

Active Fire Protection A system or device that is designed to alert occupants, aid in extinguishment, or limit the spread of fire (e.g. sprinkler system or alarm system).

Annular Space (Annulus) The region, measured in a straight line, between penetrants, or between the outer most portion of the penetrants and the inside periphery of a circular opening or the sides of a rectangular opening.
Example: a pipe with an outside diameter of 4.5" centered in a 6" diameter hole has an annular space of $(6 - 4.5) \div 2 = 3/4"$.

Annular Space Requirements Per NFPA Std. #13 In section 4-5.4.3.4, it requires that sprinkler pipes in seismic areas, have a minimum annular space of 1-inch for pipes 1" through 3-1/2" and 2-inches for pipes 4" and larger. Exceptions to this standard do exist. Please consult NFPA Standard #13 for details.

Assembly Rating The combination of the T and F rating. In a joint assembly, T equals F.

ASTM E-814 "Standard Method of Fire Tests of Through-Penetration Firestops"

Authority Having Jurisdiction The organization, office, or individual responsible for approving equipment, an installation, or procedure.

Backing Material (Forming Material, Packing Material) Material used in firestop systems (e.g. mineral wool, backer rod, CF 128 foam) to set the depth and provide support for the fill, void cavity material.

Building Officials and Code Administrators (BOCA) Publishes National Building Code (NBC). It is principally used in the Midwest and Northeastern portions of the United States.

Closed Piping System Piping system which is completely enclosed, usually carrying fluids under pressure. **Examples:** hot/cold water distribution, sprinkler piping, chilled water supply and return.

Combustible Capable of undergoing combustion.

cULus Mark An Underwriters' Laboratories certification mark that indicates compliance with both Canadian and U.S. requirements.

Draftstopping Building materials installed to prevent the movement of air, smoke, gases and flame to other areas of the building through large concealed passages, such as attic spaces and floor assemblies with suspended ceilings or open web trusses.

Endothermic Reaction Absorption of energy during a chemical reaction. Thus feeling cool to the touch.

Exothermic Reaction The production of energy during a chemical reaction. Thus feeling warm to the touch.

F Rating The time a firestop system prevents the passage of flame through an opening and successfully passes the hose stream test as determined by ASTM E-814 and UL 1479.

Fill, Void or Cavity Material A firestop material (e.g. sealant, putty, mastic, etc.)

Fire Barrier A continuous membrane, either vertical or horizontal, such as a wall or floor assembly that is designed and constructed with a specified fire resistance rating to limit the spread of fire and restrict the movement of smoke.

Fire Blocking Building materials installed to resist the free passage of flame to other areas of the building through concealed spaces.

Fire Compartment A space, within a building, that is enclosed by fire barriers on all sides, including the top and bottom.

Fire Damper A damper arranged to seal off airflow automatically through part of an air duct system, so as to restrict the passage of heat.

Fire Partition A vertical assembly of materials, having protected openings, designed to restrict the spread of fire.

Fire Resistance Rating The period of time a building or buildings component maintains the ability to confine a fire or continues to perform a structural function or both. This is usually determined or measured by ASTM E-119 test standard.

Fire Resistive Joint System A system consisting of specified materials designed and tested to resist the passage of flame and hot gases sufficient to ignite cotton waste for a prescribed period of time in accordance with UL 2079.

Fire Wall A fire resistance rated wall, having protected openings, that restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

Firestop System A specific construction consisting of a fire-rated wall or floor assembly, a penetrating item or items passing through an opening in the assembly, and the materials designed to help prevent the spread of fire through the openings.

Hose Stream Test This portion of ASTM E-814 (UL 1479) is done to represent the structural integrity of the firestop system after it is exposed to heat.

International Conference of Building Officials (ICBO) Publishes Uniform Building Code (UBC). It is principally used in the Western portions of the United States.

Intumescent A term describing materials which are designed to expand significantly (typically 2 to 10 times original volume) and when exposed to sufficient heat. Intumescent materials are often used as firestops, particularly around combustible penetrants.

Joint System A joint system is a specific construction consisting of adjacent wall and/or floor assemblies and the materials designed to help prevent the spread of fire through a linear opening between the wall and/or floor assemblies.

L Rating An optional measurement of the rate of air leakage through test samples resulting from a specified air pressure difference applied across the surface of the test samples.

Membrane Penetration An opening made through one side (wall, floor or ceiling membrane) of an assembly.

Membrane Penetration Firestop A material, device or construction installed to resist, for a prescribed period of time when tested in accordance with appropriate test standard. The passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.



Noncombustible A material that, in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire.

Non-Rated System An assembly that has not been tested, or assigned an hourly rating in accordance with ASTM E-119.

Passive Fire Protection A device or system designed to confine fire and smoke in zones (e.g. compartmentalization).

Penetrant (Penetrating Item) Any item passing completely through a wall or floor, such as pipes, conduits, cables, etc.

Percent Fill The cross-sectional area of an opening that is occupied by a penetrating item(s). Typically found in UL Systems containing cables. Percent fill may be calculated with the following formulas:

$$\text{Percent Fill } (\%_f) = (A_W/A_O) \times 100 \quad N = \text{number of wires}$$

$$\text{Area of Wire } (A_W) = [3.14 \times (r_C^2)] \times N \quad r_C = \text{radius of wire}$$

$$\text{Area of Opening } (A_O) = 3.14 \times (r_O^2) \quad r_O = \text{radius of opening}$$

Point of Contact (Penetrating Item) When listed UL system drawing allows penetrating item to “touch” edge of opening.

Shop Drawings Construction drawings generated by contractors, sub-contractors, or suppliers to communicate what they plan to furnish on a project to meet the terms of their contract. They differ from the contract drawings in that contract drawings are generated by the design firm and provided to the contractors and suppliers. Shop drawings are often marked-up contract drawings, but the supplier or contractor can also generate them from scratch. Shop drawings are part of the submittals, which are prepared so that the contractor can gain approval to proceed. They are reviewed and approved by the appropriate design professional. Areas where shop drawings are used include structural steel, miscellaneous metals, pre-cast concrete, and in some cases firestop.

Smoke Barrier A continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed to restrict the movement of smoke. A smoke barrier might or might not have a fire resistance rating. Such barriers might have protected openings.

Smoke Compartment A space within a building enclosed by smoke barriers on all sides, including the top and bottom.

Smoke Damper A listed device installed in ducts and air transfer openings that is designed to resist the passage of air and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required is capable of being positioned manually from a remote command station.

T Rating The time for the temperature of the unexposed surface of the firestop system or any penetrating item to rise 325°F above its initial temperature as determined by ASTM E-814 and UL 1479.

Through Penetration Penetrating items passing entirely through both protective membranes of bearing walls required to have a fire-resistance rating and wall requiring protected openings.

Type I Construction Construction in which the structural members are noncombustible (formerly referred to as fire resistive).

Type II Construction Construction in which the structural elements are entirely of noncombustible or limited combustible materials permitted by the code and protected to have some degree of fire resistance (formerly referred to as noncombustible).

Type III Construction Construction which all or part of the interior structural elements may be of combustible materials or any other material permitted by the particular building code being applied (formerly referred to as exterior protected combustible or ordinary construction).

Type IV Construction Construction in which structural members i.e. columns, beams, arches, floors, and roofs, are basically of unprotected wood (solid or laminated) with large cross-sectional areas (formerly referred to as heavy timber).

Type V Construction Construction which the structural members are entirely of wood or any other material permitted by the code being applied (formerly referred to as wood frame).

UL UL is an abbreviation for Underwriters Laboratories Inc., a not for profit independent organization testing for public safety.

UL 1479 “Fire Tests of Through-Penetration Firestops” (equivalent to ASTM E-814).

UL 2079 “Tests for Fire Resistance of Building Joint Systems.”

UL Fire Resistance Directory UL publication which contains descriptions and ratings of firestop systems.

Vented (Open) Piping System Piping system which is atmospherically vented by design to prevent backflow or vacuum. **Examples:** DWV piping (drain, waste or vent).

W-rating An optional rating for through penetrations Firestop systems. Determines the effectiveness of a firestop system to restrict the flow of water. Class 1-rated firestops have been shown to resist up to 3 feet of water column for 72 hours.