

Ignition Barriers and Thermal Barriers in Attics

International Residential Code (IRC) Requirements

The 2009 International Residential Code establishes prescriptive and alternative performance requirements for spray polyurethane foam (SPF) plastic insulation when installed in residential attic applications to ensure adequate performance of foam in a fire.

Requirement	Key Conditions	Code
No Requirement	1. Attic access not required.	R807.1
Ignition Barrier Requirement	1. Attic access required: $\geq 30"$ high ¹ and $\geq 30\text{ft}^2$ 2. The space is entered only for the purposes of repairs or maintenance.	R807.1 R316.5.3
Thermal Barrier Requirement	1. Attic access required: $\geq 30"$ high ¹ and $\geq 30\text{ft}^2$ 2. The space is entered only for the purposes of repairs or maintenance.	R807.1 R316.5.3

1. Attic height is measured from the top of the ceiling framing members to the underside of the roof framing members

Meeting Code Requirements: There are two ways to meet the requirements for an ignition barrier or thermal barriers. The first way is the prescriptive requirements listed in the IRC and presented below. The second is based on performance testing of an assembly.

Thermal Barrier:

Prescriptive: 1/2" gypsum wallboard (R316.4)

Performance: An assembly tested in accordance with NFPA 286 and ICC-ES AC377 with the acceptance criteria of R302.9.4 (required full 15-minute burn). This is a performance test that evaluates the foam and possibly other products in their end-use configuration. Passing of this test depends on the chemistry of the foam and in many cases protective coatings over the foam. Tests should be conducted by third-party certified laboratories.

Ignition Barrier:

Prescriptive: (R316.5.3)

- | | |
|---|-----------------------------|
| 1 1/2-inch-thick mineral fiber insulation; | 3/8-inch gypsum board; etc. |
| 1/4-inch-wood structural panels (OSB or plywood); | 3/8-inch particleboard; |
| Corrosion resistant steel 0.016 inch | 1/4-inch hardboard; |

Performance: Same as Thermal Barrier but the testing requirement is reduced to the first five minutes of the testing protocol.

WHAT IS A STORAGE ATTIC? The IRC does not define a "storage attic." This creates a wide range of interpretations and confusion among design professionals, contractors, and builders as well as code officials. The following are key considerations to determine if an attic is a "storage attic."

- 1. What is declared on the plan** – The intended use of an attic has implications beyond the proper protection of foam, including structural design of the space. The truss designer may or may not design the bottom cord of the trusses for limited storage as per Table R301.5. If the trusses are not designed to carry a higher live load (20 lb/ft²) this indicates that the space cannot be used for storage.
- 2. Floor Sheathing** – If the floor is fully sheathed – the space is probably intended to be used for storage. Exception: If there is mechanical equipment in the attic, the IRC (M1305.1) requires a 24" minimum catwalk from the attic access to the equipment and a 30" x 30" work platform in front of the equipment for service technicians. Most code officials do not count this required flooring as floored attic. Some code officials require this flooring to be permanently labeled in letters $\geq 2"$ high "NOT FOR STORAGE"
- 3. Ease of access** – If the space is accessed by pull-down or permanent stairs this indicates that the space may be used for storage.

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IB = Ignition Barrier

TB = Thermal Barrier

● = Duct Work

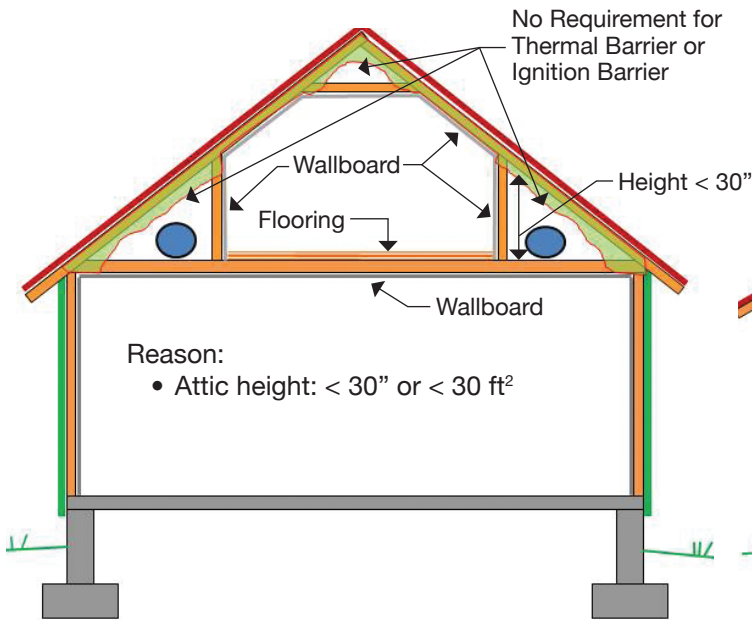


Figure 1. IB or TB Not Required

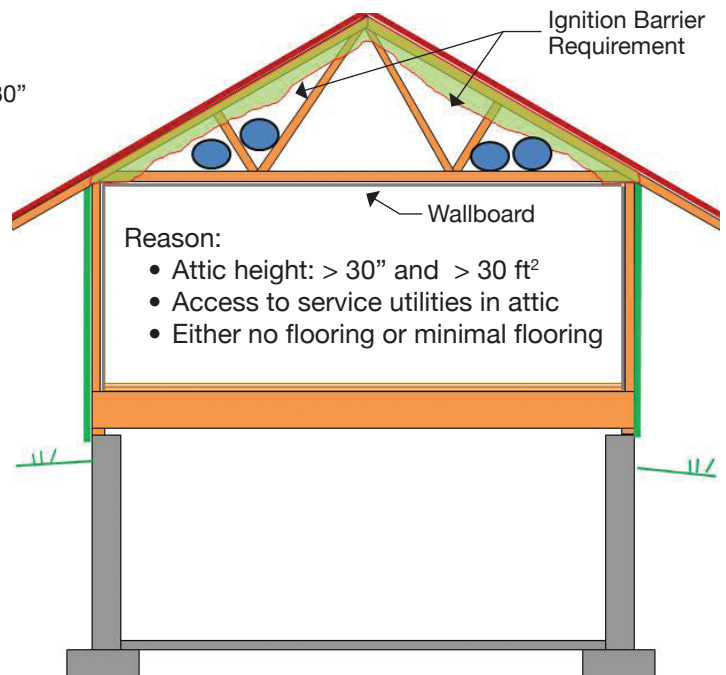


Figure 2. IB Required

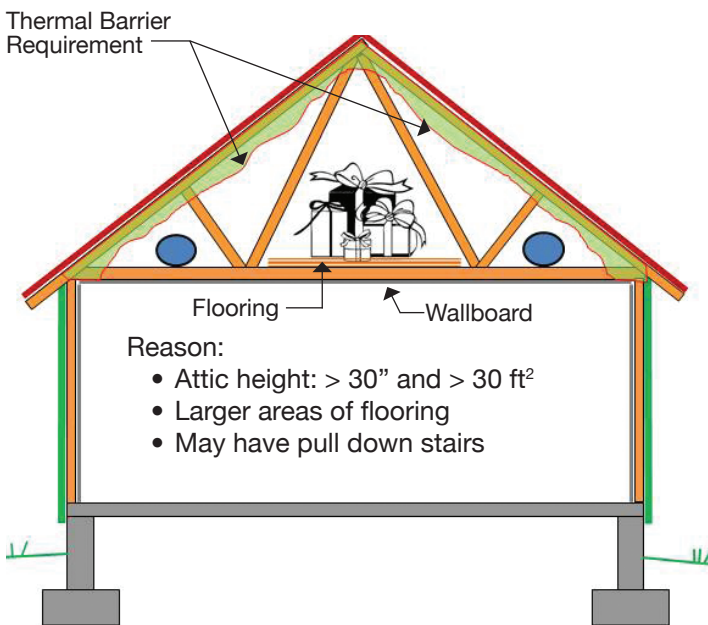


Figure 3. TB Required

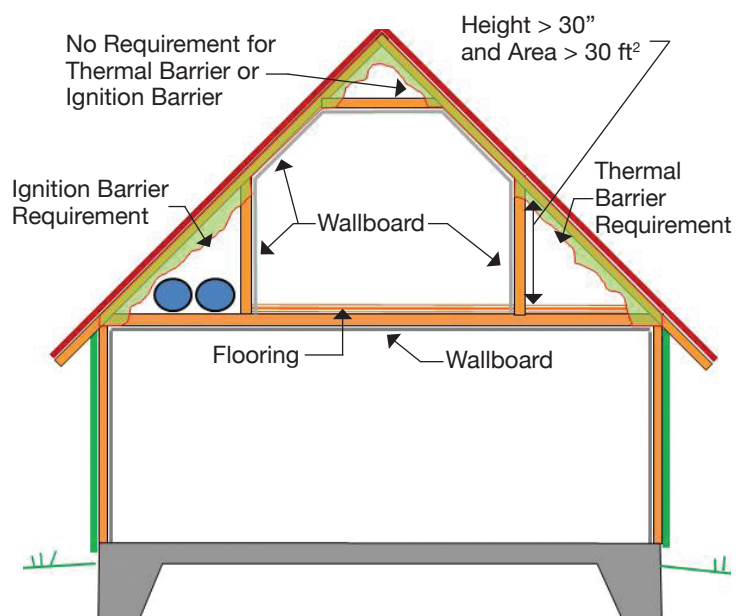


Figure 4. Mix of Requirements