



Recommended IFC Guidelines for Evaluating Firestop Systems in Engineering Judgments (EJ'S)

The International Firestop Council (IFC) is a not-for-profit association of manufacturers and users of fire protective materials and systems. IFC's mission is to promote the technology of fire containment in modern building construction through research, educational programs, and the development of safety standards and code provisions. These recommended guidelines are presented as part of IFC's educational information program. They are for informational and educational purposes.

The Premise of Firestop Systems

Firestop systems deter the passage of fire, hot gases and toxic smoke through openings in walls, floors and floor/ceiling assemblies for through penetrations, membrane penetrations, joints, blanks, gaps, voids and ducts. These systems are required by building codes to be tested and rated as part of an assembly in accordance with ASTM E 814 or UL 1479 for through-penetration systems, ASTM E 1996 or UL 2079 for construction joint systems, ASTM E 2307 for fire resistance of perimeter fire barrier systems, ASTM E 2336 for grease duct enclosure systems, or ISO 6944 for ventilation duct enclosure systems.

All elements of a tested and rated firestop system, including the assembly into which the system is installed, constitute a specific and inseparable engineered unit that must be utilized as such. Firestop system designs are tested and listed by independent testing agencies. The specific elements of each design become part of the listing.

When field conditions differ from original design or unanticipated construction hindrances are encountered, Engineering Judgments (EJ's) are typically made that recommend alternative methods to ensure performance of the firestop system is not compromised. Generally these conditions or hindrances cannot be easily or cost-effectively redesigned so alternative protection schemes must be implemented to maintain the system's integrity. Since these recommendations are not based upon identical designs as that which were fire tested, it is important that they be developed using sound engineering principles and good judgment.

Construction industry professionals, building officials, fire officials, firestop contractors and other stakeholders need appropriate guidelines for evaluating and using such judgments. As such, IFC developed *Recommended IFC Guidelines for Evaluating FireStop Systems in Engineering Judgments*.

IFC EJ Guidelines

Engineering Judgments for firestop systems should:

1. Not be used in lieu of tested systems when available;
2. Be issued only by a firestop manufacturer's qualified technical personnel or in concert with the manufacturer by a knowledgeable registered Professional Engineer, Fire Protection Engineer, or an independent testing agency that provides listing services for firestop systems;
3. Be based upon interpolation of previously tested firestop systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the judgment is to be given. Additional knowledge and technical interpretations based upon accepted engineering principles, fire science and fire testing guidelines (e.g. ASTM E 2032 – Standard Guide for Extension of Data from Fire Endurance Tests) may also be used as further support data;
4. Be based upon full knowledge of the elements of the construction to be protected, the understanding of the probable behavior of that construction and the recommended firestop system protecting it were they to be subjected to the appropriate Firestop Standard Fire Test method for the rating indicated on the Engineering Judgment;
5. Be limited only to specific conditions and configurations upon which the engineering judgment was rendered and should be based upon reasonable performance expectations for the recommended firestop system under those conditions;
6. Be accepted only for a single, specific job and project location and should not be transferred to any other job or project location without thorough and appropriate review of all aspects of the next job or location's circumstances.

Basic Presentation Requirements

Proper Firestop System Engineering Judgments should:

1. Be presented in appropriately descriptive written form with or without detail drawings where appropriate;
2. Clearly indicate that the recommended firestop system is an engineering judgment;
3. Include clear directions for the installation of the recommended firestop system;
4. Include dates of issue and authorization signature as well as the issuer's name, address and telephone number;
5. Reference tested system(s) which design (EJ) is based on;
6. Identify the job name, project location and firm EJ is issued to along with the non-standard conditions and rating supported by the EJ;

7. Have proper justification (i.e. UL, Intertek or other independent laboratory system(s) and or opinions);
8. Provide complete descriptions of critical elements for the firestop configuration. These should include, but not be limited to the following:
 - a. Basic, Common
 - Type(s) of assembly used or being penetrated;
 - Rating supported by the EJ.
 - b. Through Penetrations
 - Penetrating item(s) (type, size, etc.);
 - Annular space requirements, (minimum, maximum, actual, nominal, etc.)
 - Opening size;
 - Firestop product(s) to be used, type and amount (thickness if applicable);
 - Accessory items(s) (i.e. anchors, backing material, etc.)
 - c. Joints
 - Joint Width (installed width, nominal)
 - Movement Capability;
 - Movement Class (thermal wind sway, seismic);
 - Accessory item(s) (i.e. insulation type, thickness and compression, etc.)
 - d. Duct Enclosure System(s)
 - Duct System Type - i.e. kitchen exhaust, hazardous material exhaust, ventilation, supply/return, etc;
 - Duct Construction – dimensions, material, gauge, reinforcement, connections, orientation (horizontal, vertical or both);
 - Enclosure System – brand name designation, description, fire resistance rating;
 - Thickness, density, number of layers, fire rating, clearance to combustibles, material joints, mechanical attachment to duct, duct support system, access door construction.
 - Firestop System – annular space dimensions, floor/wall construction, design number, components, installed thickness.
 - e. Perimeter Fire Barrier Systems – See “Recommended IFC Guidelines for Evaluating Firestop Systems by Engineering Judgments (EJ’s) – Perimeter Fire Barrier Systems”

IFC recommends that these guidelines be considered when evaluating whether any firestop system engineering judgment meets minimal requirements. Questions concerning the EJ request should be addressed to the initiator of the judgment.