Sealed with a Caulk
... or a Pillow ... or a Foam ...

Knowing More About the Various Types of Firestop Devices
Will Help the Installer Make Better Product Choices for the Application

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After the installer has qualified your application for a firestop material, he then has to determine which product is most suitable for the application. Although the most obvious answer would be a product that has been tested for the application by a third-party laboratory, other factors should be considered. To determine product suitability, the installer should be aware of the various firestopping materials and devices available.

An excellent resource is the UL Fire Resistance Directory, which is divided into two volumes. Volume I contains information on ratings for sprayed-on fireproofing, various fire-rated wall designs and fire-resistant joint applications that use firestopping materials. Volume II contains through-penetration firestop systems for firestop materials and devices.

Firestop devices are typically arrayed in a metallic frame that is mechanically closed around the penetrating item. They are also mechanically fastened to the wall or floor. Mechanical devices were among the earliest forms of firestopping cable penetrations and have recently evolved into a popular form of firestopping large volumes of cables in a penetration.

Other firestopping devices are primarily designed to protect large-diameter plastic pipes. These devices are known as pipe choke systems or plastic pipe devices. When using plastic pipe devices, ensure that the device has been tested for the type of plastic pipe penetrating the wall. Polypropylene is much harder to protect than traditional PVC, and if the device has not been tested for that pipe there is a chance that the device will not sufficiently close off the pipe in a fire.

The other classification of firestops is the non-mechanical products. These include putties, caulks, foams, cementitious mortars, pillows and composite sheet.

Foams
Foams, the earliest non-mechanical firestop, were originally developed during the construction era of nuclear power plants. Large penetrations normally lend themselves well for foam application, however, most of the applications are being replaced largely with cementitious mortars.

Foam products are a two-part mix that the user is required to dispense immediately after mixing. Installation temperature range also is very limited and should be noted when considering foam products.

Putties
Firestop putties are very often used in cable penetrations where frequent change-outs are required. The benefit of most putties is that they never harden and do not have a
cure time. Putties also are advanta-
geous to the user because there is very little or no waste. Excess material can be saved and used at another time. With caulking mate-
rials, the installer is limited to the product’s shelf life and curing time and cannot re-use or save the caulk once the tube or pail has been opened.

CAULKS

Firestop caulks are used more often than other firestopping mate-
rials. However, because of the perceived notion that the product can be used over a putty or other non-
mechanical product, caulks are also the most mis-applied firestopping material. The various types of firestopping caulks available to the installer are another reason for mis-
application because it may cause erroneous cross-referencing of one manufacturer’s caulking material to another.

All caulking materials should be evaluated on the basis of qualified (tested) applications. They can be water based, latex based, solvent based or silicone based. Water-
based caulking materials are qualified in various designs, but the installer should be aware that they typically have limitations. Application temperatures and stor-
age temperatures have to exceed 32 degrees Fahrenheit. These caulks also dry hard and have no flexibili-
ty once they have dried. Flexibility of a product is important if there exists a potential for movement of the item in the penetration.

Silicone-based products are highly flexible and highly adhesive. Because of the silicone base, these products also are inherently waterproof and generally require less material to achieve the same fire rating as most water-based caulks.

Latex-based caulks offer the installer the benefits of a water-
based caulk in that they are easy to clean up. They also have benefits similar to a silicone-based caulk because they are somewhat adhesive and maintain a certain level of flexibility. This flexibility is not to the same degree as a silicone, which means the user should ensure that the product is suited for the amount of movement that may take place in the particular application.

Solvent-based caulks are caulks that use solvents to help the mater-
ial flow out of the tube. These caulks are flammable before they cure, and recommended installa-
tions should be in well-ventilated areas because of the solvent con-
tent.

CEMENTITIOUS MORTARS

Mortars were designed for large penetrations with multiple pene-
trating items. These products are typically used in masonry wall and floor applications. Cementitious mortars, as the name implies, are cement based; however, other materials are blended in to make these mortars an effective firestopping material. Installers should be aware that ordinary mortars or grouts should never be substituted for a qualified firestop material.

**Pillows and Composite Sheets**

Pillows are primarily designed for cable penetrations, applications exist for conduit and pipe penetrations. Pillows are stacked and compressed in the penetration to provide a fireseal. Composite sheets, which is a sheet metal-backed composite firestop material, also was designed for telecommunications cable applications.

Applications for the materials have expanded. Composite sheets also can be used for multiple pipe penetrations. Time to install composite sheets should be a consideration because they require the user to cut to the size and shape of the penetrating item, and fastening to the wall or floor with anchors or bolts also is a requirement. Caulks and putties also are required in using composite sheets.

The contractor should understand the differences between firestop materials, but also understand that firestopping is a system, not a material. Although knowing which product is more cost effective, the installer has to remember that the product should be qualified through third-party testing for the intended application. If you have questions, as your manufacturer for verification.

**About the Author**

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