

**Hilti Corporation**  
**Design Number HI/PF 120-10**  
**Through Penetration**  
**FS-ONE MAX Intumescent Firestop Sealant**  
**ASTM E814, UL 1479, CAN/ULC-S115**  
**Rating: See Table 1**

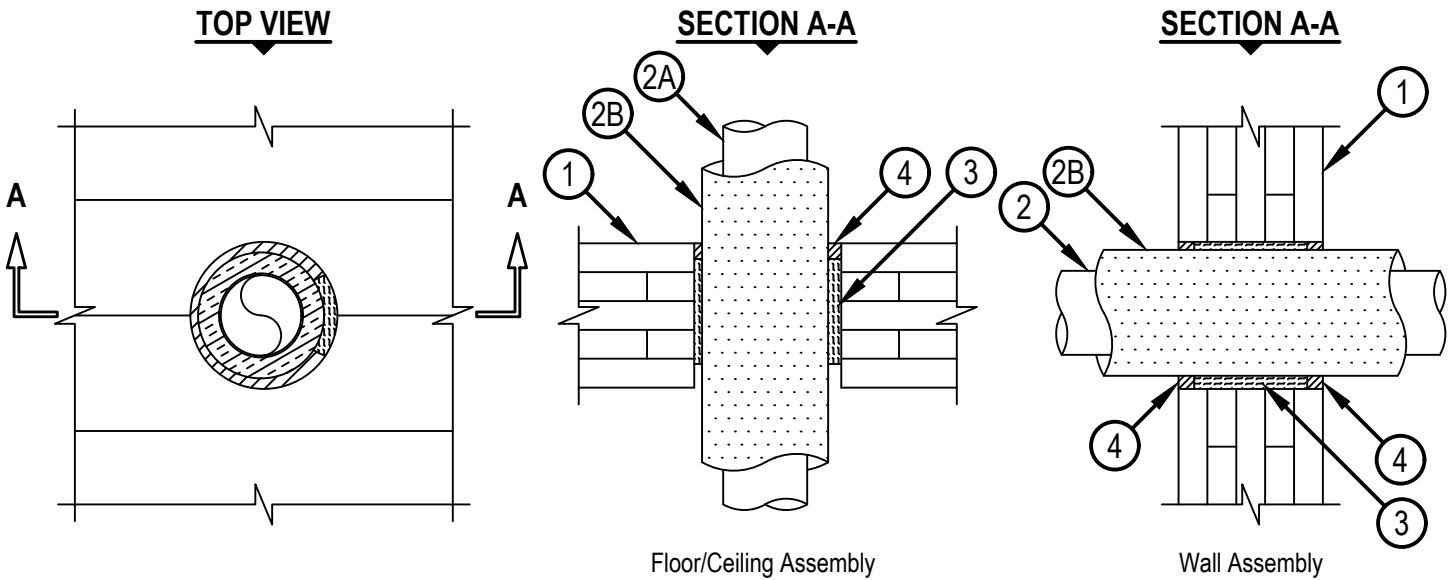
HI/PF 120-10

**Pressure Differential: Positive, 0.01 in. w.g. (2.5 Pa)**

**TABLE 1. RATINGS**

	ASTM E814, UL 1479	CAN/ULC-S115
F-Rating	2 Hr	2 Hr
T-Rating	2 Hr	NA
FT-Rating	NA	2 Hr*
FH-Rating	NA	2 Hr
FTH-Rating	NA	2 Hr*

*\*The 2 hr T, FT, and FTH-Ratings require the use of 2 in. (50 mm) thick pipe insulation as specified in Item 2B. Pipe insulation of less than 2 in. (50 mm) thick is allowed, however, the design will no longer be rated for a T, FT, or FTH-rating.*



**FIGURE 1. THROUGH PENETRATION FIRESTOP SYSTEM**

**1. FLOOR/CEILING OR WALL ASSEMBLY :** Use a 2 hour fire-rated floor/ceiling assembly or wall assembly consisting of min. 6-7/8 in. (175 mm) cross-laminated timber (CLT) with a min. 5 plys. Cross-laminated timber (CLT) assembly to be certified in accordance with ANSI/APA PRG 320 (2018 or later). Size of opening through assembly to be a max. 12 in. (305 mm) diameter.

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A. (Optional, Not Shown) GYPSUM BOARD : For floor/ceiling assemblies or for wall assemblies (Item 1), directly applied gypsum board protection may be included with the following requirements:

- One or more layers of min. 1/2 in. (13 mm) thick Type X gypsum board may be directly applied to the bottom of the CLT floor ceiling assembly, or to one or both sides of the CLT wall assembly (Item 1). Each layer of gypsum board is to be attached to the CLT assembly in accordance with local code requirements.

**2. PENETRATING ITEM :** Install one of the following penetrating items:

A. METALLIC PIPE :

- Maximum 6 in. (152 mm) diameter Schedule 10 (or thicker) steel pipe.
- Maximum 6 in. (152 mm) diameter cast or ductile iron pipe.

B. PIPE INSULATION : Penetrating item (Item 2A) shall be insulated with max. 2 in. (50 mm) thick cylindrical heavy density (min. 3.5 pcf) glass fiber unit jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. Annular space between pipe insulation and periphery of opening to be min. 1/4 in. (6 mm) to max. 1-1/16 in. (27 mm).

\*Pipe insulation of less than 2 in. (50 mm) is allowed; however, the design will no longer be rated for a T, FT, or FTH-rating.

**3. PACKING MATERIAL :** Use only packing material bearing an Intertek Certified Label and meeting the following minimum requirements. Install min. 4 pcf (64 kg/m<sup>3</sup>) density mineral wool batt insulation in the annular space of the opening in the floor/ceiling or wall assembly (Item 1), tightly packed (compressed min. 33%) around the penetrating item (Item 2) as follows:

- Floor/Ceiling Assembly - Install min. 5 in. (127 mm) thick layer recessed min. 3/4 in. (19 mm) from the top of the CLT floor/ceiling assembly (Item 1). Mineral wool may be recessed a max. 1 in. (25 mm) from bottom of floor/ceiling assembly.
- Wall Assembly - Install min 5 in. (127 mm) thick layer recessed min. 3/4 in. (19 mm) from both surfaces of the CLT wall assembly (Item 1).

**4. FILL, VOID, OR CAVITY MATERIAL :** Intumescent Firestop Sealant

**CERTIFIED PRODUCT :** Hilti Corporation, Penetration Firestopping; FS-ONE MAX Intumescent Firestop Sealant.

- Floor/Ceiling Assembly - Apply min. 3/4 in. (19 mm) thick layer of Hilti FS-ONE MAX Intumescent Firestop Sealant to fill the void left after installing the packing material (Item 3) on the top of the floor/ceiling assembly (Item 1).
- Wall Assembly - Apply min. 3/4 in. (19 mm) thick layer of Hilti FS-ONE MAX Intumescent Firestop Sealant to fill the void left on both sides of the wall assembly (Item 1) after installing the packing material (Item 3).



**Hilti Firestop Systems**

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