Facts You Should Know About Insulation and Fire Performance

A Practical Factsheet for Construction Professionals

Performance Claims: Separating Fact from Fiction

Spray foam and cellulose insulation products are often marketed with claims like:

- *Achieves a Class A fire rating, meeting the same standard as the most fire-resistant materials on the market.*
- *Formulated to self-extinguish, spray foam stops fire in its tracks—giving occupants more time to escape.*
- *Treated with natural borate fire retardants, cellulose insulation resists flame spread and provides a safer building environment.*

What ASTM E84 Class A Means—And What It Doesn't Mean

ASTM E84 testing only measures surface flame spread and the smoke-developed index. It does not measure ignition temperature, heat release rate, smoke toxicity, fire resistance ratings, or structural failure under fire conditions. This allows combustible materials—such as spray foam and cellulose—to achieve the same “Class A” label as noncombustible materials—such as unfaced fiberglass and mineral wool—even though the comparative performance, especially with respect to the quantity of smoke produced, is very different.

U.S. Codes define "Class A" ratings as: “Class A = flame spread index 0–25; smoke-developed index 0-450.” While unfaced fiberglass and mineral wool typically have smoke-developed levels of under 50, spray foam products routinely have assigned smoke-developed ratings that are significantly higher, even as high as 450. Specifiers and contractors should not treat a “Class A” rating as a complete picture of fire performance.

The Limits of "Self-Extinguishing" and Borate Treatment Claims

While under controlled conditions, some spray foam formulations are designed to stop burning if a small flame source is removed (typically less than 2.5 kW). The behavior may not reliably translate to real fire scenarios. In an actual building fire, spray foam is exposed to sustained heat and flame from multiple sources—conditions under which self-extinguishing properties may not hold. Spray foam can ignite, sustain combustion, accelerate flashover, and release dense, toxic smoke. The self-extinguishing characterization is based on small-scale bench testing, not assembly-level fire performance. That is why codes usually require it to be covered with a thermal barrier, typically drywall.

Cellulose insulation is treated with borate compounds to slow ignition and reduce flame spread—and these treatments do provide meaningful fire retardancy compared to untreated paper. However, borate treatment does not make cellulose noncombustible. Cellulose is made from recycled paper and can smolder, sustain combustion, and contribute to hidden fire spread within wall cavities, particularly when exposed to prolonged heat or when retardant concentrations are uneven.

Fiberglass and Mineral Wool Insulation Are Noncombustible

Unfaced fiberglass and mineral wool insulation are naturally noncombustible, require no chemical fire retardants, and do not contribute fuel to a fire. Both are “Class A” rated and maintain their structure at high temperatures—fiberglass melts at 1,300°F and mineral wool at over 2,000°F. Both are widely recognized as acceptable fire-blocking materials in wood-framed construction.[1]

Note: Kraft-faced or foil-faced fiberglass may be required to be covered with drywall or other code-approved finish material after installation.

1. UL Solutions, (November 29, 2023). “The Code Authority Q&A: Fireblocking”, UL Solutions, https://www.ul.com/news/code-authority-qa-fireblocking

2. North American Modern Building Alliance, "NFPA 285 Testing and Design Information: History and Roots," July 13, 2003,https://www.modernbuildingalliance.us/2023/07/13/nfpa-285-history-and-roots/

What's the Risk of Buying into Fire Performance Claims?

Risk: Assembly-level failures

△ In NFPA 285 testing—which evaluates how fire spreads across full exterior wall assemblies—products with identical ASTM E84 ratings can behave very differently. Spray foam can only be used if the specific assembly is tested under NFPA 285 because it is combustible, has a high heat release rate, and can accelerate flame progression.[2]

Risk: Code compliance exposure

△ Spray foam is required to be protected by a thermal or ignition barrier—typically drywall or an intumescent covering—by code. Specifying or installing spray foam without the required thermal or ignition barrier creates liability exposure for contractors and designers.

Risk: Occupant safety

△ Marketing claims that imply a product is "fire safe" can give building owners and occupants an inaccurate picture of real-world fire performance. Marketing combustible insulation materials as “fire-resistant” can be misleading. While these materials may delay ignition or the rate of fire spread, by code, fire-resistance is not determined by ASTM E84 or UL 723. Fire resistance is determined for assemblies using ASTM E119 or UL 263.

How Can You Verify the Claims Are Real?

Fire performance claims are only meaningful when backed by assembly-level test data—not material-level ratings alone. When evaluating a product, look for:

- ASTM E84 test reports that show the full flame spread index and smoke-developed index—not just a “Class A” label. Pay particular attention to the smoke-developed index; noncombustible materials like unfaced fiberglass and mineral wool typically have an SDI of less than 50, while spray foam products can have an SDI as high as 450.
- NFPA 285 compliance for the specific exterior wall assembly you are building. Ask whether the product has been tested in a full assembly—not just whether the material passed a bench test.
- ASTM E136 noncombustibility test reports for any product marketed as noncombustible.
- ASTM E119 or UL 263 fire-resistance-rated assembly listings for any product where fire resistance—not just flame spread—is claimed.
- Combustion byproduct documentation identifying gases and smoke produced during a fire, particularly for spray foam.
- Thermal or ignition barrier requirements clearly identified in the product specification, with confirmation they are included in the proposed assembly.

Quick “Jobsite Checklist”

Before specifying or installing insulation products that make fire performance claims, request:

- ✓ ASTM E84 results for flame spread and smoke-developed index values (e.g., less than 50) rather than simply "Class A" designation
- ✓ NFPA 285 code listing for the specific wall assembly being built
- ✓ ASTM E136 noncombustibility reference if noncombustibility is claimed in product literature
- ✓ Documentation of required thermal or ignition barrier, confirmed as part of the assembly specification
- ✓ ASTM E119 or UL 263 assembly listings, if fire resistance is claimed
- ✓ Confirmation of combustion byproducts for any combustible insulation product

Watch for Red Flags

- “Class A” fire rating cited without the underlying smoke-developed index
- “Self-extinguishing” claims without specifying the flame size
- Fire-resistance claims based on chemical treatment, without a corresponding ASTM E119 or UL 263 assembly listing
- Ambiguity between “fire-resistant” and “fire-retardant”
- Statements equating a product's “Class A” rating with its overall fire performance
- “Slows flame spread” claims presented without supporting test data
- No NFPA 285 test results provided