

## Product Description

Introducing FSB ULTRA™: ETS Schaefer Corporation's latest innovation for grease duct enclosures and ventilation air duct protection. FSB ULTRA™ weighs in at just 8/10ths of a pound per square foot, making it the lightest, strongest, most flexible, Single Layer duct protection blanket available. At 1½ inches thick it provides a low profile, 2-hour grease duct enclosure for zero clearance to combustibles anywhere on the wrap. This makes FSB ULTRA™ the thinnest blanket on the market for duct sizes up to 52" x 52".

The core material of FSB ULTRA™ is composed of long strand, high strength, bio-soluble fibers needled into a tight blanket with superior handling properties and rated for operating temperatures as high as 2300°F. Unlike other products on the market FSB ULTRA™ will not become brittle or shrink over the lifetime of the enclosure system. The scrim reinforced facing is the latest state-of-the-art product specifically developed for extreme temperatures and superior puncture resistance, while still maintaining excellent handling characteristics. The facing is adhered to the fiber blanket with a full surface coating of proprietary high temperature adhesive preventing delamination during installation and normal grease duct operating temperatures.

## Product Features

- Tested per UL 1978 for zero clearance to combustibles for grease ducts
- The only blanket available totally encapsulated or with the more economical foil facing on one side
- Thinnest and lightest system tested to date for the largest duct size of 52" x 52"
- The only grease duct enclosure system to allow lengthwise blanket installation on vertical duct sections, resulting in significant labor savings
- Bio-soluble core fiber

## Applications

- 1 or 2 Hour commercial kitchen grease duct enclosure
- 1 or 2 Hour air ventilation duct enclosure

## Sizes and Properties

- Thickness.....1½"
- Widths.....24" & 48"
- Length.....25'
- Facings.....Foil 1-side or encapsulated
- Weight.....8/10 ths lb. per sq. ft.
- Density.....6 PCF
- Operating temperature.....2300°F
- Melting point.....3200°F

## Test Compliance

- UL 1978 "2 hour grease duct enclosure"
- ASTM E-84
- ASTM E-814 (UL 1479)
- ASTM C-411
- ASTM E-136
- ASTM E-119-95
- ASTM E-119-95A modified
- ASTM C-518-91
- NFPA 96 2001 Edition
- Uniform Mechanical Code (UMC)
- Uniform Building Code (UBC)
- International Mechanical Code (IMC) section 506 commercial grease ducts and exhaust equipment; section 507 commercial kitchen hoods, 2000 edition
- NFPA 101 Life Safety Code
- Omega Point Laboratories GD 574 F, GD 575 F
- NYC MEA 61-03-M, Vol. II

## Performance

- Flame Spread Index.....0 (ft)
- Smoke Developed.....0
- Fuel contribution.....0
- Max Duct Size.....52" x 52"

## Installation

### Material and Equipment

- ETS Schaefer Corporation FSB ULTRA™ blanket, 1½" (3.81 cm) thick, 24 inches (61 cm) or 48" (122 cm) wide, 25 feet (7.62 m) standard length, fully encapsulated or foil face on 1 side
- Aluminum foil tape
- Minimum ¾ inch (1.9 cm) wide filament tape
- Stainless steel banding material, minimum ½ inch (1.27 cm) wide, minimum 0.015 inch (.38 mm) thick, with steel banding clips
- Hand banding tensioner tool, crimping tool, and cutter
- Minimum 12 gauge copper-coated steel insulation pins; galvanized steel speed clips, minimum 2 ½ inch (6.4 cm) square or 2 ½ inch (6.4 cm) diameter, or equivalent sized cup-headed pins
- Capacitor discharge stud gun
- Access door hardware: four galvanized steel threaded rods, ¼ inch (6.35 mm) diameter, 6 inches (15.2 cm) long, with ¼ inch (6.35 mm) wing nuts and ¼ inch (6.35 mm) washers, and 4 inch (10.16 cm) long steel tubing to fit over threaded rods
- Firestop sealant

### Storage

The ETS Schaefer Corporation FSB ULTRA™ and Firestop sealants must be stored in a dry warehouse environment. Pallets should not be stacked.

### Preparatory Work

ETS Schaefer Corporation FSB ULTRA™ is installed using common tools: Insulation cutting knives, bander, crimp tools for banding, tape measure. For pinning alternative method of attaching blankets a capacitor discharge gun will be required for the insulation pins.

The through penetration sealant will require a caulk gun for tubes and a small trowel for larger pails. The surface area of the duct should be free of dust and debris. The through penetration opening and penetrating items should be clean, dry, frost free and free of dust and debris.

### Method

Have an area large enough to roll FSB ULTRA™ out completely, this will aid in measuring and minimize waste.

## Installation Techniques

- **Telescoping:** 3 inch (7.6 cm) overlap method, where each adjacent blanket has one edge exposed and one edge covered by the adjacent blanket.
- **Dual end overlap (Checkerboard):** 3 inch (7.62 cm) dual overlap method, where both edges of each alternating blanket are covered by each adjacent blanket whose edges are exposed.
- **Butt splice with collar method:** where the blankets are butted together and a 6 inch (15.2 cm) wide collar of blanket is centered over the butt splice overlapping each adjacent blanket 3 inches (7.62 cm)

### Vertical run alternative

For vertical runs, the insulation can be applied to the duct in a continuous length applied parallel with the length of the duct as opposed to wrapping around the circumference of the duct. All overlaps are to be maintained at a minimum 3 inches (7.62 cm) and are to occur a minimum of 6 inches (15.2 cm) from any corner of the duct. See below for pin and banding methods.

### Telescoping overlap wrap

1. Measure and cut FSB ULTRA™ to a length sufficient to wrap around the circumference of the duct and provide a minimum 3 inch (7.62 cm) overlap over itself.
2. Measure and cut each additional piece of FSB ULTRA™ to a length sufficient to maintain a minimum 3 inch (7.62 cm) overlap over itself and provide a minimum 3 inch (7.62 cm) overlap of the adjacent blanket. The overlap of the adjacent blanket forms the longitudinal overlap.
3. To temporarily secure the blanket to the duct surface, optional use of filament tape is allowed. Install the filament tape approximately 1½ inches (3.2 cm) from blanket edge and approximately 8 inches (20.3 cm) on center.
4. For ducts with spans greater than 24 inches (61 cm) wide.
  - a. **Underside of Duct:** 12 gauge, 5 inch long (12.7 cm) steel or stainless steel insulation pins shall be welded to meet the following requirements. For a 24 inch (61 cm) wide blanket, pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap in a horizontal run. For a 48 inch (122 cm) wide blanket, pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap and at the centerline of the blanket in a transverse

line on maximum 6 inch (15.2 cm) centers and a maximum 4 inches (10.2 cm) from the duct edges. Turn down or cut off pins that extend beyond blanket layer.

- b. **Vertical Sides of Duct:** Pins are required to be placed a maximum of 6 inches (15.2 cm) at the centerline of every longitudinal overlap. When required, adjust pin location to ensure that all overlaps are pinned and centered within the overlap, approximately 1 ½ inches (3.8 cm) from the end of the wrap.
  - c. **Transitions:** At changes in direction, such as going from horizontal to vertical duct runs, locate pins to facilitate the attachment of the blanket to the duct. Locate pins 1 ½ inch (3.8 cm) from duct edge and spaced in rows or spans a maximum 8 inches (20.3 cm) on center. Locate pins to attach blankets at overlaps. Secure blanket to pins with 2 ½ inch (6.4 cm) square galvanized steel speed clips. Turn down or cut off pins that extend beyond the outer blanket wrap layer.
  - d. **Bands:** Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands over centerline of transverse joints 1 ½ inches (3.8 cm) from the edge of the overlap joint and centered around the wrap. Place the second band mid point between the overlapped joints, approximately 10 ½ inches (26.7 cm) on center.
4. For Duct Spans 24 inches (61 cm) or less wide.
    - a. Pins are not required when this banding technique is used.
    - b. Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands 1 ½ inches (3.8 cm) from the edge of the blanket, centered on the overlap.
    - c. Place a minimum of 2 additional bands in the field area between the overlaps on maximum 8 inch (20.3 cm) centers.

#### Dual End Overlap (Checkerboard)

1. Measure and cut FSB ULTRA™ to a length sufficient to wrap around the circumference of the duct and provide a minimum 3 inch (7.62 cm) overlap over itself.
2. Measure and cut each additional piece of FSB ULTRA™ to a length sufficient to maintain a minimum 3 inch (7.62 cm) overlap over itself and provide a minimum 3 inch (7.62 cm) overlap of each adjacent blanket. The overlap of each adjacent blanket forms the longitudinal overlaps.
3. To temporarily secure the blanket to the duct surface, optional use of filament tape is allowed.

Install the filament tape approximately 1½ inches (3.2 cm) from blanket edge and approximately 8 inches (20.3 cm) on center.

4. For ducts with spans greater than 24 inches (61 cm) wide.
  - a. **Underside of Duct:** 12 gauge, 5 inch long (12.7 cm) steel or stainless steel insulation pins shall be welded to meet the following requirements. For a 24 inch (61 cm) wide blanket, pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap in a horizontal run. For a 48 inch (122 cm) wide blanket pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap and at the centerline of the blanket in a transverse line on maximum 6 inch (15.2 cm) centers and a maximum 4 inches (10.2 cm) from the duct edges. Turn down or cut off pins that extend beyond blanket layer.
  - b. **Vertical Side of Duct:** Pins are required to be placed a maximum of 6 inches (15.2 cm) at the centerline of every longitudinal overlap. When required, adjust pin location to ensure that all overlaps are pinned and centered within the overlap, approximately 1 ½ inches (3.8 cm) from the end of the wrap.
  - c. **Transitions:** At changes in direction, such as going from horizontal to vertical duct runs, locate pins to facilitate the attachment of the blanket to the duct. Locate pins 1 ½ inches (3.8 cm) from duct edge and spaced in rows or spans a maximum 8 inches (20.3 cm) on center. Locate pins to attach blankets at overlaps. Secure blanket to pins with 2 ½ inch (6.4 cm) square galvanized steel speed clips. Turn down or cut off pins that extend beyond the outer blanket wrap layer.
  - d. **Bands:** Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands over centerline of transverse joints 1 ½ inches (3.8 cm) from the edge of the overlap joint and centered around the wrap. Place the second band mid point between the overlapped joints, approximately 10 ½ inches (26.7 cm) on center
5. For Duct Spans 24 inches (61 cm) or less wide. Pins are not required when this banding technique is used.
  - a. Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands 1 ½ inches (3.8 cm) from the edge of the blanket, centered on the overlap.

- b. Place a minimum of 2 additional bands in the field area between the overlaps on maximum 8 inch (20.3 cm) centers.

### Butt Joint with Collar

1. Measure and cut FSB ULTRA™ to a length sufficient to wrap around the circumference of the duct and provide a minimum 3 inch (7.62 cm) overlap over itself.
2. Measure and cut each additional piece of FSB ULTRA™ to a length sufficient to provide a square butt joint with the adjacent blanket.
3. Measure and cut 6 inch (15.2 cm) wide by 1 ½ inch thick (3.8 cm) collar to wrap around the circumference of the duct at the butt joint. Filament tape may be used to temporarily hold collar in place.
4. To temporarily secure the blanket to the duct surface, optional use of filament tape is allowed. Install the filament tape approximately 1½ inches (3.2 cm) from blanket edge and approximately 8 inches (20.3 cm) on center.
5. For ducts with spans greater than 24 inches (61 cm) wide.
  - a. **Underside of Duct:** 12 gauge, 5 inch long (12.7 cm) steel or stainless steel insulation pins shall be welded to meet the following requirements. For a 24 inch (61 cm) wide blanket, pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap in a horizontal run. For a 48 inch (122 cm) wide blanket pins are required to be placed on maximum 6 inch (15.2 cm) centers at the centerline of every longitudinal overlap and at the centerline of the blanket in a transverse line on maximum 6 inch (15.2 cm) centers and a maximum 4 inches (10.2 cm) from the duct edges. Turn down or cut off pins that extend beyond blanket layer.
  - b. **Vertical Side of Duct:** Pins are required to be placed a maximum of 6 inches (15.2 cm) at the centerline of every longitudinal overlap. When required, adjust pin location to ensure that all overlaps are pinned and centered within the overlap, approximately 1 ½ inches (3.8 cm) from the end of the wrap.
  - c. **Transitions:** At changes in direction, such as going from horizontal to vertical duct runs, locate pins to facilitate the attachment of the blanket to the duct. Locate pins 1 ½ inches (3.8 cm) from duct edge and spaced in rows or spans a maximum 8 inches (20.3 cm) on center. Locate pins to attach blankets at overlaps. Secure blanket to pins with 2 ½ inch (6.4 cm) square galvanized

steel speed clips. Turn down or cut off pins that extend beyond the outer blanket wrap layer

- d. **Bands:** Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands 1 ½ inch (3.8 cm) from the edge of the collar on both sides of the underlying seam, around the circumference of the duct. Continue on with banding on the blanket on maximum 11 ¼ inches (28.6 cm) spacing on center.
6. For Duct Spans 24 inches (61 cm) or less wide. Pins are not required when this banding technique is used.
  - a. Place ½ inch (1.3 cm) wide, nominal 0.015 (3.2 mm) thick stainless steel bands 1 ½ inches (3.8 cm) from the edge of the collar on both sides of the underlying seam, around the circumference of the duct.
  - b. Place a minimum of 2 additional bands in the field area between the collars on a maximum 8 inch (20.3 cm) on centers.

### Optional Method

**Pins only:** 12 gauge, 5 inch long (12.7 cm) steel or stainless steel insulation pins shall be welded to meet the following requirements. Place pins on all sides of the duct in rows perpendicular to the length of the duct, spaced a maximum of 10 ½ inches (26.67 cm) on center. Pins in each row are spaced a maximum 5 inches (12.7 cm) from each edge and a maximum 8 inches (20.3 cm) on center. Locate the pins a maximum 4 inches (10.2 cm) from the ends of the duct. All overlaps are a minimum 3 inches (7.6 cm) for overlaps going around the duct and for overlaps following the length of the duct. Locate insulation overlaps so they are centered on the pins. Secure the blanket to pins with 2 ½ inch (6.4 cm) square galvanized steel speed clips. Turn down or cut off insulation pins that extend beyond the outer blanket wrap layer.

### Access Doors

For field fabricated doors weld four 6 inch (15.2 cm) x ¼ inch (6.4 mm) all thread rods to the duct, one at each corner of the door opening. Drill holes in the access cover door to match the four all thread rods. Weld four 5 inch (12.7 cm) long, 12 gage steel or stainless steel insulation pins to the access door cover for installation of the blanket. Apply 2 layers of FSB ULTRA™ blanket to the access door panel. Cut the first layer slightly larger than the access door opening to allow for a friction fit of the blanket material when it is fitted into the access hole. Cut the second layer of blanket to allow for a 1 inch (2.54 cm) overlap of the first layer of blanket. Place both layers of blanket over the insulation pins on the access door cover so that the larger blanket is stacked above the smaller blanket, being careful to maintain a 1 inch (2.54

cm) overlap. Secure the blanket to the access door cover with 2 ½ inch (6.4 cm) square galvanized steel speed clips. Turn down or cut off insulation pins that extend beyond the blanket layers. Secure the access door cover assembly by placing steel tubing over the all thread rods, locate the four holes in the access door assembly, then slide the assembly over the all thread rods. Apply washers and wing nuts over the threaded rods to complete the access door assembly.

### **Supports**

Center insulated duct on trapeze hangers so that a minimum 1 inch (2.5 cm) exists between insulated duct and rods. Support hangers systems are not required to be wrapped. Space horizontal supports a maximum 72 inches (183 cm) on center, starting at the center of the vertical rise portion. Use a minimum ½ inch (1.27 cm) all-thread rod bolted to a 2 inch (5 cm) x 2 inch x ¼ inch (6.4 mm) steel angle to assemble the trapeze supports. Center the all-thread rod through ½ inch (1.27 cm) clearance holes drilled 2 inches (5 cm) from each end of the angle iron. Extend trapeze support at least 2 inches (5 cm) on each side of insulated duct and all-thread rods.

### **Fire-rated Penetrations**

When the duct system penetrates a fire-rated wall, ceiling or floor, an approved Firestop system must be used.

### **Other Applications**

Refer to drawing section in this manual.

### **Maintenance**

No maintenance is required when installed in accordance to ETS Schaefer Corporation installation instructions. If after installation, any section of the grease duct protection system should become damaged the following procedures will apply:

- Remove the damaged section, being careful not to inflict further damage to adjacent areas.
- Measure and cut a new section from a roll of FSB ULTRA™ to replace the area that has been damaged.
- The new section should be installed being careful to maintain the same overlaps that previously existed.
- Replace steel banding and speed clips as needed.
- If the damage is to the foil facing and not the underlying blanket, seal the rips with aluminum foil tape.

### **Purchase Information**

ETS Schaefer Corporation Fire protection products are available through a nationwide network of distributors.

For additional information, technical support or customer service please call 800-863-5400 or visit [www.etsshaefer.com](http://www.etsshaefer.com)

### **Handling**

Consult Material Safety Data Sheet (MSDS) prior to handling and disposing of ETS Schaefer Corporation FSB ULTRA™.

### **Warranty and Limited Remedy**

This product will be free from defects in material and manufacture for a period of ninety (90) days from the date of purchase. ETS Schaefer Corporation makes no other warranties including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. User is responsible for determining whether the ETS Schaefer Corporation product is fit for a particular purpose and suitable for the user's application. If the ETS Schaefer Corporation product is proved to be defective within the warranty period stated above, your exclusive remedy and ETS Schaefer Corporation's obligation, at ETS Schaefer Corporation's option, to replace or repair the ETS Schaefer Corporation product or refund the purchase price of the ETS Schaefer Corporation product. **Limitation of Liability.** Except where prohibited by law, ETS Schaefer Corporation will not be liable for any loss or damage arising from an ETS Schaefer Corporation product, whether direct, indirect, incidental, or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.