

## **OVERVIEW**

### **FIRESTOPPING AND SMOKE SEAL SYSTEMS (In The US)**

It is critical that the compartmentation of a structure -- created by the use of fire rated floor, wall and ceiling assemblies -- be maintained in order to reduce the severity of a fire and ensure safety to both life and property.

When penetrations are created for building services, within a fire rated floor, wall or roof assembly it becomes critical to seal these penetrations to a rating equivalent to the fire resistance rating of the assembly. This design approach will assist in confining a fire to its origin, thereby giving the building's suppression systems or firefighters a better chance to control it before the entire structure becomes involved.

Performance standards are being created by authorities having jurisdiction (AHJ's) to ensure that materials used to seal these openings will withstand exposure to the severe conditions of a fire. The United States uses Underwriters Laboratories Standard UL 1479, "Fire Tests of Through-Penetration Firestop", as one of its recognized standards.

The requirement for the use of "tested" fire stop materials for sealing building services which penetrate a fire separation or an assembly required to have a fire resistance rating.

Service penetration assemblies are assigned a fire rating when tested in accordance with the Standard Method of Fire Tests of Firestop Systems, ASTM E-814. These firestop assemblies are intended for use in openings in fire resistive wall and/or floor assemblies which are evaluated in accordance with ASTM E-119, "Standard Methods of Fire Endurance Tests of Building Construction and Materials".

Under ASTM E-814, two ratings may be established for each Firestop assembly (F and T rating).

A fire stops shall be considered as meeting the requirements for an F rating when it remains in the opening during the fire test and hose stream test within the following limitations.

The fire stops shall have withstood the fire test for the rating period without permitting the passage of flame through openings, or the occurrence of flaming on any element of the unexposed side of the fire stops.

During the hose stream test, the fire stops shall not develop any opening that would permit a projection of water from the stream beyond the unexposed side .

A fire stops shall be considered as meeting the requirements for a T rating when it remains in the opening during the fire test and hose stream test within the following limitations.

The transmission of heat through the fire stops during the rating period shall not have been such as to raise the temperature of any thermocouple on the unexposed surface of the fire stops or on any penetration item more than 325°F (181°C) above its initial temperature. Also, the fire stops shall have withstood the fire test during the rating period without permitting the passage of flame through openings, or the or the occurrence of flaming on any element of the unexposed side of the fire stops.

During the hose stream test, the fire stops shall not develop any opening that would permit a projection of water from the stream beyond the unexposed side .

In order to provide the specifier with accurate and concise specifications which conform to the requirements, a suggested format for firestopping and smoke seals is available for you to download from this server. Download generic American specifications now. It is recommended that this format be incorporated in the project specifications under a separate section.