

Chapter 21, Installation, Inspection and Maintenance of Firestop Systems

21.1 General

21.1.1 This chapter covers the requirements of the installation, inspection and maintenance of firestop systems for use in fire walls, fire barriers, smoke barriers, building perimeter and other resistance rated or non-resistance rated construction.

21.1.2 Firestop System Ratings shall be established in accordance with UL 1479, UL 2079 or ASTM E-814, ASTM E 2307.

21.1.3 Definitions

21.2 Fire Resistance Rated and Smoke Resistant Compartmentation - Fire, Smoke, or fire-and smoke-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire, smoke, or fire and smoke or other hazards within a building and the spread of fire to or from buildings.

21.2.1.1 Firestop System – Firestop Systems are the generic term referring to an installed assemblage of materials that reflects a classified firestop system as tested and to UL 1479, ASTM E-814, UL 2079, ASTM E-2307, and listed.

21.2.1.1.1 For purposes of this document, the system parameters are followed to minimum and maximum parameters resulting a firestop system that is installed to conditions the system was classified.

21.2.1.2 Through Penetration Firestop System - A single or combination of materials used to create a firestop assembly capable of preventing the spread of heat, fire, gasses, smoke or other defined hazards through an opening in a fire-resistance-rated, smoke or other resistant wall or floor assembly, using ASTM E 814 or UL 1479 as the test method. The firestop system refers to all the necessary components in the approved firestop design, which can include but is not limited to the penetrant size, annular space, sealant depth, and other parameters in the listing. The rating of the firestop system shall be equivalent to the rating of the barrier in which the firestopping is installed.

21.2.1.3 Perimeter Firestop System - A single or combination of materials used to create a firestop assembly at the perimeter gap between a fire resistance rated floor assembly and a non-resistance rated wall assembly, capable of preventing the spread of heat, fire, gasses, smoke or other defined hazards through the opening in the wall

and floor assembly, using ASTM E 2307 as the test method. The firestop system refers to all the necessary components in the approved firestop design, which can include but is not limited to the gap size, sealant or backing material depth, and other parameters in the listing. The rating of the firestop system shall be equivalent to the rating of the floor in which the firestopping is installed.

21.2.1.4 Joint Firestop System - A single or combination of materials used to create a firestop assembly at a joint between a fire resistance rated floor assembly and a fire resistance rated wall assembly, capable of preventing the spread of heat, fire, gasses, smoke or other defined hazards through the opening in the wall and floor assembly, using ASTM E 1966, UL 2079 as the test method. The firestop system refers to all the necessary components in the approved firestop design, which can include but is not limited to the joint width, sealant or backing material depth, and other parameters in the listing. The rating of the firestop system shall be equivalent to the rating of the two assemblies in which the firestopping is installed.

21.2.1.5 Membrane Firestop System

21.2.1.6 F Rating - The time, stated in hours, that a firestop system will prevent the passage of flame through an opening and not permit the projection of a water stream through a fire rated assembly, as determined by ASTM E-814, UL 1479, UL 2079.

21.2.1.7 T Rating - The period of time (in hours or 15 minute increments) a firestop system has been shown capable of keeping the unexposed surface of the firestop system and/or any penetrating items from exceeding a 325° F temperature rise. This T rating also includes passage of F rating requirements for the same time period as determined by ASTM E 814, UL 1479 or other test standards.

21.2.1.8 L Rating - The amount of air leakage through the fire rated assembly, determined by applying specified air pressure (0.30" water column) across the surface of the test assembly. The rating is expressed in cubic feet per minute (CFM) leakage per square foot of opening, as detailed in UL 1479 and UL 2079. An L rating is a measure of the ability of a fire-resistive assembly to prevent air passage through firestops, joint seals and other resistance rated assemblies. L ratings are obtained at ambient and/or elevated (400°F) temperatures.

21.2.1.9 Dynamic Joint - The linear opening or gap between adjacent fire resistant structures designed to allow independent movement of a building. A joint is designed into structures to accommodate movement in any plane caused by thermal, wind, seismic or other loading forces.

21.2.1.10 Static Joint - The linear opening or gap between adjacent fire resistant structures designed to not accommodate movement of a building.

21.2.1.11 Engineering Judgment (EJ)- Evaluations developed and presented by firestop manufacturers to address firestop configurations encountered in the field

that do not exactly match the fire tested system. EJ drawings and/or documents are based upon engineering judgment as per guidelines of International Firestop Council (IFC) and not a test that exactly bounds the field configuration. EJs are submitted to the AHJ for approval. EJ's are not to be used as a substitute for a classified system if it exists in the public domain.

21.2.1.12 Equivalent Fire Resistance Rated Assembly - An EFRRA is for all practical purposes the same thing as an EJ. Consequently, any firestop installation backed by an EFRRA is not qualified by exactly representative fire testing, but instead is deemed to be qualified by an engineering assessment performed by the product manufacturer.

21.2.2 Firestop Systems Selection – Firestop Systems shall be selected based on criteria as outlined in the FCIA Manual of Practice, Systems Selection Section and are to be selected to match conditions anticipated at the project, by personnel designated by the contractor as qualified.

21.2.3 Firestop System Field Communication & Preparation

21.2.3.1 Firestop Systems approved for use by the authority having jurisdiction are to be communicated to the field installation crew using systems from approved agency.

21.2.4 Firestop System Field Installation

21.2.4.1 Firestop Systems shall be installed to the classified system parameters outlined in the system design from testing laboratories or EJ, EFRRA.

21.2.4.2 Firestop Systems shall be installed by contractors who are FM 4991 Approved and/or UL Qualified Firestop Contractors.

21.2.4.3 Firestop Systems shall be installed to the classified system from approved agency.

21.2.5 Firestop System Inspection

21.2.5.1 Firestop Systems shall be randomly inspected as a part of the firestop contractor firms' quality process.

21.2.5.2 Firestop Systems shall be inspected to ASTM E-2174 Standard for the Inspection of Installed Firestop Systems and ASTM E-2393, Standard for the Inspection of Installed Joint Systems as specified in construction documents.

21.2.5.3 Firestop Systems shall be inspected annually by the building owner.

21.2.6 Firestop System Building Life Cycle Maintenance

21.2.6.1 Firestop Systems shall be inspected annually by the building owner.

21.2.6.2 Firestop Systems shall be repaired as the fire resistance rated, smoke or other resistant compartmentation is maintained, by owner, with repairs as recommended by firestop system classified listing and manufacturer instructions, and as inspection reveals action to maintain integrity of fire wall, fire barrier, smoke barrier or other resistance rated / resistant construction.