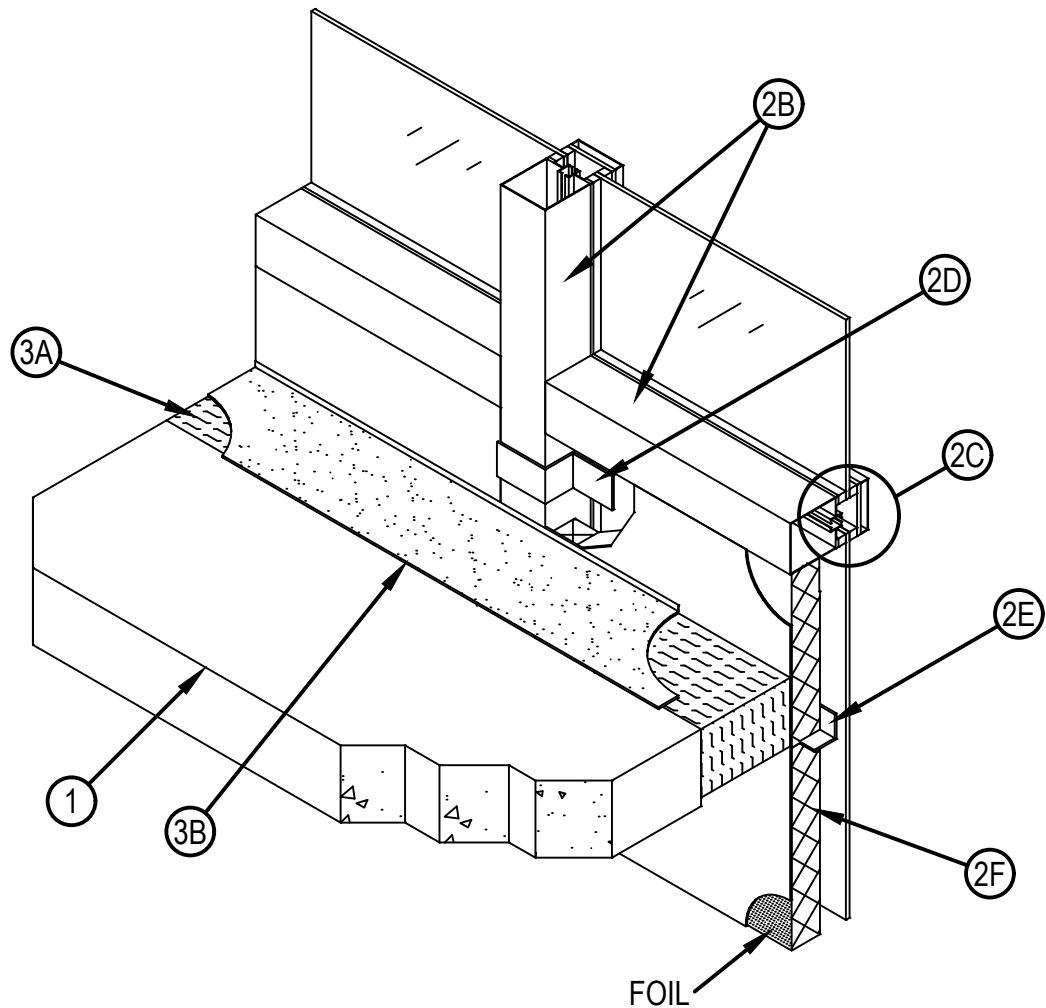
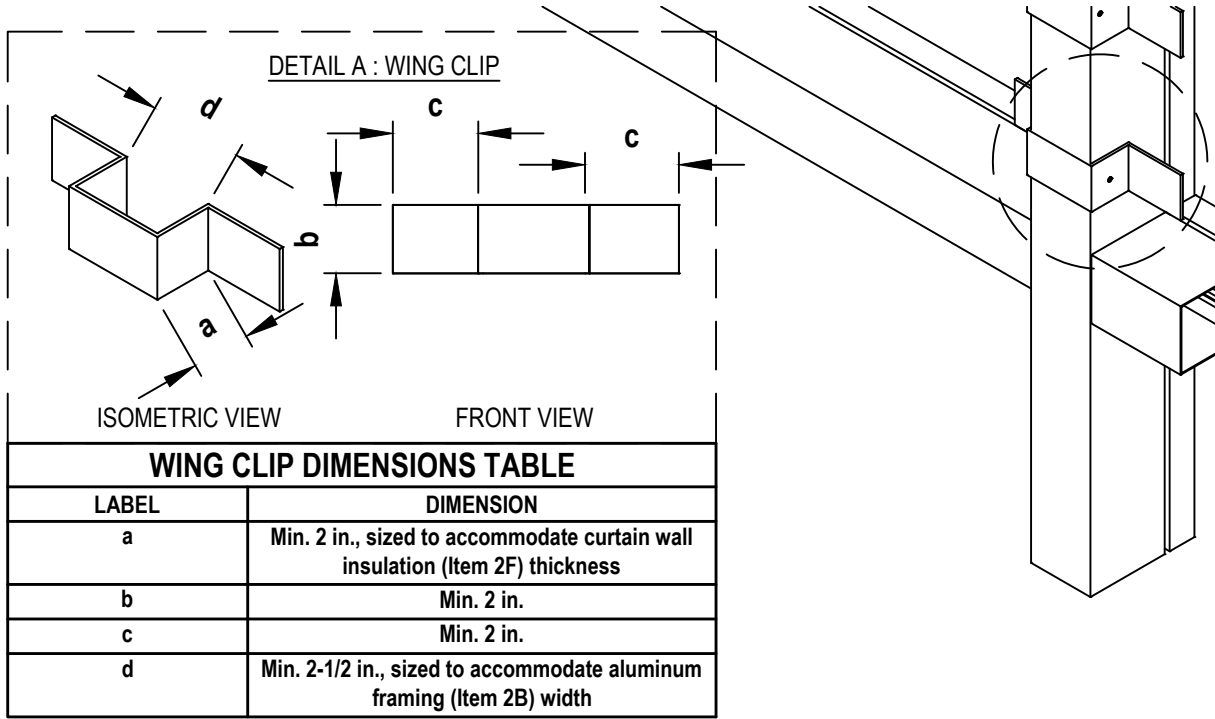


Hilti Corporation
Design No. HI/BPF 120-37
Perimeter Fire Barrier System
ASTM E 2307, UL 2079 (Air Leakage Only)
Rating: See Table 1
Table 1. Ratings

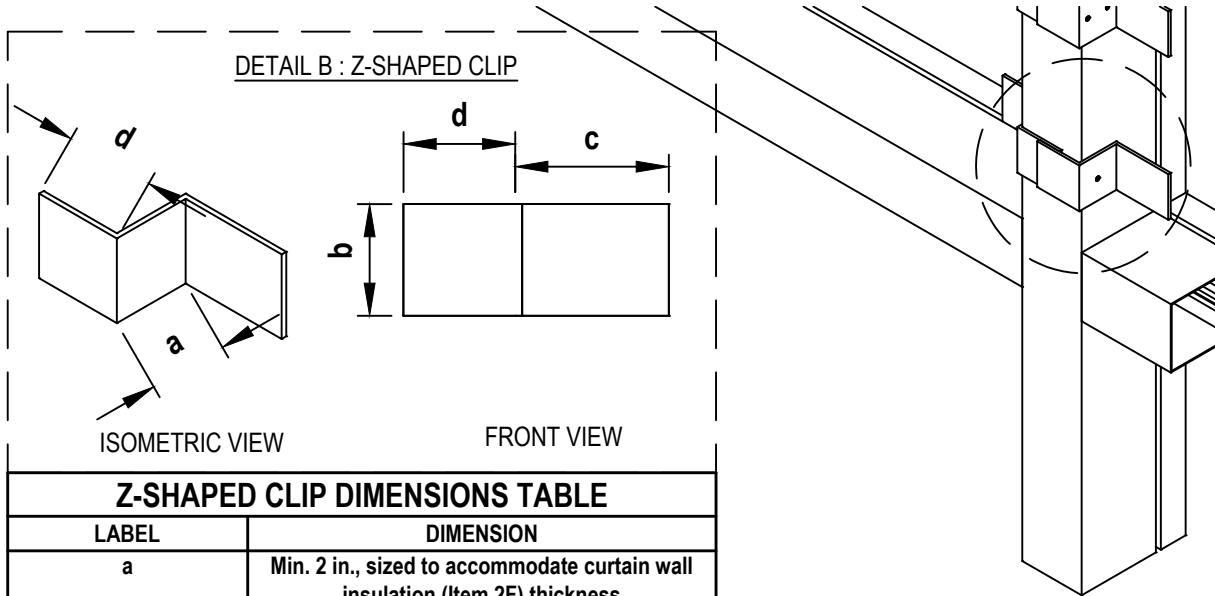
	Firestop Joint Spray CFS-SP WB	Silicone Joint Spray CFS-SP SIL
F-Rating	2 Hr.	2 Hr.
T-Rating	1 Hr. or N/A (See Item 1)	1 Hr. or N/A (See Item 1)
Application Thickness	1/8 in. wet film (1/16 in. dry)	2mm (0.08 in.) wet film
Cycling (%): Class IV Vertical	± 5	± 5
L-Rating	<1.0 SCFM/LF	



1. CONCRETE FLOOR ASSEMBLY: Min. two-hour rated concrete floor assembly made from either lightweight or normal weight concrete with a density of 100-150 pcf, having a min. thickness of 4-1/2 in. at the joint face. Alternatively, a min. 2-hr rated floor assembly consisting of a steel form unit and min. 4-1/2-in. thick lightweight or normal weight concrete with a density of 100 to 150 pcf above the top of the steel form unit and at the joint face. A max. 1/2-in. thick steel pour angle may be used extending from the top of the joint face to the steel form unit. When steel pour angle is used, a T-rating is not assigned to the assembly. When a longitudinal recess (blockout) is required to contain an architectural joint system, increase concrete floor assembly thickness to maintain a min. thickness of 4-1/2 in. and accommodate the depth of blockout formed in the concrete: blockout width unrestricted.
2. CURTAIN WALL ASSEMBLY: The curtain wall assembly shall incorporate the following construction features:
 - A. MOUNTING ATTACHMENT: (Not shown) Curtain wall anchors consist of aluminum angle. Aluminum angle secured to interior mullion face and top of concrete slab per manufacturer's instructions. Max. distance between mounting attachments shall be 10 ft.
 - B. FRAMING: Framing to consist of 0.10 in. thick rectangular aluminum tubing. Horizontal aluminum framing (transoms) and vertical aluminum framing (mullions) to be nominal 2.5 in. wide. Mullion and transom covers are added to the external side of the framing, giving the framing system a total depth of nom. 5 in. Vertical framing shall have a max. spacing of 60 in. oc. Horizontal framing shall be located a min. of 6 in. above the top concrete floor assembly and a min. of 19-1/2 in. below the bottom of the concrete floor assembly.
 - C. GLASS PANELS: Size and install aluminum framing (Item 2B) in accordance with the curtain wall manufacturer's instructions. Use min. 1/4 in. thick, clear, heat strengthened (HS) or tempered glass with a max. width and height less than the aluminum framing (Item 2B) oc spacing. Oc spacing shall allow glass to be secured to the aluminum framing (Item 2B) between the notched shoulders. Secure glass panels with a thermal break (rubber extrusion), pressure bar (aluminum extrusion), min. 1/4-20 × 5/8 in. long screws, and a snap face (aluminum extrusion). As an alternate method, the glass panels may be secured with a thermal break (rubber extrusion) and structural sealant.
 - D. CURTAIN WALL HILTI INSULATION CLIPS: Use 20 GA steel clips, designed by Hilti Inc. Secure clips to mullions using at least one min. No. 10 × 3/4 in. sheet metal screw on either side of mullion. Exception: Where clips are supporting reinforcing angle (Item 2E), use two screws, one on each side of mullion. Insulation clips to be located at the following locations at minimum:
 - I. 2 in. below underside of upper transom (horizontal mullion directly above the floor assembly);
 - II. At the location described in Item 2E to ensure the horizontal leg of the reinforcing angle is located flush with bottom of the floor assembly;
 - III. 2 in. above the top of the lower transom (horizontal mullion directly below the floor assembly).A total of three clip variations detailed below can be used interchangeably at the mullion locations, with the exception that where wing clips are used there are no z-shaped clips or angle-clips used at that same elevation on the same mullion.

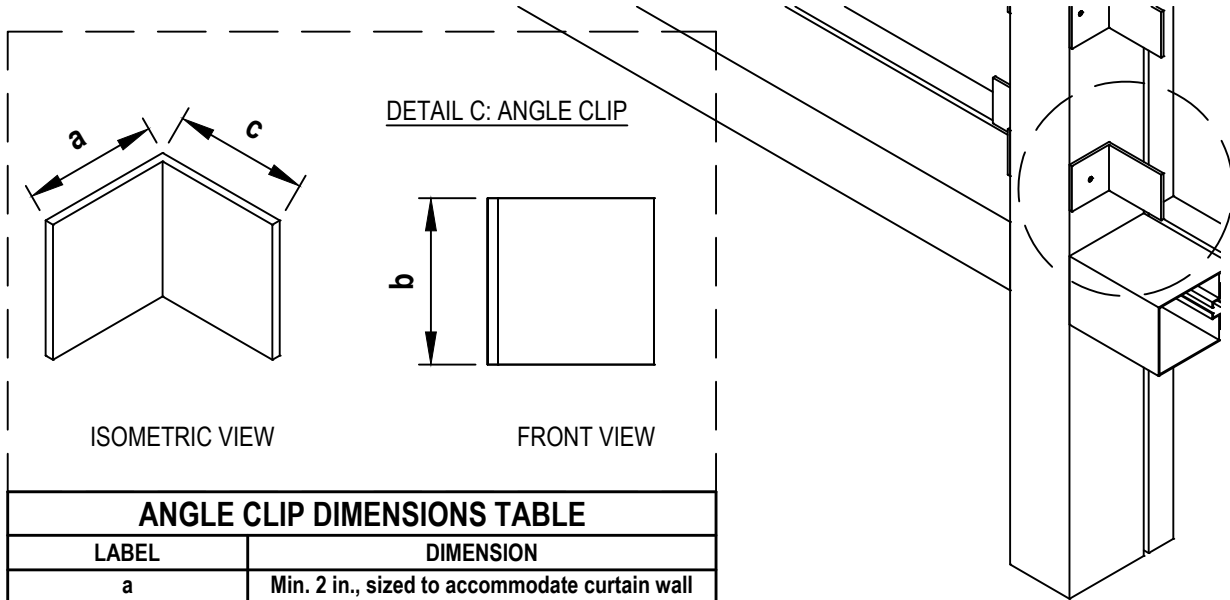


IV. WING CLIPS: Consists of a single piece 20 GA steel clip as shown in Detail A above. Each face of the wing clip to be nominal 2 in. high. Wing clips to have a front face sized to accommodate the width of the curtain wall framing members (mullions) (Item 2B) so that the sides of the clips are flush with the sides of the mullion. The sides of the wing clips are to be min. 2 in. deep to accommodate the thickness of curtain wall insulation (Item 2F). The wing extensions of the wing clip are to be minimum 2 in. wide to act as a backing for curtain wall insulation and mounting point for the reinforcing angle, where required.



Z-SHAPED CLIP DIMENSIONS TABLE	
LABEL	DIMENSION
a	Min. 2 in., sized to accommodate curtain wall insulation (Item 2F) thickness
b	Min. 2 in.
c	Min. 2 in.
d	Nominal 1-1/2 in.

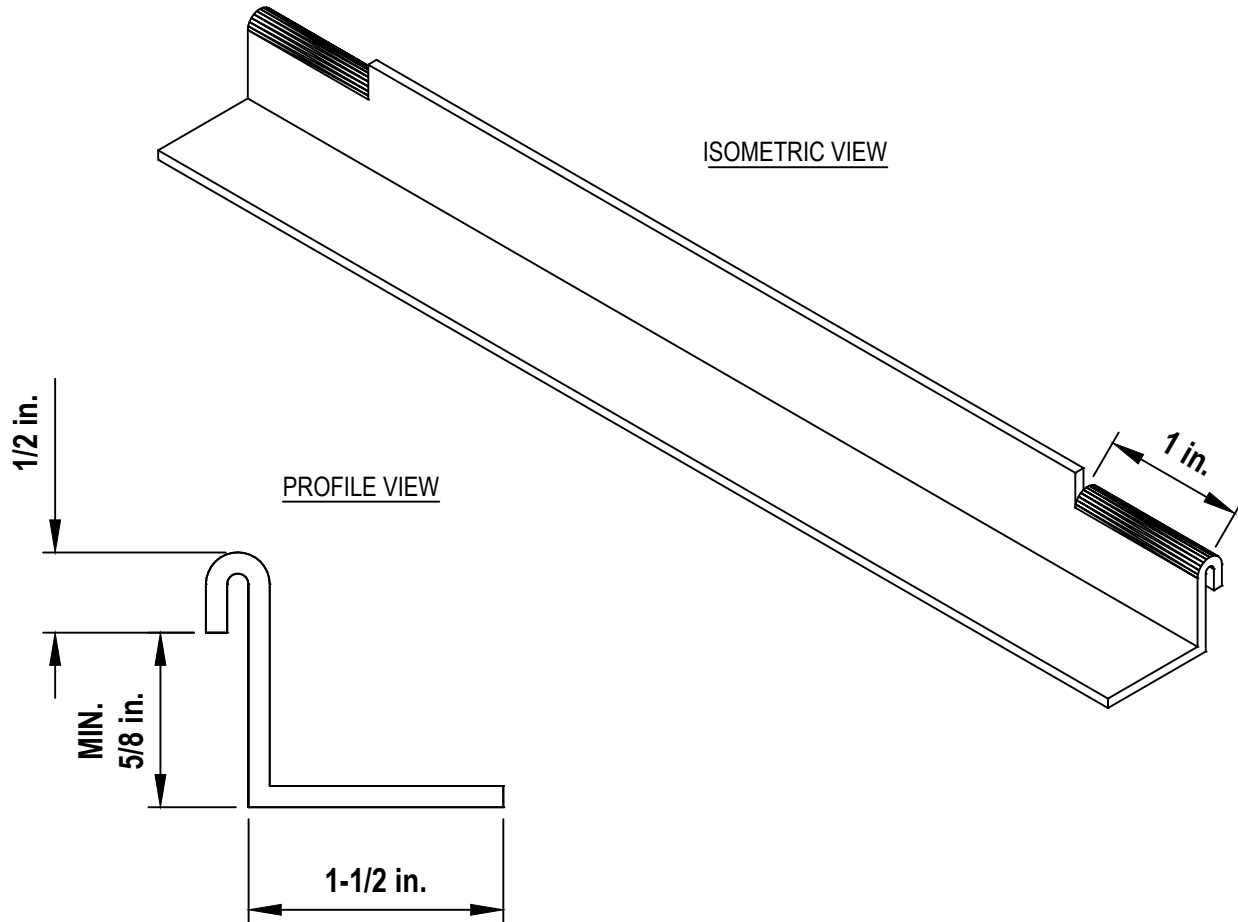
V. Z-SHAPED CLIP: Consists of a single piece 20 GA steel clip, as shown in Detail B above. Each face of the z-shaped clip to be nominal 2 in. high. The face of the z-shaped clip that overlaps onto the front of the mullion is to be minimum 1-1/2 in. long. The sides of the z-shaped clips are to be min. 2 in. deep to accommodate the thickness of curtain wall insulation (Item 2F). The leg of the z-shaped clip that extends into the spandrel shall be minimum 2 in. wide to act as a backing for curtain wall insulation and mounting point for the reinforcing angle, where required.



ANGLE CLIP DIMENSIONS TABLE	
LABEL	DIMENSION
a	Min. 2 in., sized to accommodate curtain wall insulation (Item 2F) thickness
b	Min. 2 in.
c	Min. 2 in.

VI. ANGLE-CLIP: Consists of a single piece 20 GA steel clip as shown in Detail C above. Each face of the angle clip to be nominal 2 in. high. The sides of the angle-clips are to be min. 2 in. deep to accommodate the thickness of curtain wall insulation (Item 2F) and shall be positioned so the front end of the angle-clip is flush with the front of the aluminum framing member. The leg of the angle-clip that extends into the spandrel shall be minimum 2 in. wide to act as a backing for curtain wall insulation and mounting point for the reinforcing angle, where required.

DETAIL D : REINFORCING ANGLE WITH FOLD OVER TAB



E. REINFORCING ANGLES (See Detail D Above): Install a reinforcing angle system to consist of one 18 GA steel angle with 1-1/2 in. x 1-1/2 in. legs. Angles shall be 1/8 in. to 1/2 in. shorter than the respective spandrel width placed in. On the back and at each end of the angle, there will be approximately 3/4 in. deep, 1 in. wide fold over tabs. Attach angles to the steel curtain wall insulation clips (Item 2D) by sliding over described tabs onto the wings of the clips so that the horizontal leg falls flush with the underside of the floor assembly. As an alternative to creating a fold over tab on the steel angle, the steel angle can be attached to the Hilti Insulation Clip (Item 2D) by overlapping the angle a min. 1- 1/2 in. onto the front of the Hilti Insulation Clip and securing the angle to the clip using two min. No. 10. X 3/4 in. long sheet metal screws on each end. The horizontal leg of reinforcing angles shall face towards the perimeter fire barrier system (i.e., shall point towards the concrete slab). Reinforcing angle to be located so that the horizontal leg of the stiffener falls flush with the underside of the floor assembly. Note: for floors thicker than 4-1/2 in. the reinforcing angle shall be located so that the horizontal leg of the stiffener falls flush with the bottom of packing material (Item 3A).

- F. **CERTIFIED MANUFACTURER:** Only Intertek Certified mineral wool manufacturer's product meeting the below min. requirements.
CURTAIN WALL INSULATION: Use nominal 2-in. thick, 8 pcf mineral wool batt insulation with foil facing. Cut dimensions of batts to have a 1/8 in. compression fit between spandrel framing (Item 2B). Seal all meeting edges of insulation with nominal 4-in. wide aluminum tape, centered over the junction. Interior face of batt insulation is to be flush with interior face of the curtain wall framing, using insulation clips (Item 2D) as a back stop guide.
- G. **IMPALING CLIPS FOR FRAMING COVERS (Not Shown):** Steel, 20 GA, 6-5/8 in. wide clips. L- profile with vertical leg 1-3/8 in. and horizontal leg 3/8 in. Each clip has two 19 GA pins, measuring 3.5 in. long with a 2 in. square perforated base, spaced 4-3/4 in. oc. A 3/4 in. wide section of pin base is folded over the long side of the clip, with pins pointing in the same direction of the shorter leg (facing towards perimeter joint). Fasten clips to mullions using at least one min. No. 10 × 3/4 in. sheet metal screw through center of clip to mullion, placed 4 in. above lower transom, and 2 in. below bottom of floor assembly. After impaling framing cover (Item 2H), pins are capped with circular, 1.5 in. diameter, steel washers.
- H. **CERTIFIED MANUFACTURER:** Only Intertek Certified Mineral Wool Manufacturer's product meeting the below min. requirements.
FRAMING COVERS (Not Shown): Use nominal 2-in. thick, 12-in. wide, 8 pcf mineral wool batt insulation with foil facing. Framing covers to be flush with the underside of the perimeter joint system (Item 3), flush with bottom of lower transom, and centered over each mullion (Item 2B). Framing covers to be secured over impaling pins (Item 2G) and secured with circular steel washers.
3. **PERIMETER JOINT PROTECTION:** The perimeter joint (linear opening) shall not exceed 4 in. width (joint width at installation). Incorporate the following construction features:
- A. **CERTIFIED MANUFACTURER:** Only Intertek Certified Mineral Wool Manufacturer's product meeting the below min. requirements.
PACKING MATERIAL - Use min. 4 in. tall, nominal 4 pcf density, mineral wool batt insulation. Cut batt sections to achieve a min. 20% compression when installed in the nominal joint width, using no more than two adjacent strips. Install with the fibers running parallel to the concrete floor assembly edge (Item 1) and curtain wall (Item 2B). Tightly compress together splices (butt joints) in the lengths of packing material by using 1/4 in. compression. Top surface of the packing material shall be flush with the top surface of the concrete floor assembly (Item 1).
- B. **CERTIFIED MANUFACTURER:** Hilti Corporation
CERTIFIED PRODUCT: Firestop Joint Spray CFS-SP WB or Silicone Joint Spray CFS-SP SIL.
FILL, VOID, OR CAVITY MATERIAL - Apply over the packing material (Item 3A) as follows:
Apply at the thickness specified in Table 1 and overlap the material 1/2 in. onto the adjacent curtain wall assembly (Item 2) and concrete floor slab assembly (Item 1). When the spraying process is stopped and the applied liquid cures to an elastomeric film before application is restarted, overlap the edge of the cured material at least 1/8 in. with the spray. Reference Product Section of the Intertek Directory for more details on the Certified product.