
Firestop Glossary

Ablative: Materials that provide fire resistance by gradually eroding to the flame front at a known or predictable rate.

ABS Pipe: Plastic (Acrylonitrile Butadiene Styrene) pipe used for water distribution, drain, waste, and vent.

Afterglow: Emission of light, usually subsiding, from a material undergoing combustion, but occurring after flaming has ceased.

Annulus (Annular measurement or space): The gap between the penetrating item and the edge of the hole. In a given penetration, the measurement from the outside diameter (O.D.) of the pipe to the inside diameter (I.D.) of the hole.

Assembly Rating: The rating, in hours, for a wall or floor assembly's ability to prevent the passage of heat or hot gases and to limit a temperature rise to not more than 250°F (120°C) on average or 325°F (160°C) at any one point.

ASTM: American Society for Testing and Materials

ASTM E 119: Tests the performance of walls, columns, floors, and other building components under fire exposure conditions.

ASTM E 814: The method applicable to "through penetration" firestops of various materials and construction. Firestops are tested, and intended for use, in openings in fire-resistive walls and floors.

ASTM E 84: "Standard Method for Surface Burning Characteristics of Building Materials"

AWG: American Wire Gauge

Backer Rod: A combustible polyurethane or polyethylene foam material used to provide support for gunned or troweled sealant within walls or floors.

Backing Material (Foam Backer Rod or Mineral Wool): Combustible or noncombustible material used to provide support for gunned or troweled sealant within walls or floors.

British Thermal Unit (Btu): The heat required to raise the temperature of one pound of water through 1 degree Fahrenheit at atmospheric pressure.

Burn: To undergo combustion.

Burn Patterns: The characteristic configuration of char left by fire. Burn patterns are influenced by wind direction, length of exposure, and type of fuel. They can be used to trace a fire's origin. (Also called fire tracks).

Butt Vertical Joint: The meeting of two vertical veneers whose joint faces are parallel.

Cable Tray: An opened or closed steel ladder or metal tray, which is used to support runs of multiple cables strung throughout buildings.

CAN/ULC-S115: "Standard Method of Fire Tests of Firestop Systems"

Char: A grayish black, crusty material formed by burning organic type sealants.

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

CMU: Concrete Masonry Unit. Usually hollow, pre-cast concrete blocks used to construct walls.

Combustible Construction: That type of construction that does not meet the requirement for noncombustible construction. Combustible means that a material fails to meet the acceptable criteria of ASTM E 136 (Standard Method of test for Determination of Non-Combustibility in Building Materials).

Combustible Penetrants: Pipes, cables, or other penetrants that may burn or melt out during a fire.

Combustion: A chemical process of oxidation that occurs at a rate fast enough to produce heat and usually light, either as a glow or flame.

Concentric: Having a common center like a penetrating item centered in the middle of a through-penetration hole.

CPVC Pipe: High-grade plastic (Chlorinated Polyvinyl Chloride) pipe commonly used for hot/cold water distribution, fire sprinkler piping, and some chemicals.

cUL (UL certifications for Canada): An independent testing laboratory that also provides full product listing and follow-up services.

Curtain Wall Joint: Perimeter gap between the concrete floor slabs and the exterior wall construction (usually of metal or glass) in high rise buildings.

Detail Drawing: An architectural drawing showing section details of a through-penetration firestop assembly with installation instructions and other pertinent details given.

DWV: Acronym for Drain, Waste, and Vent. Pipes that are used in plumbing applications.

Eccentric: Penetrating item that is offset to one side of a through-penetration hole such that the annulus varies around the penetrating item.

Elastomeric: A material having characteristics which allow it to expand or contract its shape and still return to its original dimensions without losing stability.

EMT (Electrical Metal Tubing): A thin wall galvanized steel pipe used to house electrical wiring or other types of conductive cables. Also commonly known as conduit.

Endothermic: A chemical reaction that allows materials to absorb heat.

F Rating: The time in hours that a firestop system will prevent the passage of flames through an opening, remain in place, and not permit the projection of a water stream through a fire rated assembly as determined by standard test methods ASTM E 814 or UL 1479.

Fill Material: Firestopping material used to fill within the penetration.

Fire Compartment of Fire Zone: An enclosed space in a building that is separated from all other parts of the building by the construction of Fire Separations having Fire Resistance Ratings.

Fire Resistive: Have a resistance to fire.

Fire Resistance Rating: Sometimes called fire rating, fire resistance classification, or hourly rating. A term defined in building codes, usually based on fire endurance required. Fire resistance ratings are assigned by building codes for various types of construction and occupancies, and are usually given in half-hour increments.

Fire-Retardant Barrier: A layer of material, which, when secured to a combustible material or otherwise interposed between the material and a potential fire source, delays ignition and combustion of the material when the barrier is exposed to fire.

Fire-Retardant Chemical: A chemical, which, when added to a combustible material, delays ignition and combustion of the resulting material when exposed to fire.

Fire-Retardant Coating: A fluid-applied surface covering on a combustible material that delays ignition and combustion of the material when the coating is exposed to fire.

Fire-Retardant Treatment: The use of a fire-retardant chemical or a fire-retardant coating.

Fire Risk: The probability that a fire will occur. The potential for risk to life or property.

Fire Separation: A construction assembly that acts as a barrier against the spread of fire.

Firestop System: A specific construction consisting of a fire rated assembly (wall or floor), penetrating item(s) (pipe, cable, etc.), and materials (sealant, backing material, etc.) that fill the opening around penetrating item(s) to prevent the spread of fire beyond the assembly for a specified period of time.

Fire Wall: 1. A wall constructed of solid masonry units, faced on each side with brick or reinforced concrete, used to subdivide a building or separate buildings, to restrict the spread of fire. 2. A wall with adequate fire resistance used to subdivide buildings to restrict the spread of fire.

Flame: A hot, usually luminous zone of gas, or particulate matter in gaseous suspension, or both, that is undergoing combustion.

Flame Front: The leading edge of a flame propagating through a gaseous mixture or across the surface of a liquid or solid.

Flame Resistance: The ability to withstand flame impingement or provide protection against it.

Flame-Resistant: Having resistance to flame.

Flame Spread Index: A number or classification showing a comparative measure derived from observations made during the progress of the boundary of a zone or flame under defined test conditions.

Flammable: Subject to easy ignition and rapid flaming combustion.

Flammable Vapor: The vapor given off by a flammable liquid at, and above, its flash point.

Flash Point: The lowest temperature of a sample at which application of an ignition source causes the vapor of a sample to ignite momentarily under specified conditions of test.

Glass Fiber Board: Fibrous glass insulation consisting of inorganic glass fibers formed into rigid boards using a binder.

Glow: 1. The visible light emitted by a substance because of its high temperature. 2. Visible light, other than from flaming, emitted by a solid undergoing combustion (TCG-01).

Gypsum Wallboard Type X: A mill fabricated product made of a gypsum core containing special minerals and encased in a smooth, finished paper on the face side and line paper on the back.

Heat Transmission Endpoint: An acceptance criterion of ASTM E119 limiting the temperature rise of the unexposed surface temperature to an average of 250°F or a maximum of 325°F at any one point.

Hose Stream Test: A test of the physical integrity of an assembly after a specified period of burning in which it is removed from the furnace and exposed to a blast of water from a fireman's hose. ASTM E 119 specifies the nozzle size, pressure, duration, and distance from the assembly.

Ignition: The initiation of combustion.

Ignition Temperature: The lowest temperature at which sustained combustion of a material can be initiated under specified conditions.

Intumesce: To swell, enlarge, inflate, or expand with heat. Intumescent firestopping sealants swell when exposed to the intense heat of fire to close gaps or voids in through-penetration openings.

Joints: Gaps between two or more adjoining surfaces, left to provide for expansion and contraction of the assembly.

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

Lightweight Aggregate Concrete: Concrete made with aggregates of expanded clay, shale, slag or sintered slate or fly ash, and weighing 85 to 115 pcf.

Mineral Board: A rigid thermal insulation board consisting of either felted mineral fiber or cellular beads of expanded aggregate.

Mineral Wool or Rock Wool: High temperature resistant mineral fiber insulation used as fill material component in firestop systems to prevent the passage of flame.

Noncombustible: Will not combust; will not catch fire and burn

Normal Weight Concrete: Any concrete made with natural aggregates, cement and water having a unit weight of approximately 150 pcf.

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

Penetration: A void in a continual slab common to building through which penetrants may pass.

Point of Contact (Annular Space): When listed on UL system drawing, point at which penetrant touches the side of the opening.

PVC Pipe: Common plastic (Polyvinyl Chloride) pipe used for cold water distribution and drain, waste, and vent.

Pyrolysis: Irreversible chemical decomposition caused by heat, usually without combustion.

Safing Joint: The gap between the floor in a high-rise building and the curtain wall.

Sleeve: A liner, usually metallic, used to create an annulus for or around the penetrants. May be placed into concrete as it is poured or may be placed around a penetrant and inserted into a wall as it is erected.

Smoke: The airborne solid and liquid particulate and gases evolved when a material undergoes pyrolysis or combustion.

Smoke Seal: A seal that exhibits the ability to prevent passage of smoke and hot gases.

Smoldering: Combustion of a solid without flame, often evidenced by visible smoke.

Spontaneous Ignition: Initiation of combustion caused by internal, chemical exothermic reaction.

Sprayed Mineral Fiber: A blend of refined mineral fibers and inorganic binders. Water is added during the spraying operation; and the untapped unit weight is approximately 13 pcf.

Standard Fire Exposure: The time/temperature relationship defined by ASTM E119.

Steel Deck Assembly: Otherwise known as fluted deck or floor pans, these floor assemblies consist of concrete that is poured into a corrugated steel pan assembly.

Surface Flame Spread: Surface flame spread per unit of time.

SWG: An abbreviation for Standard Wire Gauge usually used in combination with a number to identify a particular size wire.

System Number: A number assigned by listing organizations such as UL to a specific firestop detail or series of similar details. These details are then indexed in numerical order in a reference book or directory such as the UL Fire Resistance Directory.

T Rating: The time in hours required for the temperature on the unexposed surface of a fire rated assembly. A firestop system or any penetrating item to rise 325° F above the surrounding temperature as determined by standard test methods ASTM E 814 or UL 1479 (in addition to meeting F-Rating requirements).

Torr: A unit of pressure: 1 Torr = 1 mm Hg (Mercury) @ 1 degree Celsius.

Toxicity: A reflection of a material's ability to release poisonous particulate.

UL (Underwriters Laboratories Inc.): An independent testing laboratory that also provides full product listing and follow-up services.

UL 263: Standard Fire Test of Building Construction and Materials (UL equivalent to ASTM E 119).

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

UL2079: "Tests for Fire Resistance of Building Joint Systems"

ULC (Underwriters Laboratories of Canada): An independent testing laboratory that also provides full product listing and follow-up services.

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

WHI (Warnock Hersey International, Inc.): An independent testing laboratory that also provides full product listing and follow-up services.

Wire Mesh: A galvanized steel hardware cloth used to support backing materials and sealants within the hollow core of gypsum wall and CMU construction.

Vented (Open) Piping System: Piping system which is vented to the atmosphere, to prevent backflow and vacuum, such as drains and vent pipes.

Zero Annular Space: A point of contact or an area where no gap exists between a penetrating item and the edge of the hole.