, min. 3" (76.2mm) overlap on outer layer
6. Perimeter (lateral) joint butt or min. 3" overlap (76.2mm) on inner layer, min. 3" (76.2mm) overlap on outer layer
7. Metallic commercial cooking exhaust duct

**Note: System integrity is limited by quality of installation. Ducts ≥ 24" (60.9cm) wide require pinning on the bottom side of horizontal ducts and on a minimum of one of the wider sides of a vertical duct. Vertical ducts require pinning on all sides > 48" (121.8cm).**

Consult current independent testing laboratories (e.g. Intertek, UL) for design or system details. See Detail 9 for additional pinning information.



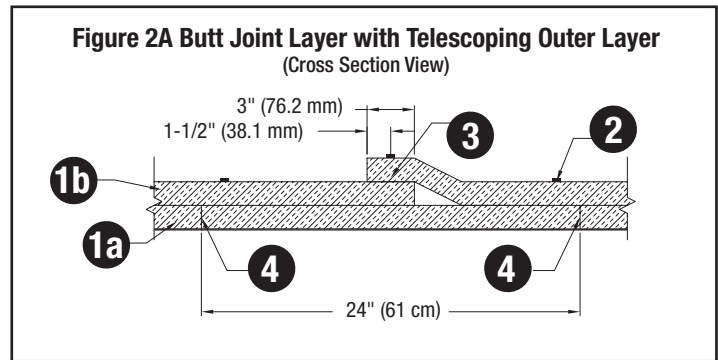
## 8. Grease Duct Installation Techniques cont.

### Four approved grease duct installation techniques: 3M™ Fire Barrier Duct Wrap 615+

#### 2A. Butt Joint Inner Layer with Telescoping Outer Layer

With the Butt-Joint Inner Layer and Telescoping Outer Layer technique, the inner layer of blankets abut the adjacent pieces of blanket. The outer layer blankets each overlap one adjacent blanket, and then the exposed edge is covered by the next blanket as shown in Figure 2A.

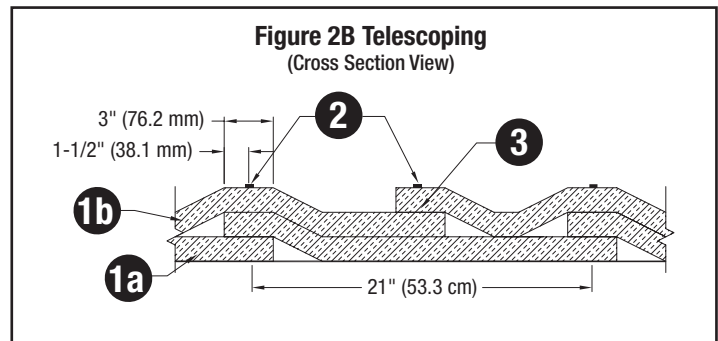
- 1a. First layer of 3M™ Fire Barrier Duct Wrap 615+
- 1b. Second layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 3" (76.2mm) min. longitudinal overlap
4. Tightly butted joint



#### 2B. Telescoping 3" (76.2mm) Overlap Wrap

With the Telescoping Overlap Wrap method, each blanket overlaps one adjacent blanket, and each blanket has one edge exposed and one edge covered by the next blanket as shown in Figure 2B.

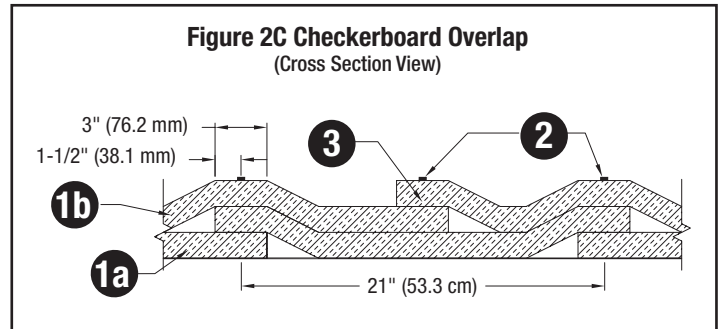
- 1a. First layer of 3M™ Fire Barrier Duct Wrap 615+
- 1b. Second layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 3" (76.2mm) min. longitudinal overlap



#### 2C. Checkerboard 3" (76.2mm) Overlap Wrap

With the 3" (76.2mm) Checkerboard Overlap Wrap method, blankets with both edges exposed alternate with blankets with covered edges, as shown in Figure 2C.

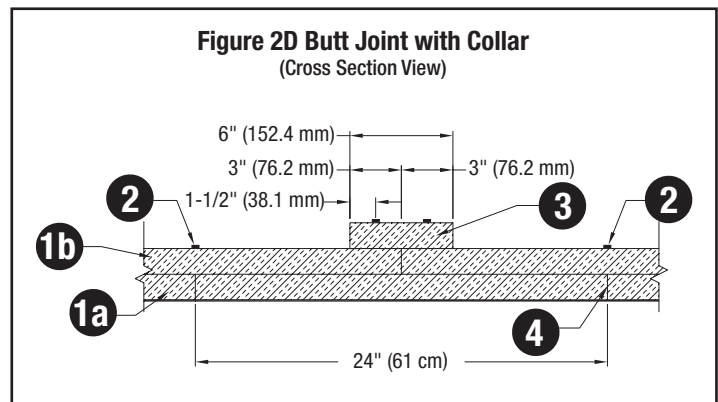
- 1a. First layer of 3M™ Fire Barrier Duct Wrap 615+
- 1b. Second layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 3" (76.2mm) min. longitudinal overlap



#### 2D. Butt Joint with Collar

With the Butt Joint and Collar method, adjacent blankets are butted tightly together and 6" (152.4mm) wide collar of duct wrap is centered over the joint, overlapping each blanket by 3" (76.2mm) minimum as shown in Figure 2D.

- 1a. First layer of 3M™ Fire Barrier Duct Wrap 615+
- 1b. Second layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 6" (152.4mm) min. wide 3M™ Fire Barrier Duct Wrap 615+ Collar
4. Tightly butted joint



## 8. Grease Duct Installation Techniques cont.

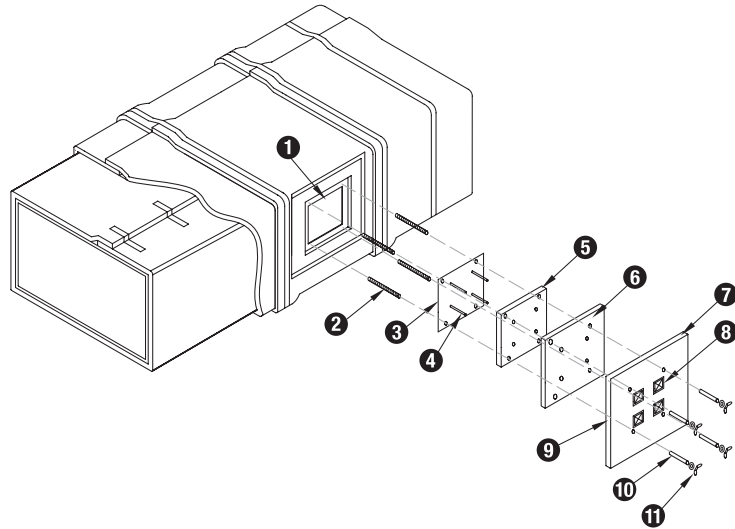
### Access Door Installation

Four galvanized steel threaded rods, 1/4" diameter (6.35mm) by 4-1/2" to 5" long (114.3mm to 127mm) are welded to the duct at the corners of the door opening. Four steel tubes, each 3" (76.2mm) long, are placed over the rods to act as protection for the 3M™ Fire Barrier Duct Wrap 615+, and to transfer the wing nut force to the access door, when fastening the door. Four insulation pins are welded to the door panel for installation of the blanket. One layer of 3M™ Fire Barrier Duct Wrap 615+ is sized approximately 1/2" to 1" larger than the access door on all sides and impaled over the insulation pins on the panel. It is essential that this layer fit tightly against the wrap surrounding the access door opening with no through openings. A second layer of 3M™ Fire Barrier Duct Wrap 615+ is cut to overlap the first layer by a minimum of 1" (25.4mm). Impale the second layer over the pins. A third layer of 3M™ Fire Barrier Duct Wrap 615+ is cut to overlap the second layer by a minimum of 1" (25.4mm). The third layer is impaled over the pins and all three layers are locked in place with galvanized or stainless steel speed clips. Pins that extend beyond the outer layer of 3M™ Fire Barrier Duct Wrap 615+ should be turned down or cut off to avoid sharp points on the door. The insulated door panel is placed over the threaded rods and held in place with washers and wing nuts. The details are shown in Figure 3. The details for installing the 3M™ Fire Barrier Grease Duct Access Door (pre-manufactured) are shown in Figure 3A.

### 3M™ Fire Barrier Duct Wrap 615+ Commercial Kitchen Grease Duct Systems (Figure 3)

#### Field-Fabricated 2-Hour Access Door System

1. Access hole
2. 1/4" (6.35mm) dia. by a minimum 6" (152.4mm) all-threaded rods
3. Access door cover – 16 gauge
4. Insulation pins (impaling pins) – welded (optional)
5. First layer 3M™ Fire Barrier Duct Wrap 615+ cut same size as cover
6. Second layer 3M™ Fire Barrier Duct Wrap 615+ with 1" (25.4mm) overlap on all sides
7. Third layer 3M™ Fire Barrier Duct Wrap 615+ with 1" (25.4mm) overlap on all sides
8. Speed clips (optional)
9. Aluminum tape covering all exposed edges
10. 4" (102mm) long steel hollow tubing to fit threaded rods
11. 1/4" (6.35mm) diameter wings nuts and 1/4" (6.35mm) washers

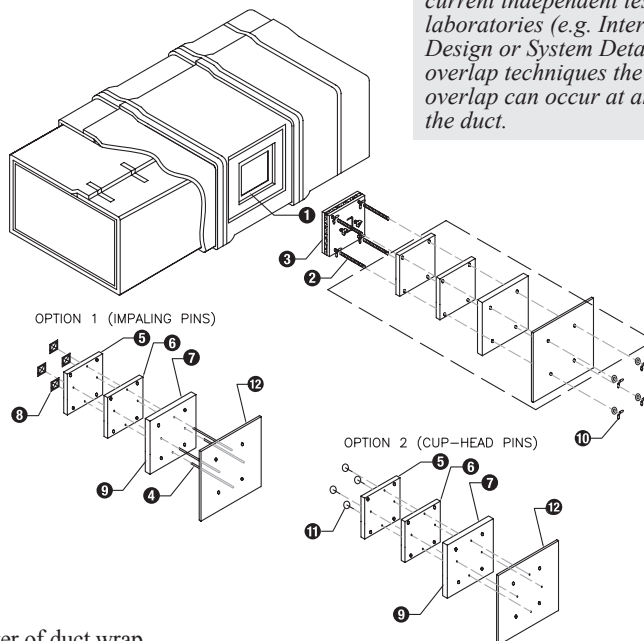


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details. In all four overlap techniques the perimeter overlap can occur at any location on the duct.*

### 3M™ Fire Barrier Duct Wrap 615+ Commercial Kitchen Grease Duct Systems (Figure 3A)

#### Pre-Fabricated 1- or 2-Hour Access Door System

1. Access hole
2. 1/4" (6.35mm) dia. by a minimum 6" (152.4mm) all-threaded rods
3. 3M™ Fire Barrier Grease Duct Access Door or Ductmate ULtimate Door™
4. Insulation pins (impaling pins) – welded
5. First layer 3M™ Fire Barrier Duct Wrap 615+ with 1" (25.4mm) overlap beyond access door on all sides
6. Second layer 3M™ Fire Barrier Duct Wrap 615+ cut to same size as first layer
7. Third Layer 3M™ Fire Barrier Duct Wrap 615+ with 1" (25.4mm) overlap beyond second layer on all sides
8. Speed clips
9. Aluminum tape covering all exposed edges
10. 1/4" (6.35mm) diameter wings nuts and 1/4" (6.35mm) washers
11. Insulation pins (cup-head pins) – welded
12. Access door cover – 16 gauge cut same size as third layer of duct wrap with clearance holes to match pattern of all-threaded rods



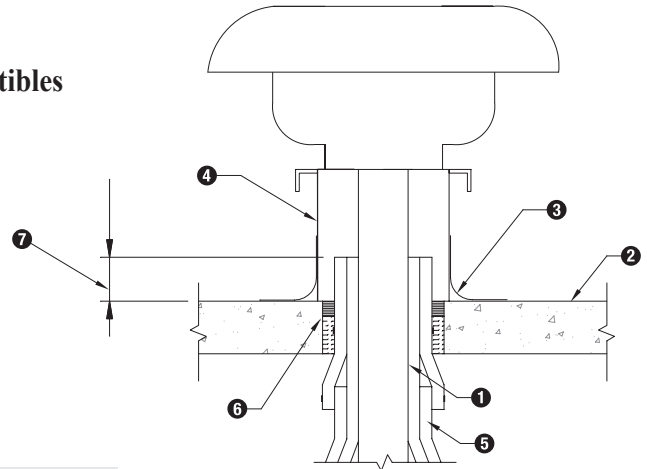
*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details. In all four overlap techniques the perimeter overlap can occur at any location on the duct.*

## 8. Grease Duct Installation Techniques cont.

### 3M™ Fire Barrier Duct Wrap 615+ Commercial Grease Duct Systems (Figure 4)

#### 1 or 2-Hour Shaft Alternative Zero Clearance to Combustibles Suggested Roof Vent

1. Duct
2. Roof Assembly
3. Roof Flashing
4. Vent Flashing
5. Two layers 3M™ Fire Barrier Duct Wrap 615+
6. Firestopping System for Rated Roof Assemblies Only
7. Extend wrap a min. distance that meets local code requirements for clearance to combustibles

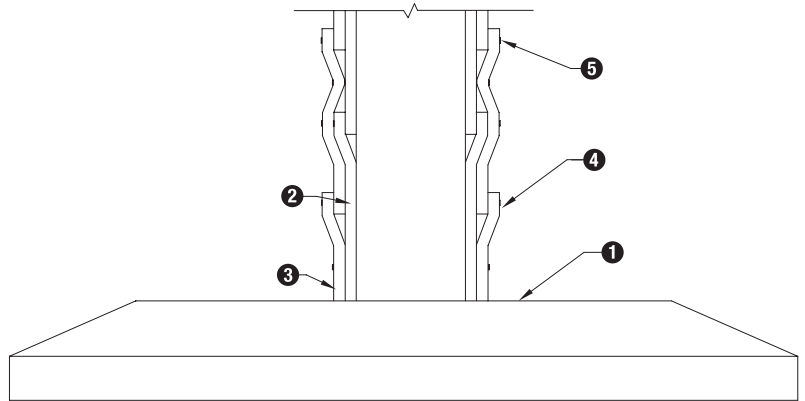


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Commercial Grease Duct Systems (Figure 5)

#### Suggested Free-Standing Hood Installation

1. Hood
2. First layer 3M™ Fire Barrier Duct Wrap 615+
3. Second layer 3M™ Fire Barrier Duct Wrap 615+
4. 3" (76.2mm) minimum overlap
5. Banding typical

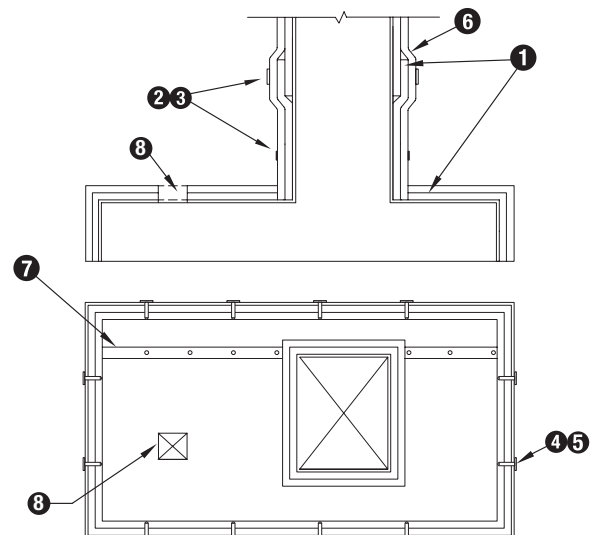


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Grease Duct Systems (Figure 6)

#### Suggested Grease Hood Installation

1. Two layers 3M™ Fire Barrier Duct Wrap 615+
2. Scotch® Filament Tape 898 (or similar) for temporary hold
3. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
4. 6" (152.4mm) long, 12 Gauge Copper-Coated Insulation Pins with Speed Clips  
— OR —
5. 12 Gauge cupped head pins
6. 3" (76.2mm) min. perimeter overlap
7. 3" (76.2mm) min. seam overlap
8. Cutout Duct Wrap around junction boxes or fan louvres



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

# 9. Ventilation Air Duct Installation Techniques

3M™ Fire Barrier Duct Wrap 615+ should be installed per the application design listing in accordance with the following basic installation instructions.

## 1-Layer Ventilation Duct Method (ISO 6944)

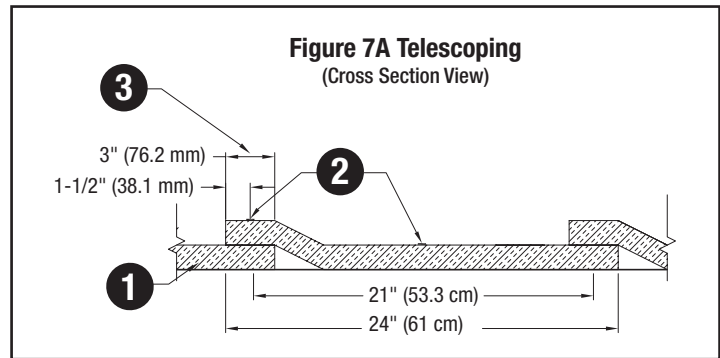
Note: This general instruction for applying 3M™ Fire Barrier Duct Wrap 615+ details a one-layer wrap installation of 3M™ Fire Barrier Duct Wrap 615+ blanket applied directly to a ventilation duct. To minimize waste, the 3M™ Fire Barrier Duct Wrap 615+ material should be rolled out tautly before measuring. The single layer of 3M™ Fire Barrier Duct Wrap 615+ blanket is wrapped around the perimeter of the duct and is cut to a length to overlap itself not less than 3" (76.2mm), this is known as the "circumferential" or "lateral" joint. The interface between adjacent blankets forms the "longitudinal" joint. The minimum overlap required at the longitudinal joints is a minimum 3" (76.2mm) overlap. Aluminum foil tape or FSK tape is used to seal all cut edges of the blanket and any tears in the foil scrim. As an installation aide, the blanket may be temporarily held in place using filament tape. The 3M™ Fire Barrier Duct Wrap 615+ requires permanent fastening with stainless (or carbon) steel banding, or with rows of weld, pins (impaling or cup head style).

## Three approved ventilation duct installation techniques: 3M™ Fire Barrier Duct Wrap 615+

### 7A. Telescoping 3" (76.2mm) Overlap Wrap

With the Telescoping Overlap Wrap method, each blanket overlaps one adjacent blanket. Each blanket has one edge initially exposed which is then covered by the edge of the next blanket as shown in Figure 2A.

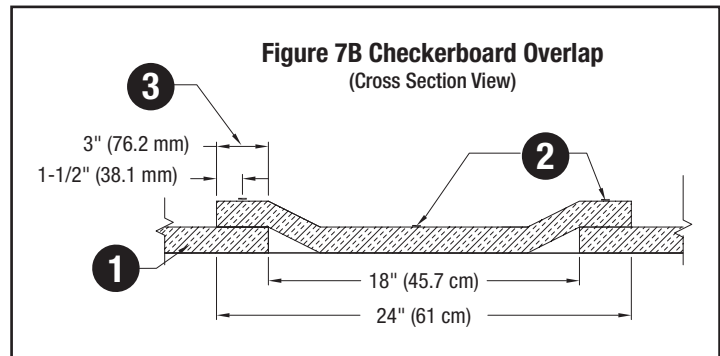
1. Single layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 3" (76.2mm) min. longitudinal overlap



### 7B. Checkerboard 3" (76.2mm) Overlap Wrap

With the 3" (76.2mm) Checkerboard Overlap Wrap method, blankets with both edges exposed alternate with blankets with covered edges, as shown in Figure 2B.

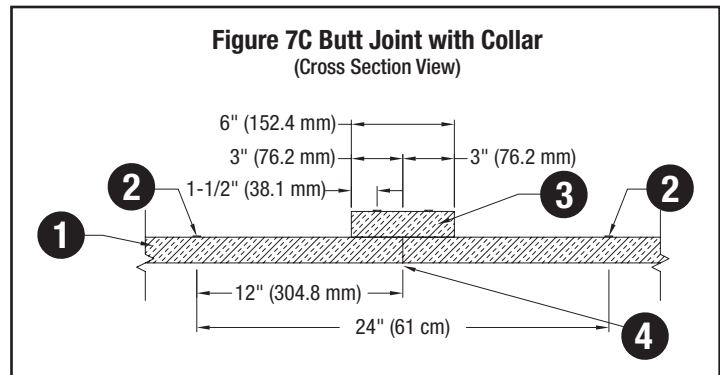
1. Single layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 3" (76.2mm) min. longitudinal overlap



### 7C. Butt Joint with Collar

With the Butt Joint and Collar method, adjacent blankets are butted tightly together and 6" (152.4mm) wide collar of duct wrap is centered over the joint, overlapping each blanket by 3" (76.2mm) minimum as shown in Figure 2C.

1. Single layer of 3M™ Fire Barrier Duct Wrap 615+
2. Steel banding 1/2" (12.7mm) wide min. typical
3. 6" (152.4mm) min. wide 3M™ Fire Barrier Duct Wrap 615+ Collar
4. Tightly butted joint



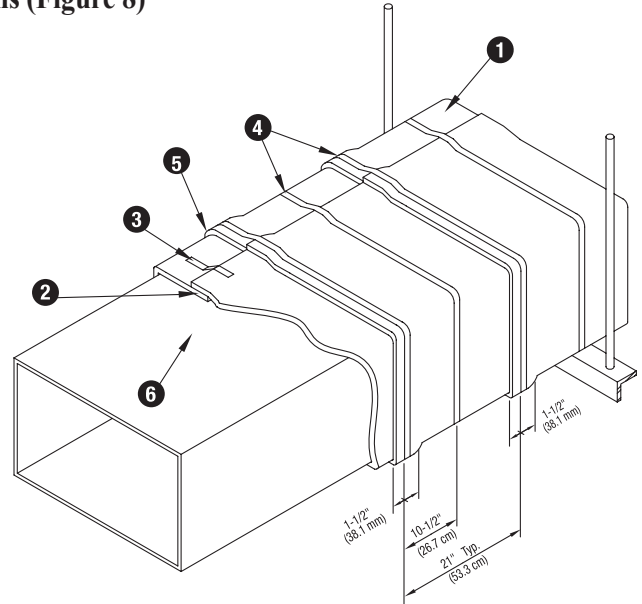


## 9. Ventilation Air Duct Installation Techniques cont.

### 3M™ Fire Barrier Duct Wrap 615+ Ventilation Duct Systems (Figure 8)

1. 3M™ Fire Barrier Duct Wrap 615+, 1-layer
2. Perimeter (lateral) joint min. 3" (76.2mm) overlap
3. 3/4" (19mm) wide filament tape
4. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
5. Longitudinal joint min. 3" (76.2mm) overlap
6. Metallic ventilation duct

**Note: System integrity is limited by quality of installation. Ducts  $\geq 24"$  (60.9cm) wide require pinning on the bottom side of horizontal ducts and on a minimum of one of the wider sides of a vertical duct. Vertical ducts require pinning on all sides  $> 48"$  (121.8cm).**



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 10. Grease Duct & Ventilation Air Duct Installation Techniques

### Duct Support (Grease & Ventilation)

Horizontal duct assemblies with maximum cross-sectional areas of 24" x 24" (610mm x 610mm) must be supported with min. 3/8" diameter (9.5mm), all-thread steel rod and 2" x 2" x 1/8" (51mm x 51mm x 3.2mm) steel angle, spaced a maximum of 60" (1524mm) on center. A min. clearance of 0" (0mm) and a max. clearance of 6" (152mm) is required between the vertical edge of the blanket material surrounding the duct and the steel rod. Horizontal duct assemblies with max. dimensions of 24" x 48" (610mm x 1219mm) must be supported with min. 1/2" diameter (12.7mm), all-thread steel rod and 2" x 2" x 1/4" (51mm x 51mm x 6.4mm) steel angle spaced a max. of 60" (1524mm) on center. A min. clearance of 0" (0mm) and a max. clearance of 6" (152mm) is required between the vertical edge of the blanket material surrounding the duct and the steel rod. Vertical ducts must be supported at every floor line on the top of the slab.

### Pinning & Banding Requirements

| Duct Width             | Banding Only | Banding with Bottom-Side Pinning | Pinning Only (All 4 sides) |
|------------------------|--------------|----------------------------------|----------------------------|
| width $\leq 24"$       | ✓            |                                  | ✓                          |
| 24" < width $\leq 48"$ |              | ✓                                | ✓                          |
| width $> 48"$          |              |                                  | ✓                          |

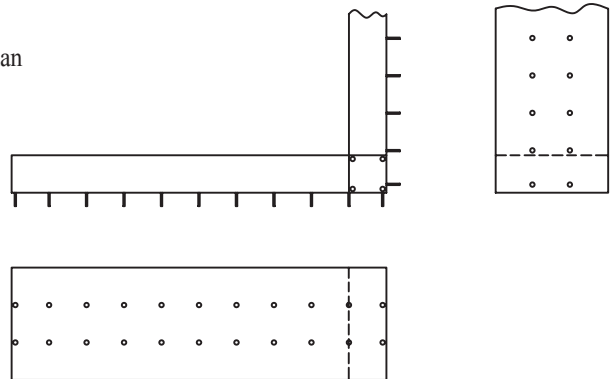
### 3M™ Fire Barrier Duct Wrap 615+ Pinning guide (Figure 9)

Additional pinning to prevent sagging of the duct wrap. For all ducts greater than 24" (60cm) in width, pinning is required to support the blanket on the bottom horizontal surface and on the outside face of a vertical duct run. Space pins a max. of 10-1/2" (26.7cm) apart in the direction of the blanket width, and a max. 12" (30cm) apart in the direction of the blanket length.

#### Materials and Equipment

- Minimum 12 gauge copper-coated steel insulation pins used with minimum 2-1/2" (63.5mm) square galvanized steel or stainless steel clips or 1-1/2" (38.1mm) dia. round or equivalent sized insulated cup-head pins
- Capacitor discharge stud gun

**Note: Either apply min. 12 gauge copper-coated impaling pins to the bare duct using a capacitor discharge gun or apply min. 12 gauge cup-head pins after the duct wrap is installed.**



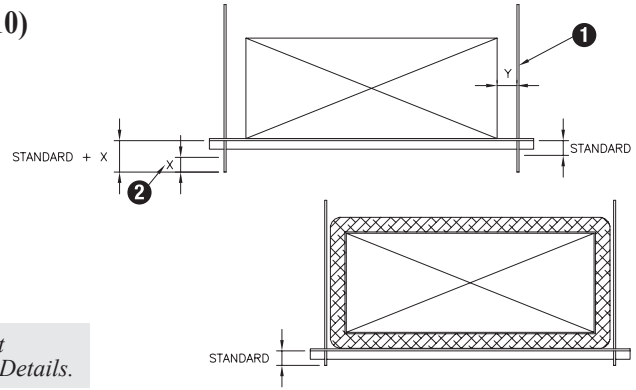
*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

### 3M™ Fire Barrier Duct Wrap 615+ Hanging Support Details for Fire-Rated Ductwork (Figure 10)

Note: To facilitate the application of 3M Fire Barrier Duct Wrap 615+ so that the rods & trapeze hangers are outside the wrap envelope, the following dimensions are recommended:

|                                   | 1-layer    | 2-layer    |
|-----------------------------------|------------|------------|
| 1. Rod-to-bare duct clearance (Y) | 4" (102mm) | 6" (152mm) |
| 2. Added rod length (X)           | 2" (51mm)  | 4" (102mm) |

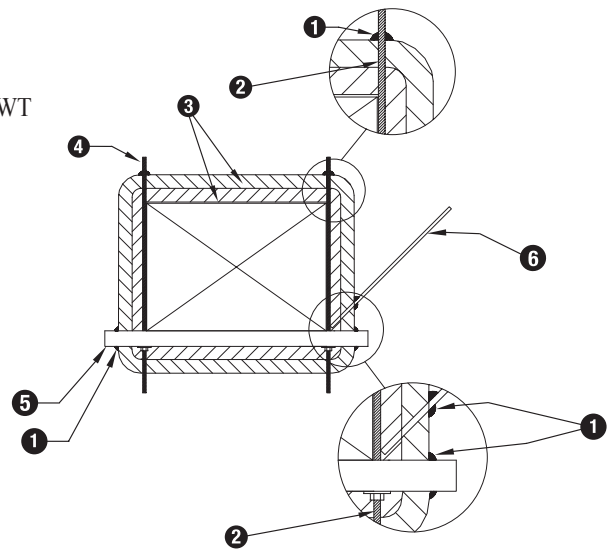


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Hanger Penetrations of Wrap Envelope for Grease or Ventilation Duct Systems (Figure 11)

1. Min. 1/2" (12.7mm) crown of 3M™ Fire Barrier Sealant CP 25WB+ or 3000WT
2. Tape seams – min. 3" (76.2mm) wide aluminum tape, 3M™ FSK Facing Tape 3320 (or equivalent)
3. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
4. All Threaded Rod
5. C-channel or angle iron trapeze support
6. Seismic bracing wire

**Note: The inclusion of metallic items penetrating out of the wrap envelope may diminish the T-Rating of the enclosure.**

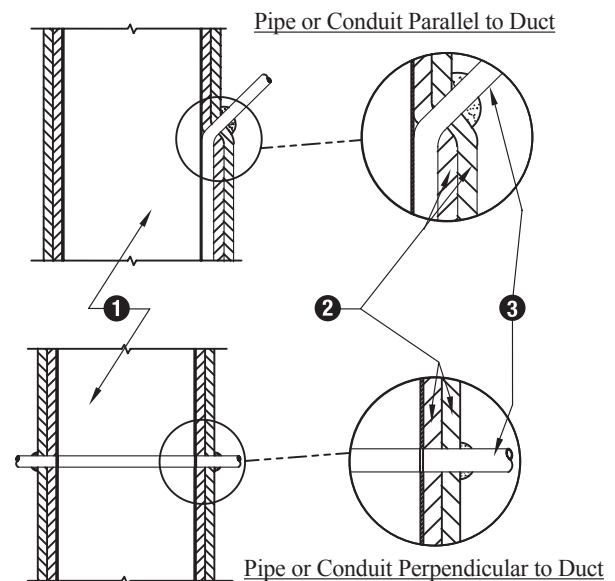


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Conduit Penetrations of Wrap Envelope for Grease or Ventilation Duct Systems (Figure 12)

1. Duct
2. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Min. 1/2" (12.7mm) crown of 3M™ Fire Barrier Sealant CP 25WB+ or 3000WT

**Note: The inclusion of metallic items penetrating out of the wrap envelope may diminish the T-Rating of the enclosure. Penetrants within the wrap envelope are not protected from the effects of a grease fire.**

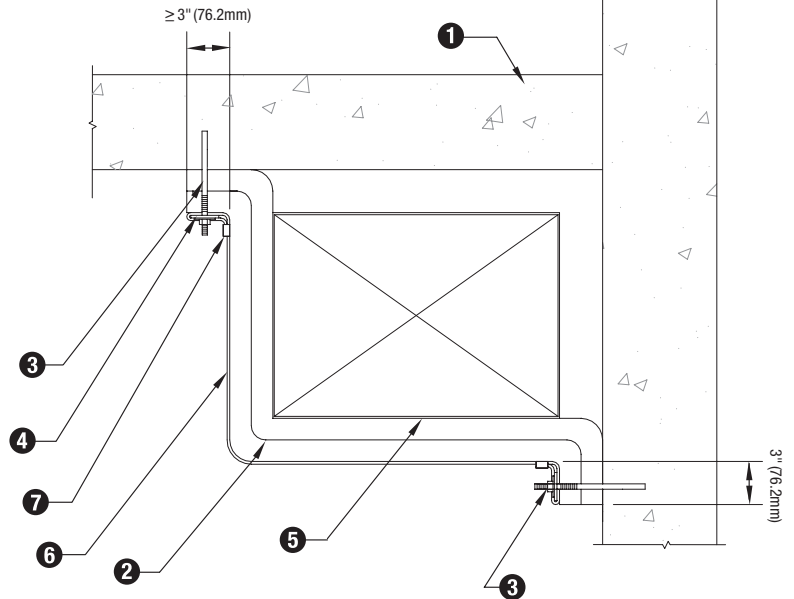


*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

### 3M™ Fire Barrier Duct Wrap 615+ Suggested Two-Sided Wrap Installation (Figure 13)

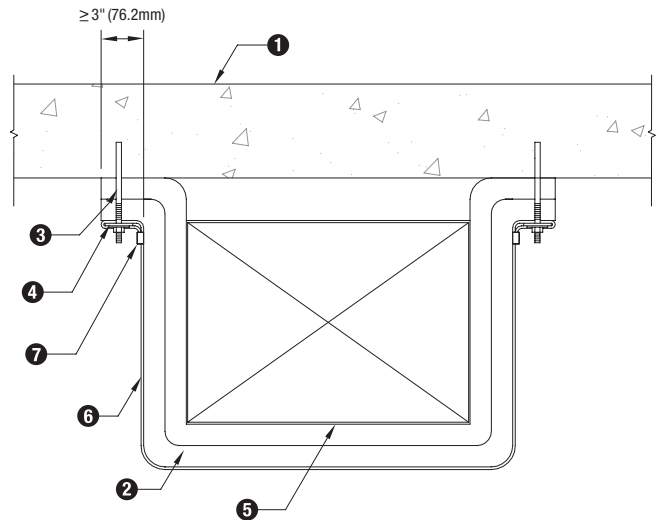
1. Concrete slab
2. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Concrete fasteners – min. 1/4" (6.35mm) dia. steel concrete anchors
4. 1/8" (3.18mm) thick x 2" to 3" (50.8mm to 76.2mm) wide bar stock perforated 12" (30.5cm) O.C.
5. Duct
6. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
7. Banding clips



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Suggested Three-Sided Wrap Installation (Figure 14)

1. Concrete slab assembly
2. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Concrete fasteners – min. 1/4" (6.35mm) dia. steel concrete anchors
4. 1/8" (3.18mm) thick x 2" to 3" (50.8mm to 76.2mm) wide bar stock perforated 12" (30.5cm) O.C.
5. Duct
6. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
7. Banding clips



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

# 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

## 3M™ Fire Barrier Duct Wrap 615+ Elbow and Banding Installations (Figure 15) Suggested Elbow Pattern Installation (A)

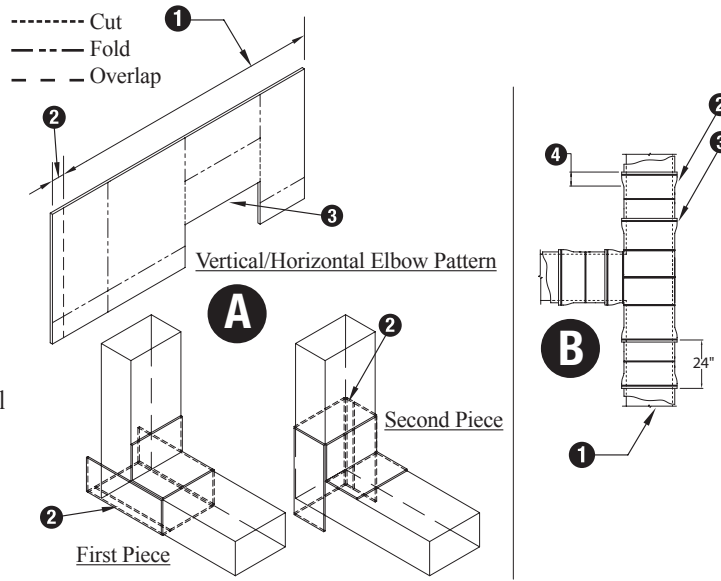
1. Perimeter
2. 3" (76.2mm) min. overlap
3. Hole cut (off-center)

Note: Place overlap on opposite side of horizontal pattern.

## Suggested Banding Pattern Installation (B)

1. Grease of ventilation duct
2. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Steel or stainless steel banding 1/2" (12.7mm) wide min. typical for permanent fastening with max. 10-1/2" (26.7cm) spacing
4. 3" (76.2mm) overlay (typical throughout application)
5. Min. 3" (76.2mm) perimeter overlap (not shown)

**Note: 1-layer application depicted. When 2-layer application is required, replicate these steps with outer joints staggered a min. 3" (76.2mm) from inner joints. Banding is required on outermost layer only.**



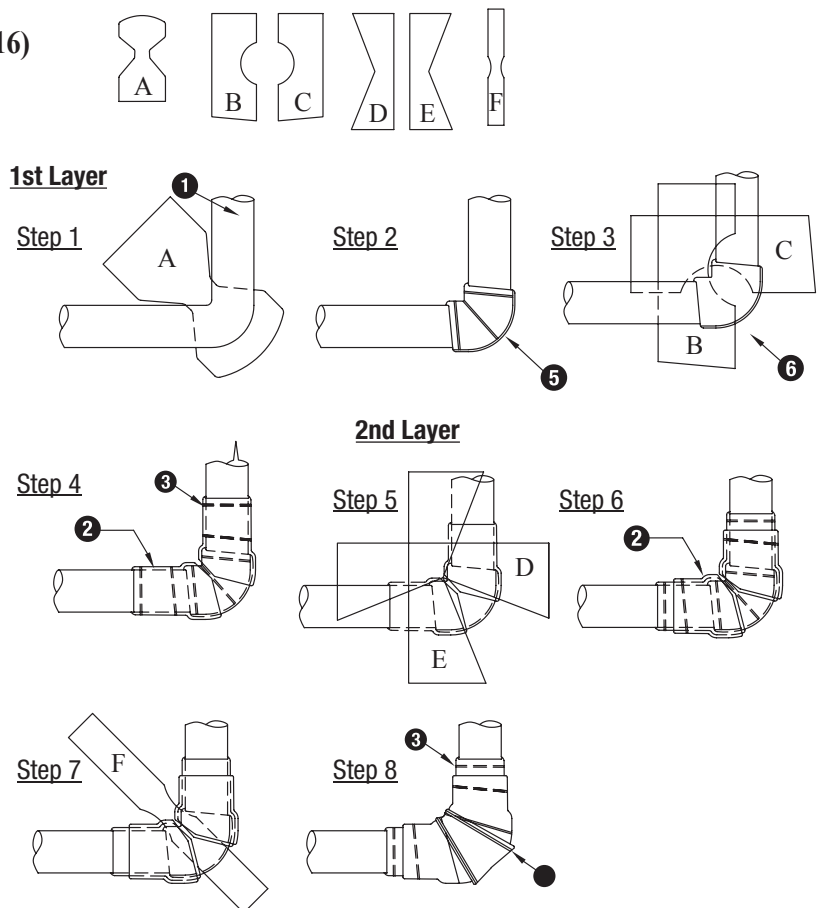
*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 3M™ Fire Barrier Duct Wrap 615+ Suggested Installation for 90° Turn (Figure 16)

A-F (representative field-cut duct wrap sections)

1. Duct
2. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Scotch® Filament Tape 898 (or equivalent)
4. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
5. Min. 3" (76.2mm) perimeter overlap
6. Min. 3" (76.2mm) longitudinal overlap

**Note: 2-layer application depicted. When 1-layer application is used, install banding (item 4) as a permanent hold.**



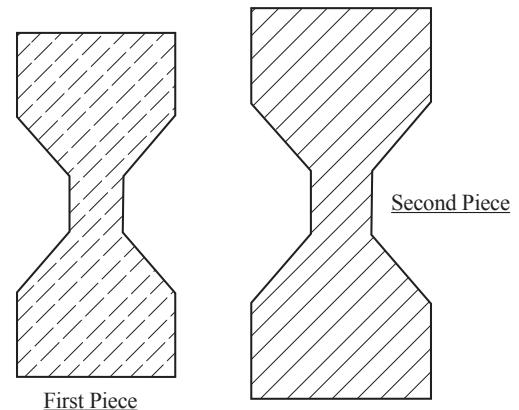
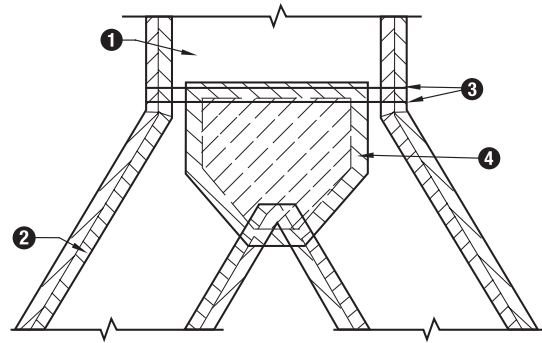
*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

### 3M™ Fire Barrier Duct Wrap 615+ Suggested Branching Duct Details (Figure 17)

1. Duct
2. Full width pieces of 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
3. Steel banding 1/2" (12.7mm) wide min. typical for permanent fastening
4. 3M™ Fire Barrier Duct Wrap 615+ (field cut)

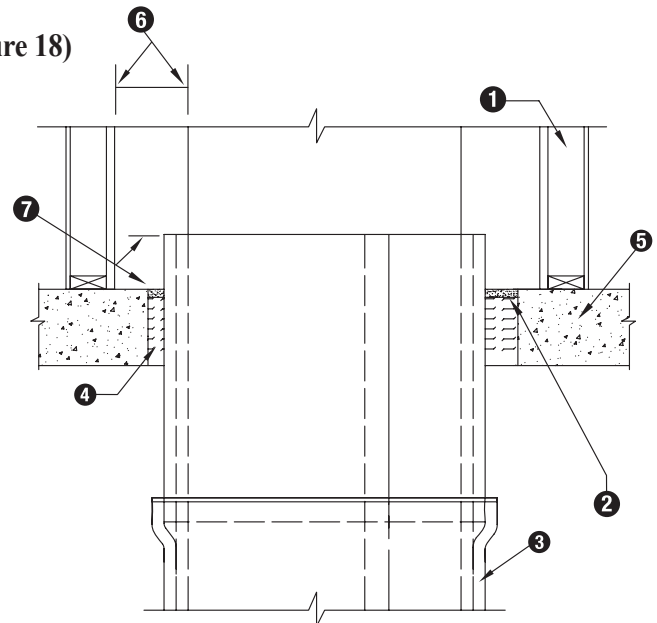
**Note: Install first piece onto the inside of the inner duct area and then install the adjacent pieces so they overlap at the edges a minimum of 3" (76.2mm). When an application requires a second layer of duct wrap, install the second piece over the first piece and overlap at the edges a minimum of 3" (76.2mm).**



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Suggested Duct Wrap / Shaft Transition Installations (Figure 18)

1. Fire barrier gypsum shaft assembly
2. 5/8" (15.88mm) depth of 3M™ Fire Barrier Sealant 1000NS, 1003SL or 2000+
3. 1 or 2 layers of 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
4. 3M™ Fire Barrier Duct Wrap 615+ (use small scrap piece)
5. Fire barrier concrete floor assembly
6. Air gap as required by local mechanical code (grease ducts)
7. Extend duct wrap into shaft a min. distance that meets local code requirements for clearance to combustibles



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

## 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

### Penetrations

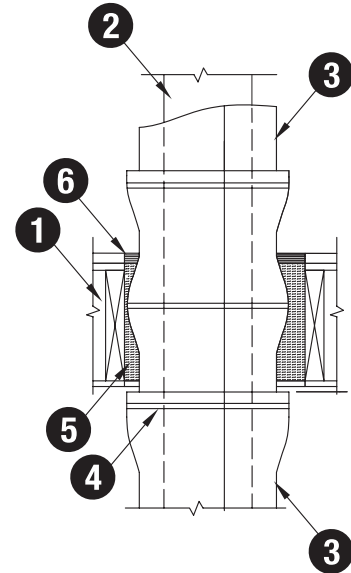
When the duct penetrates a fire rated wall, ceiling or floor, an approved firestop system must be employed. Figures 19–21 illustrate typical conditions. To firestop the wrapped duct, follow the installation parameters detailed in a compatible ASTM E 814 tested through-penetration firestop design. Note: Through-penetration designs in which the duct is bare where it passes through combustible or limited-combustible construction (e.g. gypsum walls or wood joist floor-ceiling assemblies) are appropriate for ventilation duct scenarios only. It is not appropriate for bare, uninsulated grease ducts to pass through combustible assemblies. Intertek 3MU/DI design listings contain through penetration details. See system details of UL System HNLJ.V-27, Section 3.C. for applicable UL through penetration systems.

### 3M™ Fire Barrier Duct Wrap 615+ Typical Through Penetration Firestop System (Figure 19)

#### 1-Hour Through Penetration Systems Fire-Rated Wood/Gypsum Floor/Ceiling Assembly

1. Floor/ceiling assembly
2. Duct
3. One or two layers 3M™ Fire Barrier Duct Wrap 615+
4. Banding or pinning
5. 3M™ Fire Barrier Packing Material PM 4, 4 pcf mineral wool, or scrap duct wrap (min. 33% compressed)
6. 3M™ Fire Barrier Water Tight Sealant 1000 NS, 3M™ Fire Barrier Water Tight Sealant 1003 SL, or 3M™ Fire Barrier Silicone Sealant 2000+

**Note: Sealant to be applied at a minimum 5/8" (15.9mm) depth.**



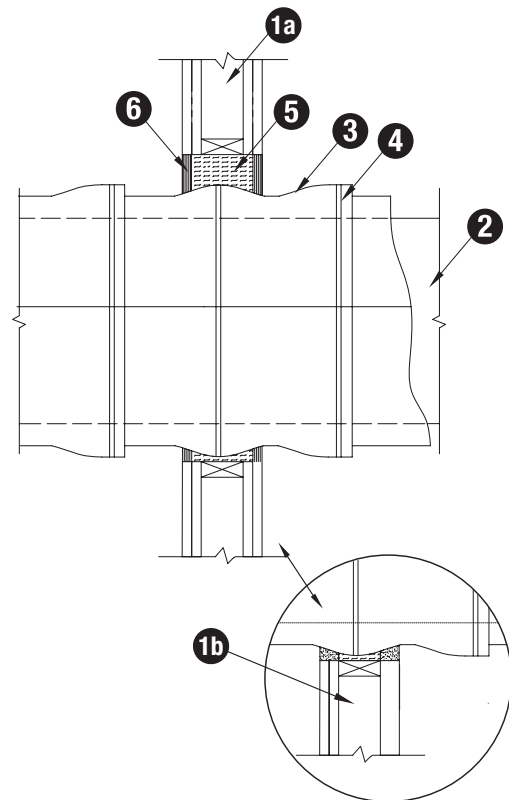
*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

### 3M™ Fire Barrier Duct Wrap 615+ Typical Through Penetration Firestop System (Figure 20)

#### 1- or 2-Hour Through Penetration Systems — Gypsum Wall or Gypsum Shaftwall

- 1a. Gypsum wall assembly
- 1b. Gypsum shaftwall assembly
2. Duct
3. One or two layers 3M™ Fire Barrier Duct Wrap 615+ (layering dependant on application)
4. Banding or pinning
5. 3M™ Fire Barrier Packing Material PM 4, 4 pcf mineral wool, or scrap duct wrap (min. 33% compressed)
6. 3M™ Fire Barrier Sealant 1000NS or 2000+ applied at a min. 5/8" (15.9mm) depth

**Note: The assembly can be either a symmetrical gypsum wall or an asymmetrical gypsum shaftwall.**



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

For technical data and properties of 3M™ Fire Barrier Water Tight Sealant 1000 NS, 3M™ Fire Barrier Water Tight Sealant 1003 SL or 3M™ Fire Barrier Silicone Sealant 2000+, see separate product data sheets available from your 3M representative or go to [www.3M.com/firestop](http://www.3M.com/firestop).

## 10. Grease Duct & Ventilation Air Duct Installation Techniques cont.

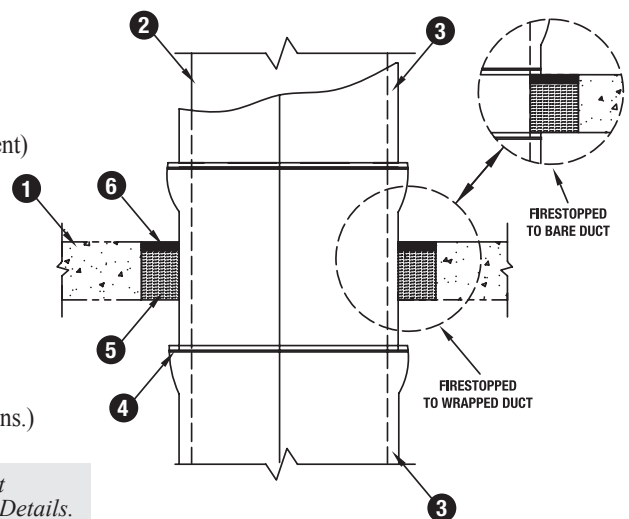
### 3M™ Fire Duct Wrap 615+ Typical Through Penetration Firestop System (Figure 21)

#### 1- or 2-Hour Through Penetration Systems 4-1/2" (11.4cm) Concrete Floor or Wall

1. Floor/ceiling or wall assembly
2. Duct
3. One or two layers 3M™ Fire Barrier Duct Wrap 615+ (application dependent)
4. Banding or pinning
5. 3M™ Fire Barrier Packing Material PM 4, 4 pcf mineral wool or scrap duct wrap (min. 33% compressed)
6. 3M™ Fire Barrier Water Tight Sealant 1000 NS, 3M™ Fire Barrier Water Tight Sealant 1003 SL, or 3M™ Fire Barrier Silicone Sealant 2000+

**Note: Sealant to be applied at a minimum 5/8" (15.9mm) depth.**

For wall assembly apply sealant to both sides of wall.  
(3M™ Fire Barrier Water Tight Sealant 1003 SL not suited for wall applications.)



*Note: System integrity is limited by quality of installation. Consult current independent testing laboratories (e.g. Intertek, UL) for Design or System Details.*

For technical data and properties of 3M™ Fire Barrier Water Tight Sealant 1000 NS, 3M™ Fire Barrier Water Tight Sealant 1003 SL or 3M™ Fire Barrier Silicone Sealant 2000+, see separate product data sheets available from your 3M representative or go to [www.3M.com/firestop](http://www.3M.com/firestop).

## 11. Maintenance

No maintenance is expected when installed in accordance with the applicable Intertek, UL or other third-party listed system and in accordance with 3M™ Fire Barrier Duct Wrap 615+ Installation Guidelines. Once installed, if any section of the 3M™ Fire Barrier Duct Wrap 615+ is damaged such that the blanket requires repair, the following procedure will apply:

1. If the blanket has not been damaged but the foil has ripped, seal the rips with aluminum foil tape.
2. If the blanket has been damaged:
  - a. The damaged section should be removed by cutting the steel banding or removing the clips holding it in place.
  - b. A new section of the same dimension should be cut from a roll of 3M™ Fire Barrier Duct Wrap 615+, either 24" (60.9cm) or 48" (121cm) wide.
  - c. The new section should be placed and fitted ensuring the same overlap that existed previously (i.e. the original installation method).
  - d. The steel banding should be placed around the material and tensioned so as to sufficiently hold the 3M™ Fire Barrier Duct Wrap 615+ in place.

## 12. Availability

3M™ Fire Barrier Duct Wrap 615+ is available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Duct Wrap 615+ is available in 24" x 25 ft, Roll (1/case), 48" x 25 ft, Roll (1/case). 3M™ Fire Barrier Duct Wrap Collars 615+ are available in 1.5" x 6" x 25 ft, Rolls (4/case). For additional technical and purchasing information regarding this and other 3M™ Fire Protection Products, please call: 1-800-328-1687 or visit [www.3M.com/firestop](http://www.3M.com/firestop).

## 13. Safe Handling Information

Prior to handling or disposal of 3M™ Fire Protection Products, consult all relevant Material Safety Data Sheets (MSDS).

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**Technical Information:** The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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