



FIRE PROTECTION OF I-JOIST FLOORS WITH FACTORY-APPLIED SOLUTIONS

Q: What does the Code require for minimum protection of floor assemblies?

A: Section R302.13 of the **2015 International Residential Code (IRC)** (Section R501.3 in the 2012 IRC) states the following:

R302.13 Fire protection of floors. Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a ½ -inch (12.7 mm) gypsum wallboard membrane, ⅝ -inch (16 mm) wood structural panel membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaires, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted.

Exceptions:

1. Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with Section P2904, NFPA 13D, or other approved equivalent sprinkler system.
2. Floor assemblies located directly over a crawl space not intended for storage or fuel-fired appliances.
3. Portions of floor assemblies shall be permitted to be unprotected where complying with the following:
 - 3.1. The aggregate area of the unprotected portions does not exceed 80 square feet (7.4 m²) per story
 - 3.2. Fireblocking in accordance with Section R302.11.1 is installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
4. Wood floor assemblies using dimension lumber or structural composite lumber equal to or greater than 2-inch by 10-inch (50.8 mm by 254 mm) nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance.

Q: Can Prefabricated Wood I-joists be used without membrane protection?

A: Yes. Section R302.13, Exception 4, of the 2015 IRC allows “other approved floor assemblies demonstrating equivalent fire performance.”

Q: Are there established criteria by which equivalent fire performance can be demonstrated for I-joists?

A: Yes. For I-joists utilizing factory-applied solutions, ICC-ES AC14 published by ICC Evaluation Services, a subsidiary of the International Code Council, has been widely accepted as the criteria by which the equivalency is established.

Q: What requirements are included in ICC-ES AC14?

A: ICC-ES AC14 includes:

- Fire testing utilizing an E119 time/temperature exposure curve
- Verification of the durability of the fire protection solution
- Determination of corrosion effects of the fire protection solution
- The effect of fire protection solution on I-joint mechanical properties

REPRESENTING THE ENGINEERED WOOD INDUSTRY

Q: Does ICC-ES AC14 require qualification, quality control, and third-party inspection of fire-protected I-joists?

A: Yes. Section A4.4.2.4 of ICC-ES AC14 states the following:

...The fire protection materials shall be manufactured and factory-applied under an approved quality control program in accordance with Section A3.0. Requirements for the quality control of fire protection materials and factory application shall be based upon the production and testing of qualification material, and shall include provisions regarding composition, verification of chemical formulation, product handling and storage, surface preparation, application rates, etc. Field-applied paints, coatings or treatments are outside the scope of this evaluation report.

Section A3.1.2 of ICC-ES AC14 requires "...inspections by ICC-ES or a properly accredited inspection agency..."

Q: What questions should be asked of the I-joist manufacturer supplying a product with equivalent fire performance?

- A:**
- 1) Is the fire protection solution factory-applied?**
 - 2) Is there a code evaluation report issued by an ISO/IEC 17065 accredited agency?**
 - 3) Who is the Qualified Agency overseeing the application of the fire protection solution?**
 - 4) Is the name or logo of the Qualified Agency overseeing the application of the fire protection solution clearly marked on the product?**