



# Fire Protection Products



BROADCAST NO. 06-1018  
3M Fire Protection Products

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**TITLE: SMOKE BARRIERS and SMOKE PARTITIONS**

The term “Smoke Wall” is a common term within the industry that is used to define walls that must resist the passage of smoke. However this term is not consistent with the 2003 International Building Code (IBC). The two types of “Smoke Walls” that are defined by the code are Smoke Barriers and Smoke Partitions. The intent of this Technical Broadcast is to help clarify the definition of a “Smoke Wall” and to provide some basic information on the use of firestop and acoustical products within these types of assemblies.

The 2006 International Building Code requires that penetrations in Smoke Barriers be tested for air leakage under UL 1479. The air leakage rate of the penetration assembly shall not exceed 5.0 cfm per square foot ( $0.025\text{m}^3 / \text{s} \cdot \text{m}^2$ ) of penetration opening at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests. These requirements will apply to all Smoke Barriers for any jurisdictions that adopt this code.

Smoke Barriers are required in Institutional I occupancies as described below. In addition to these requirements, the 2006 International Building Code, Section 1007.6, also specifies **Areas of Refuge** in many other occupancies. Areas of Refuge are designated locations or rooms, such as elevator lobbies, where people who cannot evacuate quickly can assemble and await rescue from emergency responders. These areas are to be protected by Smoke Barriers and must also provide a means of safe access and exit. Please refer to Section 1007.6 of the 2006 IBC for more detail.

**SMOKE BARRIERS:**

The basic requirement for a Smoke Barrier, as defined in Section 709 of the 2003 International Building Code (IBC), is that the wall assembly must maintain a 1-hour fire-resistance rating. The Smoke Barrier must form a continuous membrane and any openings, joints or penetrations must be properly firestopped. Smoke Barriers are required in Institutional I occupancy as described in Section 308 and summarized below:

- Group I-1 includes:**
- Residential board and care facilities
  - Assisted living facilities
  - Halfway houses
  - Group homes
  - Congregate care facilities
  - Social rehabilitation facilities
  - Alcohol and drug centers
  - Convalescent facilities

**Group I-2 includes:** (Refer to Section 407.3 and 407.4 for additional information on Group I-2 Smoke Barriers)

- Hospitals
- Nursing homes
- Mental hospitals
- Detoxification facilities

**Group I-3 includes:** (Refer to Section 408.6 for additional information on Group I-3 Smoke Barriers)

- Prisons
- Jails
- Reformatories
- Detention centers
- Correctional centers
- Prerelease centers

**Group I-4 includes:** Day care facilities (providing 24-hour care for more than 5 children or adults)

Firestopping of Smoke Barriers can be accomplished using an appropriate tested and listed 3M Firestop system. The firestop system must have an L-Rating, which indicates the ability of the firestop system to prevent the passage of smoke. Electrical Switch and Outlet Boxes should also be sealed using a Moldable Putty Pad and a caulk or sealant (such as FD-150+ Caulk or FB 1000 NS Sealant) around the perimeter of the box at the gypsum/box interface to minimize the transmission of smoke.

In some cases these walls may also need to meet code requirements for Sound Transmission Class (STC), and in these situations the firestop system selected should also provide the appropriate acoustical benefits. The use of Moldable Putty Pads and caulk or sealant as described above for electrical switch and outlet boxes will also reduce sound transmission. For sealing of joints, a non-intumescent caulk or sealant such as FD-150+ Caulk or FB 1000 NS Sealant is recommended since these products offer greater flexibility and elongation performance (as well as excellent acoustical performance). Additional information on the STC rating of 3M Fire Protection Products can be found in Broadcast No. 05-1012 entitled: Acoustical Benefits of 3M Firestop Products.

## **SMOKE PARTITIONS:**

The basic requirement for a Smoke Partition, as defined in Section 710 of the 2003 International Building Code (IBC), is that the wall assembly must form a continuous seal and the space around penetrating items and in any joints or penetrations shall be filled with an approved material to limit the free passage of smoke. This type of wall construction is not very common. These walls may also need to meet code requirements for Sound Transmission Class (STC). The 2003 IBC does not specify the requirements of the approved fill material, therefore the determination of what constitutes an approved material will ultimately be up to the Authority Having Jurisdiction (AHJ). That being said, listed below are 3M's recommendations for a fill material:

1. The material should be a caulk or sealant that has an L-Rating associated with the product that indicates the ability of the product to prevent the passage of smoke.

2. For sealing of joints, a non-intumescent caulk or sealant such as FD-150+ Caulk or FB 1000 NS Sealant at a minimum depth of ½-inch is recommended since these products offer greater flexibility and elongation performance. These products also offer excellent acoustical performance.
3. Electrical Switch and Outlet Boxes should also be sealed using a Moldable Putty Pad and a caulk or sealant (such as FD-150+ Caulk or FB 1000 NS Sealant) around the perimeter of the box at the gypsum/box interface to minimize the transmission of smoke (and sound).
4. Additional information on the STC rating of 3M Fire Protection Products can be found in Broadcast No. 05-1012 entitled: Acoustical Benefits of 3M Firestop Products.

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