

# NONCOMBUSTIBLE FIREBLOCKING

USING ASTM-E136 RATED FILLERS FOR FIREBLOCKING RESIDENTIAL PENETRATIONS

Due to alarming statistics in the loss of life and property damage that result in residential fires, code officials have been forced to take a closer look at the fireblocking code requirements for single family residential construction. As a result, code officials have implemented the use of an **“approved”** fireblocking/firestopping sealant or device to resume the **integrity of fireblocks** that have been penetrated when contractors run their wires, pipes, ducts and other mechanical penetrating items. Fireblocks in residential construction are designed to create an **effective** barrier to flame, smoke, and toxic gases within concealed spaces. In many areas, these stricter fireblocking enforcement measures have been widely accepted and have helped to improve the quality of building and life-safety of the structure.

In the past, many areas allowed contractors to stuff fiberglass insulation or spray foam in the holes in an attempt to satisfy both the Model Energy Code and fireblocking requirements. Many other areas are unaware or have done nothing at all to address open penetrations that allow the free flow of air between stories and within concealed spaces that enable a fire to spread to new fuel sources. To satisfy both requirements, code officials and manufacturers had to take a close look at the building code **“wording”** and **“intent”** to come up with a solution that satisfies the written section of the code while fulfilling the purpose of fireblocking requirements.

To explore this solution, we must first take a look at the residential fireblocking code requirements prescribed in all model building codes where penetrations are addressed. With the exception of the IRC (International Residential Code), BOCA, CABO, SBC, and the UBC are all synonymous in code wording and intent. The code wording for fireblocking penetrations is as follows:

#### **BOCA 720.6.4**

Firestopping shall be installed at openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels, with approved **noncombustible** materials.

#### **CABO 602.7 Item 4**

At openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor level, with **noncombustible** materials.

#### **SBC 705.3.1.3/ 2305.1.3 Item 4**

Fireblocking shall consist of approved **noncombustible** materials unless otherwise specified in this code.

Materials shall be securely fastened into place. At openings around vents, pipes, ducts, chimneys, and fireplaces at ceiling and floor levels with approved materials.

#### **UBC 706.2.1 Item 4**

In openings around vents, pipes, ducts, chimneys, fireplaces and similar openings that afford a passage for fire at ceiling and floor levels, with **noncombustible** materials.

Keyword: **Noncombustible**

For years code officials and building contractors have been under the impression that the term **“noncombustible”** simply meant that it did not burn. Furthermore, it was believed that fiberglass insulation and insulating spray foam were noncombustible when in fact they were merely “nonflammable” materials. When defining the term **“noncombustible”** in the definitions section of **all** model and state building code books the definition is clearly stated as:

**Materials that are intended to be classified as noncombustible shall be tested in accordance with ASTM-E136.**

**ASTM-E136** is the standard that declares a building material **“noncombustible”**. Only once it has been tested and documented by a recognized 3<sup>rd</sup> party testing laboratory, should the product be labeled as a **“noncombustible”** material.

Although the IRC does not specifically mention the term “noncombustible” to be used for the protection of penetrations, it does reference the **ASTM-E136** standard for defining noncombustibility. The IRC allows the use of an **“approved”** material for fireblocking penetrations which allows the code official having jurisdiction to make a suitable determination based on documentation and/or by reason of accepted principals or tests performed by nationally recognized organizations.

Noncombustible materials are tested at 1380° F and demonstrate that a fireblocking material is greater than the burn time and temperature of wood. The ASTM-E136 test is difficult to pass because all organic materials burn. Therefore, manufacturers of fireblocking sealants have had to use inorganic materials (stone, mineral powders, or fibers) to ensure their formulation passes the heat tests and remain unaffected by the passage of time. Because inorganic materials are comprised mostly of minerals, they do not age and will remain effective for the lifetime of the structure.

The most important rule, however, is one that is often overlooked or misinterpreted. All building code fireblocking sections mandate that **“The integrity of all fireblocks shall be maintained”**. When a fireblock is violated, it needs to be resumed to its original integrity. This means that it needs to be sealed with a material equal to or greater than the burn time/temperature of the wood that is being penetrated. For this reason, many materials thought to be an effective fireblocking such as spray foam or fiberglass insulation do not hold compliant with this section of the fireblocking code requirements. Noncombustible/ASTM-E136 tested materials cause a fire to burn through each individual stud, minimize the flow of oxygen within concealed spaces, and contain the fire preventing it from spreading to new fuel sources.

Using noncombustible/ASTM-E136 fillers for penetrations found in single family residential construction has been enforced by the building official in many parts of the United States for almost a decade. It has proven to be a simple, cost effective solution to ensuring added safety and value to new home construction. The use of a noncombustible/ASTM-E136 caulking compound has proven to be the best way to satisfy both the “wording” and “intent” of the fireblocking requirements found in all model building codes.

Point to remember:

*The Integrity of all fireblocks shall be maintained...*