



SECTION 23 07 13
Field Applied Grease Duct Insulation
Zero Clearance, 2 Hour Rated

PART 1 GENERAL

1.1 SUMMARY

- A. Duct insulation to achieve zero clearance to combustibles and a 2-hour fire resistance rated duct enclosure on commercial kitchen grease duct exhaust systems

1.2 REFERENCES

- A. The following published specifications, standards, or tests that apply to zero clearance two layer fire rated systems of grease duct insulation:
 1. NFPA 96
 2. International Code Council Evaluation Service (ICC-ES)
 3. 1997 ICBO Uniform Mechanical Code (ICBO UMC)
 4. 1997 Uniform Building Code (UBC)
 5. International Mechanical Code (IMC) all editions
 6. Uniform Mechanical Code (IAPMO UMC) all editions
 7. National Building Code of Canada - all editions
 8. ASTM E2336 - Standard Test Methods for Fire Resistance Rated Grease Duct Enclosures
 9. CAN/ULC-S144 Standard Method of Fire Resistance Test - Grease Duct Assemblies
 10. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
 11. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
 12. ASTM E136 - Standard Test Method for Combustibility
 13. ASTM E518 - Standard Test for Durability
 14. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems

NOTE: The Authority Having Jurisdiction (AHJ) has final responsibility for approving equipment, materials, procedures, and performance requirements for their respective jurisdiction.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Preparation instructions and recommendations
 2. Storage and handling requirements and recommendations
 3. Installation methods
- C. Submit certification and installation documentation showing system performance and Code compliance

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original unopened packages, clearly marked with manufacturer's name, product designation, manufacturer's lot numbers and appropriate third party classification listings
- B. Store in a covered dry environment
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction

1.5 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: Alkegen I LLC located at: 600 Riverwalk Pkwy. Suite 120; Tonawanda, NY 14150; Tel: 716-768-6298; Fax: 716-768-6400; Email: request info (info.fp@alkegen.com); Web: <https://alkegen.com/industries-we-serve/construction-advanced-materials/#fire-protection-solutions>
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements

2.2 DUCT INSULATION FOR ZERO CLEARANCE APPLIED FIREPROOFING FOR FIRE-RATED GREASE DUCTS

- A. Product: FyreWrap[®] Elite[®] 1.5 Duct Insulation by Unifrax I LLC, Tonawanda, NY:
 - 1. Nominal 1.5 inch (38 mm) thick foil encapsulated blanket material at 6 PCF to provide 2-hour fire resistive enclosure assembly per ASTM E2336
 - 2. A lightweight, flexible, inorganic, non-asbestos, bio-soluble, high temperature, foil encapsulated blanket wrap
 - 3. Flexible, fully encapsulated blanket material, two-layer system to provide 2-hour fire resistive enclosure assembly per ASTM E2336 and CAN/ULC-S144
 - 4. Blanket insulation shall maintain a 2300 degree F (1260 degree C) operating temperature
 - 5. Blanket fiber materials shall be tested per EU regulatory requirements, Directive 97/69/EC for bio-solubility, and verified by an independent laboratory
 - 6. Provide field fabricated or prefabricated fire rated access doors (for cleanout as required) to maintain 2-hour rating and required clearance
 - 7. Provide firestop sealants, tape, insulation pins, clips, banding and other components as per manufacturer's instructions to provide fully functioning zero clearance to combustibles grease duct system
- B. Performance: Lightweight, non-asbestos, bio-soluble, high temperature, inorganic, foil encapsulated insulation blanket. The blanket material shall be capable of performing at 2300 degree F (1260 degree C) exceeding the internal and external fire test temperature for grease ducts. The duct wrap system shall be a tested and listed system evaluated for reduced clearances to combustibles as an alternative to a grease duct, with a two-hour fire rated shaft enclosure. Testing shall be conducted at a nationally recognized testing laboratory.

1. Performance Requirements:
 - a. Two-layer system of 1-1/2 inch (38 mm) 6 pcf (96 kg/m³) material
 - b. Zero clearance to combustibles across the entire surface of the blanket material per internal fire tests of ASTM E2336
 - c. 2-hour fire resistive enclosure assembly per ASTM E119
 - d. CAN/ULC-S144: Stability-2hr, Integrity-2hr, Insulation-2hr
 - e. Firestop tested per ASTM E814, 2 Hour F and T Ratings
 - f. Meets 25/50 flame and smoke ratings per ASTM E 84

2.3 BLANKET INSULATION

- A. Product: FyreWrap Elite Blanket by Unifrax LLC, Tonawanda, NY:
 1. Thickness: 1/2 inch, 1 inch, 1.5 inches, 2.0 inches (13 mm, 25 mm, 38 mm, 51 mm)
 2. Density: 4, 6, 8,10 PCF (64 kilogram/cubic meter, 96 kilogram/cubic meter, 128 kilogram/cubic meter, 160 kilogram/cubic meter)
 3. Width: 24 inches, 48 inches (610 mm, 1219 mm)
 4. Length: 12.5 feet, 25 feet (3.8 m, 7.6 m)
- B. Performance: A calcium, magnesium, silicate chemistry to provide thermal insulation at continuous operating temperatures up to 2300 degree F (1260 degree C)
 1. Performance Requirements:
 - a. ASTM E84, UL 723, ULC S102.2 - UL File No. R14514 Flame Spread/Smoke Developed Rating: Unfaced Blanket - Zero/Zero Encapsulated - < 25/< 50
 - b. ASTM E136 Combustibility Test: Passes
 - c. ASTM C518 Durability Test: Passes; R-Value = 4.8 per inch at 75 degree F.
 - d. ASTM C518 Thermal Resistance: R-Value of Elite 1.5 inches (38 mm) = 7.2

PART 3 EXECUTION

3.1 PREPARATION

- A. Inspect and verify that all surfaces are smooth, dry, clean and free from dust, debris, or other loose materials. Surfaces shall be dry before the application of insulation materials
- B. Clean surfaces thoroughly prior to installation
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions

3.2 INSTALLATION

- A. Install duct wrap system in accordance with manufacturer's installation instructions

3.3 MAINTENANCE

- A. Cut banding or insulation washers on damaged blanket areas and remove
- B. Cut and remove damaged blanket
- C. Cut new blanket piece with exact dimensions as that removed and install on ductwork in same configuration as previously used in compliance with required material overlaps and attachment methods
- D. Ensure same minimum overlap is created
- E. Replace permanent attachment