

BUILDING CODE REQUIREMENTS FOR FIREBLOCKS

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The 2003 International Building Code (IBC) and 2003 International Residential Code (IRC)* have established a means by which fire spread can be controlled within void spaces created within wood framed assemblies: **fireblocking**.

During a fire, flame and heated products of combustion can spread via paths of least resistance. Certain assemblies, particularly wood frame assemblies, result in concealed voids or cavities within walls, ceilings and attics, which not only affect the spread of fire, but also make suppression more difficult.

Fireblocking involves the use of field-installed building materials to prevent the movement of undetected flames and gases to other areas through such concealed spaces. Although such materials are not required to be tested for fire resistance, they are to be installed to slow fire migration, and to contain a fire until it can be suppressed.

Fireblocks should not be confused with firestops. Firestops are required by the codes when a higher degree of fire protection is required, particularly when penetrations through fire resistance rated assemblies are to be protected with a specific assemblage of materials that have been tested under severe fire conditions for a prescribed period of time. Unlike fireblocks, the purpose of a firestop is to prevent the spread of fire from one compartment to another through service and utility openings in floors, ceilings, roofs, and walls.

Fireblocks are required between floors, between a top story and a roof or attic space, in furred spaces or the cavities between studs in wall assemblies, at connections between horizontal and vertical spaces created in floor joists or trusses, soffits, drop or cove ceilings, combustible exterior wall finishes and architectural elements, and at openings for pipes, vents, ducts, chimneys, and fireplaces.

Fireblocks conform to innumerable configurations, depending on the dimensions and location of the concealed space. Section 717 of the IBC is a dedicated section that provides the description of

concealed spaces and fireblocking. Section 717.2.1 identifies the materials that are acceptable for use as fireblocks. Fireblocks can be constructed of materials such as 2 inch nominal lumber, structural wood panels, gypsum board, cement fiber board for larger fireblock, and batts or blankets of mineral wool or glass fiber, loose fill insulation, and caulks, sealants, and putties for smaller fireblocks. Similar text appears in the IRC.

Frequently, and inevitably, pipes, vents, ducts, and similar items penetrate fireblocks. The IBC requires that the integrity of the fireblock be maintained in 717.2.1. This may be accomplished by using an sealant, caulk or putty as permitted by 717.2.5. Such materials are required to be approved for such use, and may be either combustible and noncombustible per the specific code section and application. The use of a noncombustible sealant would address both conditions where either combustible or noncombustible are required, but not vice versa. Therefore, a noncombustible material would serve a broader range of uses than a combustible sealant, caulk or putty. (Noncombustibility shall be determined by testing to ASTM E 136 per other sections of the code).

All chimneys and fireplaces are required to be fireblocked by the code. Factory-built chimneys and fireplaces are required to be fireblocked by the code, but are also required to be tested in accordance with UL 103 and 127. Those test methods contain specific information pertaining to fireblocking beyond the code requirements.

As a side bar, the IBC also requires the use of such noncombustible sealants in other locations that are not related to fireblocks, but serve a similar purpose, such as small metallic membrane penetrations within certain size restrictions in section 712.3.2, exceptions 1.3 and 2.2 In penetrations of non-fire resistance rated assemblies, the IBC permits both combustible and noncombustible sealants to be used to limit the migration of fire and the products of combustion. The sealants used to protect noncombustible penetrations that connect not more than three stories in section 712.4.3.1 are required to be noncombustible. 712.4.3.2 permits any approved sealant on any type of penetration provided that the penetration does not connect more than two stories.

In all building codes, the designs and location for fireblocking are required to be indicated on the construction documents, and are subject to inspection before occupancy in new construction.

* The IRC is a building code for 1 and 2 family dwellings. All other construction, including all other types of residential housing regardless of construction type, falls under the IBC.

In addition to the requirements of IBC Chapter 717 for fireblocking, the following are other locations where fireblocks are used in the 2003 International Building Code*:

705.7	Noncombustible fireblock required where combustible framing intersects into hollow spaces of masonry or concrete fire wall.
707.2, exc 6	Shaft requirement may be eliminated for chimneys when fireblocked
708.4	Fireblocking required in fire partitions when not continuous between deck and ceiling
803.4, ftnote a	Interior finish (paneling over furring strips)
804.4.1	Subfloor construction
1406.2.4	Combustible exterior wall veneers
2111.11 and 2111.13	Fireplace clearances and fireblock requirements.
2111.19 and 2111.20	Chimney clearance and fireblock requirements. (IMC 801.18.4)

*The International Mechanical Code (IMC) contains similar requirements for chimneys and fireplaces and has a number of locations where it prohibits penetrations through fireblocking. However, where fireblocking is permitted, the IMC refers the to International Building Code for compliance.

In addition to the requirements of the IRC Section R602.8 for fireblocking, the following are other locations where fireblocks are used in the 2003 International Residential Code, the International Residential Mechanical Code, and the International Fuel Gas Code

R502.13	Wood frame construction required to be fireblocked
R602.4	Interior load bearing and non load bearing walls to be fireblocked same as exterior walls
R1001.15 R1001.16	Chimney clearance and fireblock requirements
R1003.11 R1003.13	Fireplace clearances and fireblock requirements
M1601.3.3	Duct installations shall be fireblocked
M1801.9	Chimneys and vents shall be fireblocked
G2425.15.4	Chimneys and vents (using fuel gas) shall be fireblocked