

FIRESTOPPING VS FIREBLOCKING

THE INTEGRITY OF ALL FIRESTOPS, FIREBLOCKS, AND DRAFTSTOPS SHALL BE MAINTAINED...

Firestopping is required in multi-family residential and commercial construction wherever a fire-rated floor or wall separation is encountered. In multi-family residential construction, fire-rated separation walls are always required between units whereas fire-rated floors are *only* required in buildings of three stories or more. Although these are general construction design rules, there may be exceptions.

During the construction process, penetrations are made partially through (membrane penetration) or completely through (through penetration) these fire-rated separations. This is done by the trades to run electrical wires and cables, plumbing pipes, HVAC ducts, and other mechanical items. These penetrations violate the original integrity of the fire-rated floor/wall system allowing the passage of flame, smoke, and toxic gases to communicate to other areas of the building in the tragic event of a fire.

In the early 1980's, ASTM (American Society for Tested Materials) established the "Test Method for Fire Tests of Through-Penetration Firestops". This test procedure is known as "ASTM-E814" and has an equivalent UL test known as "UL 1479". These test standards have been adopted by all model building codes in the United States and have established specific guidelines to addressing the penetrations made through fire-rated floor and wall separations.

As a result, manufacturers have designed and tested complete lines of firestopping sealants and accessories, and educated architects, code enforcement officials, builders, contractors, and other construction industry personnel about the importance and proper application of firestopping procedures.

Important determining factors for proper firestop application are as follows:

1. **What does the fire-rated system consist of?**
 - Wood, Gypsum, Concrete?
 - Floor or Wall?
2. **What is the hourly rating?**
 - 1, 2, 3, +... hours?
3. **What are the penetrating items?**
 - Conduit & EMT, Steel Pipe, PVC, Joints, etc.
 - The size of the penetrants
 - The size of the openings
4. **What firestop product(s) have documented testing that meet the established criteria?**

When practicing proper firestop applications, it is strongly recommended that you review the manufacturers "Firestop Products Application Guide", "UL Assembly Diagrams", and/or the Code Enforcement Municipality having jurisdiction. Using these guides as a reference will allow you to make the proper determination in selecting the firestop product that meets your application criteria.

Reminder:

Firestopping = ASTM-E814 / UL 1479 listed products for use in 1, 2, & 3+ hour fire rated separations found in multi-family and commercial construction

Fireblocking wood frame residential construction predates actual through penetration testing standards such as ASTM-E814 and UL1479 by over 30 years. All model building codes prescribe applications for residential fireblocking and are all synonymous in code wording and intent. Recently, the International Residential Code for One and Two Family Dwellings (IRC) has helped clear the grey areas in determining the difference between firestopping and fireblocking. The IRC has done so by eliminating the term "Firestopping" from the text because the IRC is only a residential 1 and 2 family dwelling code. Firestopping is used for multi-family dwellings and commercial construction for 1, 2, and 3 + hour rated fire separations which are not found in single family homes. Although there may be some exceptions, wood or steel-framed single family residential requirements are **non-rated structures** and therefore have less than an hour rating.

Balloon framing was the general structure common to 40 year or older residential construction. This style of construction allowed large, open concealed spaces to run between floors from the basements or first floor continuously to the attic area. Today, western style or platform framing construction has become the standard in residential dwellings. This construction has the floor framing bearing on load bearing walls so there is no continuous concealed space through the story levels or floor framing. This creates a built in fireblock at ceiling and floor levels also known as top-plates. When these fireblocks are penetrated for the trades to run their wires, pipes, and other mechanical penetrating items, the integrity of the wood fireblocks are violated and they must be protected with a material that is equal to or greater than the burn time of that wood top-plate.

Traditionally, fireblocking code sections found in BOCA, CABO, N.Y.S. Code, Mass. State Code, SBC, and the UBC all required openings around vents, pipes, ducts, and other mechanical penetrating items at ceiling and floor level to be fireblocked with "**noncombustible**" materials. The term noncombustible is defined in all model building codes as "Materials that Pass the Test Procedure for Defining Noncombustibility of Elementary Materials Set Forth in ASTM-E136". Simply put, ASTM has a test standard defining a noncombustible building material as a material that will not flame, smoke, or have significant weight loss when subjected to 1380° F. Upon passing this test, a manufacturer can label their product or material as a "Noncombustible" or "ASTM-E136" tested product. Using an ASTM-E136 rated product fulfills the code requirements for fireblocking penetrations because the material is tested and demonstrates not to burn at far higher temperatures than the burn time and burn temperature of wood.

Today, the IRC specifies an "**Approved**" material to resist the free passage of flame and products of combustion. This wording allows for ASTM-E814 and ASTM-E136 tested products to be used in fireblocking applications based upon the determination of the code enforcement official having jurisdiction. However, **ASTM-E136 products are not compliant for ASTM-E814 applications**. As always, it is important to check the manufacturers suggested installation procedures and to consult your local building department.

Reminder:

Fireblocking = ASTM-E136 and ASTM-E814 tested products for use in non-rated steel and wood frame residential structures