PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fire-rated insulation for the following applications:
   2. Air ventilation ducts.
   3. Chemical exhaust ducts.
   4. Stair pressurization ducts.
   5. Hazardous exhaust ducts.
   6. Trash and linen chutes.
   7. Clothes dryer vents.
   8. Construction requiring fire-rated enclosure assembly construction.
   9. Plenum rated insulation to cover non-plenum rated plastic pipe and plastic jacketed electric cables.

1.2 RELATED SECTIONS

A. Section 07 84 00 – Penetration Firestopping.
B. Section 23 38 00 – Ventilation Hoods.
C. Section 23 33 33 – Duct Accessories, Mounting Access Doors.

1.3 REFERENCES

A. Grease Duct Enclosure System Test Standards:
   2. ASTM E 814 (UL1479); ‘Standard Test Method for Fire Tests of Through-Penetration Fire Stops’.
   6. UL 1978; ‘Standard for Grease Ducts’.

B. Ventilation Air Duct Enclosure System Test Standards:
   3. ASTM E 814 (UL1479); ‘Standard Test Method for Fire Tests of Through-Penetration Fire Stops’.
C. Plenum Rated Enclosure System Test Standards:
   2. UL 1887; ‘Fire Test of Plastic Sprinkler Pipe for Visible Flame and Smoke Characteristics’.
   3. NFPA 252 (UL 910); ‘Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces’.

D. Independent Listing Agency References:
   1. Underwriters Laboratories (UL).
   3. Intertek Testing Service (ITS) – Label Mark is OPL.

E. Building Code References:
   1. 2012 International Mechanical Code (2012 IMC)
   2. 2009 International Mechanical Code (2009 IMC)
   5. 2009 International Association of Plumbing and Mechanical Officials – Uniform Mechanical Code (2009 IAPMO UMC)
   7. 2007 California Mechanical Code
   8. 2010 California Mechanical Code

F. Health Studies on Bio-solubility of Ceramic and Mineral Fibers:
   1. Long Fiber Fraction Half Life Solubility Study - Performed in accordance with Guideline 97/69/EC dated 5 December 1997 Appendix Q.

1.4 SYSTEM

A. Work of this section includes labor, material, methods, and equipment to provide a 1 or 2 or 3 hour fire-resistive enclosure system for the ducted system scheduled or indicated.

B. Work of this section includes labor, material, methods, and equipment to provide a 1 or 2 or 3 hour F and T-Rated through penetration firestop for a floor, ceiling, or wall penetration by a duct system scheduled or indicated.

C. Thermal Ceramics Pyroscat Duct Wrap XL shall be installed directly to the duct to provide a zero-clearance and 2-hour fire resistance-rated grease duct enclosure as required by IMC 506.3.6 and 506.3.10 and as detailed in UL Listing HNKT.G-18 and tested per ASTM E 2336. Product shall be UL classified and labelled for the application.
   1. When required by IMC 506.3.8 for adequate clean out of commercial kitchen grease duct, Thermal Ceramics FastDoor XL Access Doors to be installed by qualified installer as per UL Listing HNKT.G-18.
D. Thermal Ceramics PlenumWrap+ shall be installed directly to the plastic pipe or plastic jacketed electrical cable to provide an assembly meeting the ASTM E 84 requirements for materials allowed in return air plenums. Product shall be UL labelled per ASTM E 84 and Intertek labelled for the application.

E. Thermal Ceramics Pyroscat Duct Wrap XL shall be installed directly to the duct to provide a 1 or 2 hour fire resistance-rated shaft enclosure alternative per testing to ISO 6944, ASTM E 814 (UL 1479), and ASTM E 84. Product shall be UL classified and labelled for the application.

F. Pyroscat Duct Wrap XL shall be installed as per manufacturers tested and listed assemblies. When a duct penetrates a fire rated wall - floor or ceiling assembly installer is to fire stop as per listings shown in the Thermal Ceramics Installation Manual.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   2. Submit UL Listings.
   4. Preparation instructions and recommendations.
   5. Storage and handling requirements and recommendations.
   6. Installation methods.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience installing similar products.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship is approved by Architect.
   3. Revise mock-up area as required to produce acceptable work.

C. HVAC Ducts Requiring Fire-Rated Enclosures: Fire-rated assemblies using Pyroscat by Thermal Ceramics are an acceptable equivalent to gypsum board shaft wall and masonry fire assemblies specified in Division 9. At the Contractor’s option, submit Pyroscat products for fire-rated enclosures for HVAC ductwork, including manufacturer’s UL Listings and acceptance by local authority or code having jurisdiction.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Deliver materials in original sealed packages, clearly labeled with manufacturing information, including product identification and manufacturing lot numbers.
C. Store material out of weather and away from incidental damage,

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Morgan Thermal Ceramics; Augusta, GA 30906. (800) 338-9284

B. Substitutions: Not permitted.

2.2 APPLICATIONS/SCOPE


B. 1 and 2 Hour Applied Fire Protection when tested in accordance with UL 1978; Compliant per Intertek Listing TC/BI 120-01.

C. 1 and 2 Hour F- and T-Rated Through Penetration Firestop when tested in accordance with ASTM E 814 (UL 1479) using SpecSeal SSS Firestop Sealant.

D. 1 and 2 Hour Applied Fire Protection for Ventilation Air Duct when tested in accordance with ISO 6944-1985 - Reference UL Listings HNLJ V2 (for 3-hour); HNLJ V19 (for 2-hour); HNLJ V29 (for 1-hour on dryer vent);

2.3 MATERIAL

A. Thermal Material: 2192 F degree rated core blanket, manufactured from patented bio-soluble Superwool chemistry (Calcium Magnesium Silicate)

1. Product: Pyroscat Duct Wrap XL as manufactured by Thermal Ceramics.

2. Fully encapsulated thermal material in fiberglass reinforced aluminum/polypropylene scrim (FSP).

   a. Encapsulation FSP marked with UL Classification Mark

   b. Encapsulation FSP marked with ICC-ES report number ESR 2832

B. Product Characteristics:

1. Thickness: 1-1/2 inch (38 mm).

2. Nominal Density: of 6 pcf

3. R-Value: 7.35 per layer of Pyroscat Duct Wrap XL when tested in accordance with ASTM C 518 at 75 F.

4. Flame Spread: <25 when tested in accordance with ASTM E 84.

5. Smoke Development: <50 when tested in accordance with ASTM E 84.
2.4 ACCESSORY MATERIALS:

A. Glass Filament Tape: Minimum 3/4 inch (19 mm) wide – used to temporarily secure blanket until permanent attachment using steel banding and/or steel insulation pins.

B. Aluminum Foil Tape: Minimum 3 inches (76 mm) used to seal cut edges.

C. Carbon Steel or Stainless Strapping Material Minimum: 1/2 inch (13 mm) wide and 0.015 inch (.38 mm) thick

D. Steel Insulation Pins: Minimum 12 gauge, length sufficient to penetrate through duct wrap insulation.

E. Insulation Clips: Galvanized steel, minimum 1-1/2 inches (38 mm) round or square.

F. Through Penetration Firestop Sealants:
   1. Packing Material: Remove encapsulation material from Pyroscat Duct Wrap XL, use core blanket (white) as penetration packing material.
   2. Firestop sealants per applicable building code report and/or laboratory design listings.

G. Grease and HVAC Duct Access Doors:
   1. Thermal Ceramics FastDoor XL Access doors; Supplied in standard door sizes of 6 by10 inches (152 mm by 254 mm), 8 by12 inches (203 mm by 305 mm), 12 by12 inches (305 mm by 305 mm) 12 by16 inches (305 mm by 406 mm), and 20 by20 inches (508 mm by 508 mm).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Coordinate installation of the Thermal Ceramics FastDoor XL access door between sheet metal and insulation trades.

3.2 PREPARATION

A. Remove dirt and dust from surfaces of openings and items penetrating rated floors and rated walls.

3.3 INSTALLATION

A. Install Pyroscat Duct Wrap XL in direct contact with the ductwork in accordance with manufacturer's instructions, applicable laboratory listings and building code reports, and referenced standards. For additional complex duct design installation recommendations, see the Thermal Ceramics’ complete installation guide.
B. Install 2 layers of Pyroscat Duct Wrap XL for zero clearance and a 1 and 2 hour commercial kitchen grease duct applications per ASTM E 2336.
   1. General Installation Instructions for Double Layer Installations: The inside and outside layers of or Pyroscat blankets are cut to a length that will fit around the duct and meet with a tight butt joint. Adjacent blankets on the inside and outside layers are tightly butted against each other. Joints between blankets on the outside layer shall be offset from joints on the inside layer by a minimum 6 inches (152 mm). Cut edges of the blanket shall be taped with aluminum foil tape. During installation the blankets are temporarily held in place with filament tape until the wrap is mechanically attached with steel bands or steel insulation pins.

C. Install 1 layer of Pyroscat Duct Wrap XL for 1 and 2 hour air ventilation duct enclosures per ISO 6944-1985.
   1. General Installation Instructions for Single Layer Installations: Pyroscat blankets are cut to a length that will fit around the duct and overlap itself no less than 3 inches (152 mm). Adjacent blankets overlap each other a minimum of 3 inches (152 mm), or they can be fitted together with a tight butt joint and covered with a 6 inches (305 mm) wide collar centered over the butt joint. Cut edges of the blanket are taped with aluminum foil tape. During installation the blankets are temporarily held in place with filament tape until the wrap is mechanically attached with steel bands or steel insulation pins.

D. Install 1 layer of Thermal Ceramics PlenumWrap+ on plastic pipe or plastic jacketed electrical cables per Intertek listing reports and testing to NFPA 262 and UL1887.
   1. Cut plenum blanket to a length that will fit around the pipe or cable and overlap itself no less than 1 inch (25 mm). Adjacent blankets overlap each other a minimum of 1 inch (25 mm). Plenum blanket is secured using either ½ inch (12 mm) steel banding or 16 gauge carbon or stainless steel tie wire on maximum 11-1/2 inch (292 mm) spacing.

E. Mechanical Fastening of Enclosure Material to Ductwork:
   1. Banding - Carbon steel or stainless steel banding is used to hold the outer layer of the blanket enclosure in place. Banding is minimum 1/2 inch (12.7 mm) wide, and is placed around the entire perimeter of the duct on maximum 10-1/2 inches (267 mm) centers and 1-1/2 inches (38 mm) from each blanket or collar edge.
   2. Pinning - To prevent blanket sag on duct spans wider than 24 inches (610 mm), minimum 12-gauge steel insulation pins are welded to the duct along bottom horizontal and outside vertical runs in columns spaced 12 inches (305 mm) apart, 6 to 12 inch (152 to 305 mm) from each edge, and on 10-1/2 inches (267 mm) centers. Pins are locked in place with 1-1/2 inch (38 mm) diameter or 1-1/2 inch (38 mm) square galvanized steel speed clips or cup head pins. Pins are turned down or the excess cut off to eliminate sharp edges.

F. Grease Duct Access Door Installation:
   1. Install Thermal Ceramics FastDoor XL per manufacturers’ instructions, and applicable building code reports and laboratory design listings.

G. Through-Penetration Firestop System:
   1. When the duct penetrates a concrete or dry wall fire rated floor, ceiling, or wall an approved firestop system shall be employed. Pyroscat insulation shall be installed directly to the duct through the penetration, or terminated on both sides of the
penetration depending on the annular space allowance between the duct and the duct opening. When the Pyroscat enclosure system is terminated on both sides of the through penetration, the duct wrap material is mechanically attached to the duct at the termination points using either steel banding or steel pins.

2. To fire stop the through penetration void area, fill the annular space between the wrapped duct or bare duct and the periphery of the opening with scrap or Pyroscat insulation firmly packed into the opening. Compress scrap blanket to percentage stated in the firestop listing for a minimum depth as specified in the firestop listing. Recess packing material below surface on both sides of walls or top side only for floors to the depth stated in the firestop listing. Seal over the packing material using an approved firestop sealant to a depth as stated in the firestop listing, flush with top side of a floor assembly and both sides of a wall assembly.

3.4 INSPECTION
Independent inspection agency employed by the owner, will examine fireproofing in strict accordance with the requirements of the Ohio Building Code section 1704. Where deficiencies are found, remove and reinstall fire rated insulation to comply with requirements of the tested assembly.

A. Perform the tests and inspections of completed work in successive stages.
B. Fire rated insulation will be considered defective if it does not pass inspection.
C. Remove and replace fire rated insulation that does not pass inspection and retest.

3.5 REPAIR PROCEDURES

A. Repair damaged Pyroscat Duct Wrap XL in accordance with manufacturer's instructions.

B. Remove damaged section by cutting the bands and removing the anchor clips holding it in place. Apply a new section of the same dimension ensuring the same overlap and installation method that existed previously. Cut edges and tears in the foil must be taped with aluminum tape to prevent the insulation from wicking moisture or grease.

3.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION