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to UL 1479

System No. C-AJ-2831

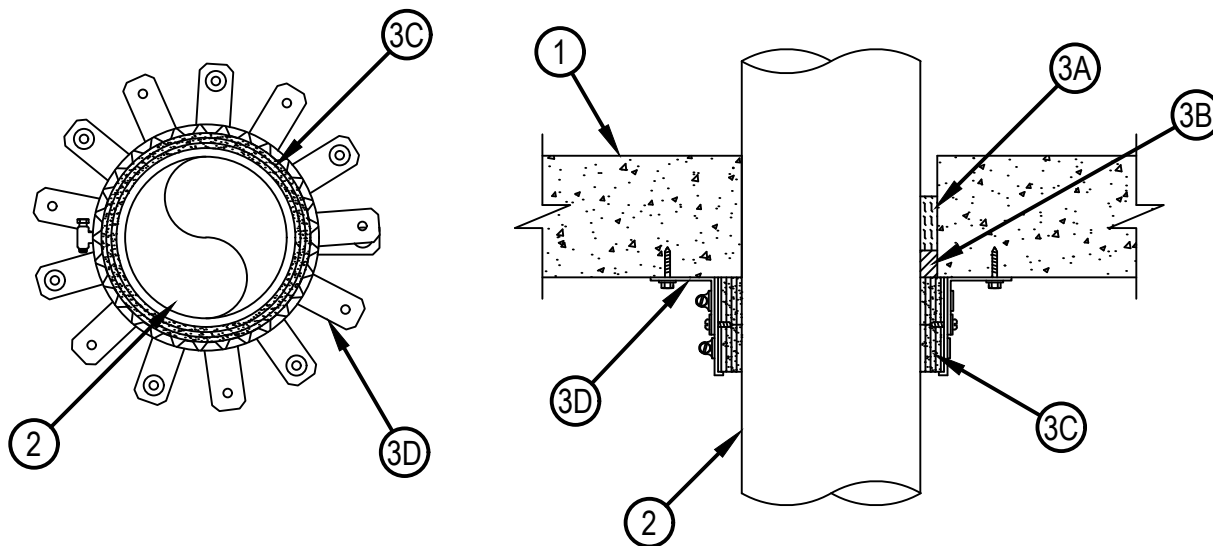
CAJ 2831

F Rating — 3 Hr

T Ratings — 0, 2-1/2 and 3 Hr (See Items 1A and 2)

L Rating at Ambient — Less Than 1 CFM/ft²

L Rating at 400 F — Less Than 1 CFM/ ft²



1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf) (1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diameter of opening is 7 in. (178 mm).

See Concrete Blocks (CAZT) in the Fire Resistance Directory for names of manufacturers.

1A. Steel Sleeve — (Optional. Not Shown) - Nom 7 in. (178 mm) diam (or smaller) Schedule 40 (or thinner) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. The use of the steel sleeve is dependent upon the type of through penetrant (Item 2) used. The T Rating is 0 hr when the steel sleeve is used.

2. Through Penetrants — One nonmetallic pipe to be installed concentrically or eccentrically within the firestop system. Annular space between pipe and periphery of opening to be min 0 in. (point contact) to max 3/4 in. (19 mm). The max annular space is dependent upon the type of penetrant as shown in the table below. For L Rating, a minimum annular space of 1/4 in. (6 mm) is required. The following types and sizes of nonmetallic pipes may be used:

- A. Polypropylene Random (PP-R) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) SDR 7.4 or 11 Aquatherm Greenpipe for use in closed (process or supply) or vented (drain, waste and vent) piping systems.
- B. Polypropylene (PP-R) Pipe — Nom 6 in. (160 mm OD) diam (or smaller) SDR 9 or 11 Aquatherm BluePipe for use in closed (process or supply) or vented (drain, waste and vent) piping systems.
- C. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) (or smaller) Nupi Americas Niron pipe SDR 7.3, 9 or 11 for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- D. Polypropylene (PP-RCT) Pipe — Nom 6 in. (160 mm OD) (or smaller) Aquatechnik NA Fusion-Tech pipe SDR 7.4 or 11 for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- E. Polypropylene (PP) Pipe — Nom 6 in. (160 mm OD) (or smaller) Uponor pipe SDR 9 or 11 for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
- F. HR Polyvinyl Chloride (PVC-HR) Pipe — Nom 6 in. (152 mm) diam (or smaller) NAPSYS-HR PVC Sch 40 pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.



Hilti Firestop Systems

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G. Polyvinyl Chloride (PVC) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

H. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 6 in. (152 mm) diam (or smaller) Schedule 40 CPVC pipe for use in closed (process or supply) piping systems.

2A. Pipe Coupling - (Not Shown) - For Items 2G and 2H, a nominal 6 in. diameter pipe coupling shall be butted against the bottom surface of the floor or both surfaces of the wall.

Penetrant Type	T Rating, Hr	Max Annular Space in. (mm)	Steel Sleeve	Use of Coupling
2A, 2B, 2C, 2D, 2E	2-1/2	3/4 (19)	Optional	Not permitted
2F	3	1/2 (13)	Optional	Not permitted
2G, 2H	2-1/2	3/8 (9.5)	Not permitted	Required

3. Firestop System — The firestop system shall consist of the following:

A. Packing or Forming Materials — Min 2 in. (51 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation tightly packed into the opening as a permanent form. Packing material to be recessed from the bottom surface of floor or both surfaces of wall to accommodate the required thickness of sealant (Item 3B).

B. Fill, Void or Cavity Material* — Min 1 in. (25 mm) thickness of sealant applied within the annulus, flush with bottom surface of floor or with both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

C. Fill, Void or Cavity Material* — Wrap Strip - Two stacks of four layers of intumescent wrap strip are continuously wrapped around the pipe with ends held in place with masking or aluminum tape. When multiple wrap strips are used to achieve the required total length, the ends are butted end to end and held in place with tape. Butted layers in successive layers shall be offset. Wrap strip butted tightly against bottom surface of floor or both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W45/1-3/4" Firestop Wrap Strip

D. Steel Collars — Steel collar fabricated from coils of precut min 0.016 in. (1.6 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be nom 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (52 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to the underside of floor or both surfaces of wall. The opposite side incorporates retainer tabs, 1/2 in. (13 mm) wide by 3/16 in. (4.8 mm) long, prebent toward the pipe surface. Collar shall be tightly wrapped over the wrap strip, overlapping min. 2 in (51 mm) at seam. Collar secured with two sheet metal screws though the overlapping portion of the collar. The length of the sheet metal screws shall not exceed the thickness of the wrap strip. A second collar to be wrapped around the second stack of wrap strip with a min 2 in. (51 mm) overlap at the seam. Anchor tabs of second collar left unbent and secured to the first retaining collar with one no. 8 sheet metal screw per tab. Every other anchor tab of first collar secured to bottom surface of floor or both surfaces of wall with 1/4 in. (6 mm) diam by 1-1/4 in. (32 mm) long steel expansion bolts in conjunction with steel nuts and 1/4 in. (6 mm) by 1-1/4 in. (32 mm) diam washers at every other anchor tab. Collars to be used at the bottom surface of floor or both surfaces of wall.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.