

THE PROBLEM WITH FOAM

USING INSULATING FOAM SEALANTS AS A FIREBLOCKING MATERIAL

Insulating foam sealants have been used for many years to increase energy efficiency by sealing gaps and cracks and around windows and doors. For this purpose, foam sealants have become the product of choice over traditional style caulking for air infiltration due to the ease of application and greater yield.

Within the past 10 years, code officials in many areas of the United States have implemented the use of an “**ASTM-E136**” rated fireblocking caulk to seal penetrations around wires, pipes, vents, ducts and other mechanical penetrating items in single family residential construction. ASTM-E136 is the standard to which a **noncombustible** building material is tested to declare that it is in fact, a noncombustible building material. Noncombustibles are specified in all model building codes to be used at openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels because noncombustible materials are demonstrated to be greater than the burn time/temperature of wood fireblocks. This fulfills the golden rule of fireblocking, “**The integrity of all fireblocks shall be maintained.**” As a result, insulating foam sealant manufacturers have lost significant market share to manufacturers of noncombustible/ASTM-E136 rated fireblocking sealants because of stricter building code enforcement and their lack of fire resistance.

Currently, manufacturers of spray foam sealants are attempting to regain market share by demonstrating their products to be an effective fireblocking material because it disrupts the flow of oxygen keeping the fire from spreading to other fuel sources. This may be good in theory, however, it still lacks the fire-resistant integrity of the wood in which it is applied. In addition, fumes and smoke that arise from burning polyurethane foam contain poisonous gases that contribute to the toxicity of the fire. Finally, the chemical composition of foam is that which breaks down in time becoming vulnerable and allowing airflow as the structure grows older. The building codes specify the use of noncombustible building materials because of their ability to withstand extreme heat and to remain unaffected by the passage of time.

Characteristics of insulating foam sealants

- Cured foam can handle 240° F before it becomes a fire hazard.
- When exposed to flame or high heat, burning foam emits smoke and toxic gases that contribute to the toxicity of a fire.
- Foam is made up of organic materials, and therefore will deteriorate with the passage of time.
- Foam does not resume the integrity of wood fireblocks, and will burn out before the wood does allowing the passage of flame, smoke, and toxic gases.
- The characteristics of foam *do not* fulfill the fireblocking requirements as an *effective* barrier between stories to resist the free passage of flame and products of combustion.

Noncombustible/ASTM-E136 fireblocking sealants are made of inorganic materials such as minerals and silicates that cure hard like a mortar or cement. Due to the intense heat requirements of the ASTM-E136 test, organic materials ignite and exhibit products of combustion. Materials that pass the ASTM-E136 standard of noncombustibility are tested to withstand in excess of 1380° F demonstrating that it will have a greater burn time/ temperature than wood. In addition, the mineral composition allows noncombustible sealants to be unaffected by age, remaining effective as a fireblock for the lifetime of the structure. This is important when the home ages and becomes more prone and vulnerable to fire. The noncombustible fireblock material will have the same integrity as the day it was installed.

When exposing flame or extreme heat to ASTM-E136 rated sealants, there are no signs of products of combustion, smoke or the emission of toxic gases. Noncombustible materials have been prescribed in all model building codes for fireblocking penetrations in non-rated residential construction for several decades. Using noncombustible sealants in openings at ceiling and floor levels around wires, pipes, ducts, chimneys and fireplaces resumes the integrity of penetrated fireblocks creating an effective barrier within concealed spaces. This not only disrupts the flow of oxygen between stories and with in the stud wall cavity, but forces a fire to burn through each stud before it can spread to other fuel sources. For these reasons, the use of noncombustible fireblocking sealants fulfill the wording and intent of the building codes.

Characteristics of ASTM-E136 sealants

- Noncombustible materials are tested at 1380°F.
- Noncombustible materials exhibit *NO* signs of combustion, smoke or toxicity when exposed to flame or high heat.
- Noncombustible materials are made of inorganic materials such as minerals, and therefore will not deteriorate with the passage of time.
- Noncombustible materials resume a greater integrity than wood causing a fire to burn through each stud or fireblock before it can migrate to other areas of the building.
- ASTM-E136 rated materials (Noncombustibles) have been prescribed in residential building codes as a specified method for fireblocking penetrations.
- Having penetrations filled with noncombustible materials can help reduce the total involvement of a fire allowing time for occupants to escape.
- The characteristics of noncombustible/ASTM-E136 tested Sealants fulfill the fireblocking requirements as an *effective* barrier between stories to resist the free passage of flame and products of combustion.