

**Design Number TFI/BPF 180-05  
 PERIMETER FIRE BARRIERS**

Thermafiber, Inc.

**FireSpan® 90 and FireSpan® 40 and Safing™**

**ASTM E 2307**

T-Rating Refer to Compression Percentage

F-Rating 3 hr

**ASTM E 2307/ASTM E 1399 Cycling**

Class IV: 500 cycles @ 30 cpm

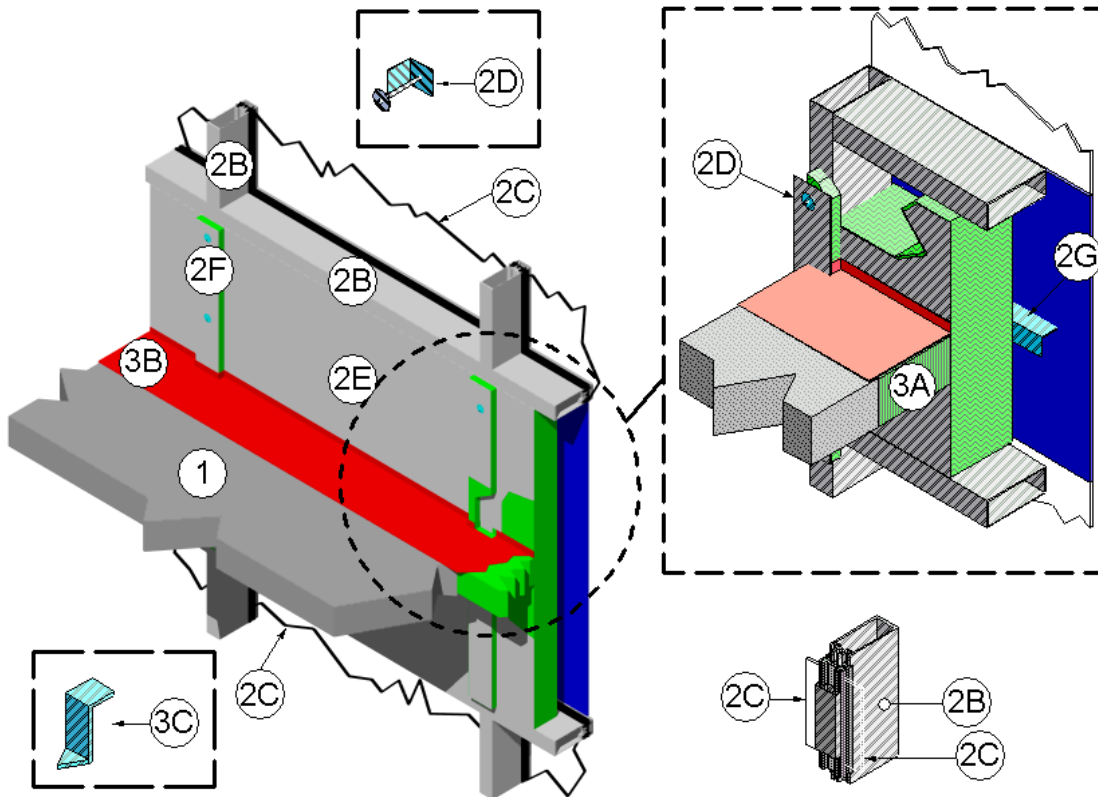
Rated for ± 16.7% horizontal movement @ 50% Compression (Reference Item 3A): T-Rating 2-1/2 hr

Rated for ± 11% horizontal movement @ 33% Compression (Reference Item 3A): T-Rating 1-1/2 hr

Rated for ± 6.25% vertical shear movement @ 50% Compression (Reference Item 3A): T-Rating 0 hr

**UL 2079**

L-Rating ambient and elevated (400F): <1.0 SCFM/LF



1. **CONCRETE FLOOR ASSEMBLY:**  
 Three hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100 to 150 pcf, having a minimum thickness of 4-1/2 in. at the joint face. When a longitudinal recess (blockout) is required to contain an architectural joint system, increase concrete floor assembly thickness to maintain a minimum thickness of 4-1/2 in. and

accommodate depth of blockout formed in the concrete: blockout width unrestricted.

2. **CURTAIN WALL ASSEMBLY:**  
 Incorporate the following construction features:
  - A. **Mounting Attachment:** (Not shown)  
 Attach aluminum framing (Item 2B) to the structural framing according to the curtain wall manufacturer's

instructions. When required, connect the mounting attachments to the joint face of the concrete floor assembly (Item 1) according to the curtain wall manufacturer's instructions. Limit distance between mounting attachments to maximum 120 in. on center (oc).

- B. Aluminum Framing: Use hollow rectangular aluminum extruded tubing with minimum overall dimensions of 0.100 in. thick, 5-1/2 in. high and 2-1/2 in. wide. Locate mullions (vertical aluminum framing) minimum 48 in. oc and locate transoms (horizontal aluminum framing) a minimum 48 in. oc. For the spandrel region, locate the upper transom a minimum 20 in. above the concrete floor assembly (Item 1) as measured from the top surface of the concrete floor assembly (Item 1) to the underside of the transom.
- C. Steel Panels: Install minimum 20 gauge (GA) steel panels with minimum dimensions of 48 in. by 60 in. to aluminum framing (Item 2B) according to the curtain wall system manufacturer's guidelines.
- D. Impaling Pins: (Optional) Install minimum 12 GA steel pins sized to extend minimum 1/2 in. through the framing covers (Item 2F). Attach pins using a 2 in. x 2 in. steel plate, 2 in. x 2 in. steel angle or directly attached to the aluminum framing (Item 2B) using a stud gun. Space pins maximum 12 in. oc.
- E. CERTIFIED COMPANY:  
Thermafiber, Inc.

CERTIFIED PRODUCT: Insulation  
Mineral Wool

MODEL: Thermafiber, Inc.  
FireSpan® 90 and FireSpan® 40

Curtain Wall Insulation: Use nominal  
24 in. wide, 4 in. thick, 4 pcf density

or 2 in. thick, 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior and installed in the stud cavity. Install curtain wall insulation between aluminum framing (Item 2B). Secure curtain wall insulation with clips or impaling pins. Seal all meeting edges of curtain wall insulation with nominal 4 in. wide pressure sensitive aluminum foil faced tape (not shown) centered over the junction so that approximately 2 in. of tape covers each edge of the adjacent curtain wall insulation. Apply pressure sensitive aluminum foil faced tape over all meeting edges of curtain wall insulation and framing covers (Item 2F) so that approximately 2 in. covers each edge of the adjacent material. Install curtain wall insulation flush with the interior face of the aluminum framing (Item 2B). Install 24 in. wide curtain wall insulation without vertical seams, spanning the full length between aluminum framing (Item 2B). Locate horizontal seams in the curtain wall insulation at least 6 in. from the top surface of the perimeter joint protection (Item 3). Maintain 1-1/4 in. air cavity between curtain wall insulation and steel panels (Item 2C). Option – in lieu of filling the full depth of the stud cavity with 4 in. thick, 4 pcf density curtain wall insulation, use minimum 2 in. thick, 8 pcf density curtain wall insulation mechanically secured (do not secure by friction fit) and use additional horizontal support angle (not shown).

- F. CERTIFIED COMPANY:  
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CERTIFIED PRODUCT: Insulation  
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MODEL: Thermafiber, Inc.  
FireSpan® 90

- Framing Covers: Make from strips of minimum 1 in. thick by minimum 4 in. wide, 8 pcf density, mineral wool batt insulation faced on one side with aluminum foil scrim (vapor retarder), which is exposed to the room interior. Center framing covers over all aluminum framing (Item 2B) and secure using impaling pins (Item 2D). Do not pass framing covers through the perimeter joint protection (Item 3). Allow framing covers to abut top and bottom surfaces of the perimeter joint protection (Item 3) provided that no deformation occurs.
- G. Reinforcing Angle: Mount a minimum 1-1/2 in. x 1-1/2 in., 20 GA galvanized-steel angle to the aluminum mullions (Item 2B) so that the vertical leg serves as a backer to the exterior face of the curtain wall insulation (Item 2E) and the horizontal leg extends away from the curtain wall insulation and is located at the centerline of the packing material (Item 3A). Size the angle 12 in. longer than the span between the interior edges of the aluminum mullions (Item 2B) and form the angle so that it has a 6 in. vertical leg on each end. Secure the 6 in. vertical leg on each end to the steel stud framing (Item 2B) on each side with three #10 steel self-tapping sheet metal screws placed in a triangular fashion with a maximum spacing of 2 in. oc.
- H. Glass Vision Panels: When required, use optional glass vision panels a minimum 20 in. above the top surface of the floor assembly (Item 1). Install glass vision panels to curtain wall framing according to the curtain wall system manufacturer's guidelines. Use a minimum 1/4 in. thick, clear tempered glass with a nominal width and height as determined by the framing.
- I. Window Gaskets: When optional glass vision panels used, secure glass vision panels with a thermal break (thermo-set rubber extrusion).
- J. Window Framing: Use tubing mullions and transoms, sized according to the curtain wall system manufacturer's guidelines. Minimum required framing dimensions, use 0.100 in. thick walls with minimum 5-1/2 in. depth and minimum 2-1/2 in. width and window framing must be compatible with steel framing (Item 2B). Locate window framing at least 20 in. above the top surface of the floor assembly.
3. PERIMETER JOINT PROTECTION: Do not exceed an 8 in. nominal joint width (joint width at installation). Incorporate the following construction features for the perimeter joint protection (also known as perimeter fire barrier system):
- A. CERTIFIED COMPANY:  
Thermafiber, Inc.
- CERTIFIED PRODUCT: Insulation Mineral Wool
- MODEL: Thermafiber, Inc. Safing™
- Packing Material: Use a minimum 4 in. thick, 4 pcf density, mineral wool batt insulation installed with the fibers running parallel to the edge of concrete floor assembly (Item 1) and curtain wall assembly (Item 2). Cut packing material width to achieve required compression, refer below, when installed in the nominal joint width. Compress the packing material into the perimeter joint. Tightly compress together splices (butt joints) in the lengths of packing material by using minimum 1/4 in. compression per piece of packing material. When a spray coating is used, locate the top surface of the packing material flush with the top surface of the concrete floor assembly (Item 1). When the non-sag or self leveling silicone sealant is used, recess the top surface of the packing material 1/4 in. from the top

surface of the concrete floor assembly (Item 1).

- i. When 50% compression is required cut the width of the packing material 2 times wider than the nominal joint width.
- ii. When 33% compression is required cut the width of the packing material 1.5 times wider than the nominal joint width.

- B. Fill, Void or Cavity Material: Apply 3M FireDam™ Spray 200 (Elastomeric, Sprayable) or Fire Barrier™ 1000 N/S Silicone Sealant (Non-sag) or FB 1003 S/L (Self Leveling) Sealant (bearing the Intertek Certification Mark) over the packing material (Item 3A) as follows:

Spray Coating – Spray apply the liquid to cover the exposed top surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply a minimum wet film thickness of 1/8 in. and overlap the spray coating a minimum 1/2 in. onto the adjacent curtain wall assembly (Item 2) and concrete floor assembly (Item 1). When the spraying process is stopped and the applied spray coating cures to an elastomeric film before installation process is restarted, then overlap the edge of the cured spray coating at least 1/8 in. with the liquid spray coating.

Sealant – Apply non-sag or self leveling sealant to cover the exposed surface of the packing material (Item 3A) compressed and installed in the perimeter joint. Apply minimum 1/4 in. thickness non-sag or self leveling sealant over the packing material (Item 3A) and finish flush with the top surface of the concrete floor assembly (Item 1).

- C. Support Clips: (Optional)  
Recommended for installations subject to vertical shear movement.

Use standard 20 GA galvanized steel Z-shaped clips having the following nominal dimensions: 1 in. wide by 3 in. high with a 2 in. upper leg and a 3 in. lower leg. Install 3 in. horizontal leg impaled into packing material (Item 3A) mid-depth and the 2 in. horizontal leg on top of the concrete floor assembly (Item 1). Install clips adjacent to mounting bracket (Item 2A) and spaced maximum 12 in. oc..