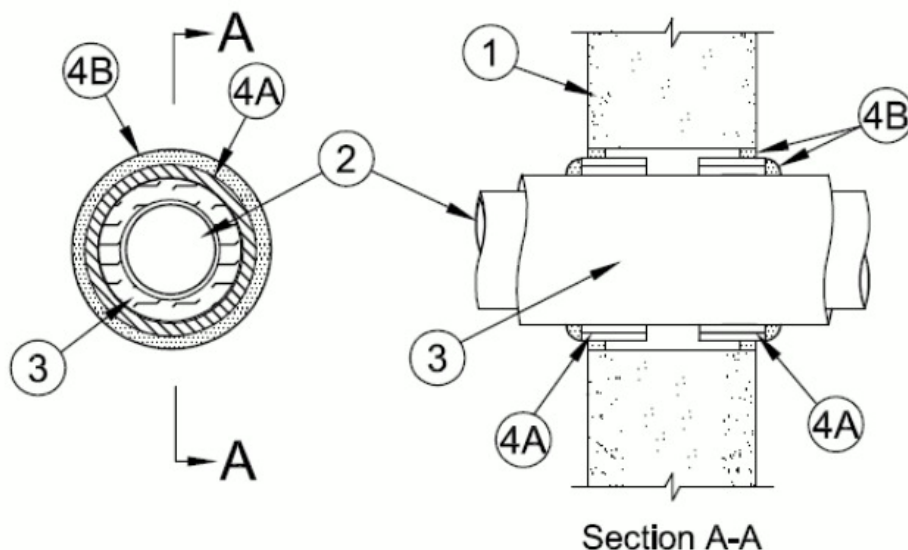


F Rating — 2 Hr
T Ratings — 0 and 2 Hr (See Item 3)
L Rating At Ambient — Less Than 1 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



1. **Wall Assembly** — Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening is 8 in. (203 mm) when Item 3A is used and max 7 in. (178 mm) when Item 3B is used.

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

2. **Through Penetrant** — One nonmetallic tube to be installed within the firestop system. Tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic tubes may be used:

A. **Crosslinked polyethylene (PEX) Tubing** — Nom 3 in. (76 mm) diam (or smaller) UPONOR - AquaPex SDR 9 tube for use in closed (process or supply) piping systems.

3. **Pipe Covering*** — One of the following types of pipe covering shall be used:

A. **Pipe and Equipment Covering Materials*** — Max 1-1/2 in. (38 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units 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 butt tape supplied with the product. The annular space between the insulated through penetrant and the periphery of the opening shall be min 3/4 in. (19 mm) to max 1 in. (25 mm). **When thickness of insulation is less than 1-1/2 in. (38 mm), the T Rating of the firestop system is 0 hr.**

See **Pipe and Equipment Covering Materials*** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

B. **Tube Insulation Plastics+** — Max 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The annular space between the insulated through penetrant and the periphery of the opening shall be min 1/4 in. (6 mm) to max 1-1/2 in. (38 mm). **When thickness of insulation is less than 1 in. (25 mm), the T Rating of the firestop system is 0 hr.**

See **Plastics+** (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-54A may be used.

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

A. **Fill, Void or Cavity Material* — Wrap Strip** — Two layers of nom 1/4 in. (6 mm) thick by 2 in. (51 mm) wide intumescent wrap strip individually wrapped around the outer circumference of the insulated pipe with ends butted and held in place with tape or tie wire. Butted ends in successive layers shall be offset. Wrap strip shall be installed at both sides of opening. Wrap strip slid into annular space to extend nom 1/4 in. (6 mm) from both surfaces of wall.

RECTORSEAL — Metacaulk Wrap Strip, Biostop Wrap Strip, FlameSafe Wrap Strip

B. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus between wrap strip (Item 4A) and periphery of opening, flush with both surfaces of wall. In addition, min 1/2 in. (13 mm) bead of sealant shall be applied to cover the exposed ends of the wrap strip at both sides of wall.

RECTORSEAL — [Metacaulk 1000](#), Biostop 500+, FlameSafe 1900

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

Reprinted from the Online Certifications Directory with permission from UL. ©UL LLC