



ASTM E-84-04 SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS AND FOAM-IN-PLACE INSULATIONS

Frequently Asked Questions:

1. Why is the ASTM E-84 standard important?

Because it's the primary standard that determines whether or not a specific brand of foam (or any other building material) will pass the flammability portion of the building code requirements.

2. In simple terms, describe the E-84 test...

A sample of foam (or any other building material) is placed in the ceiling position of a long tunnel. The sample size is typically 2 feet by 24 feet by the thickness (up to 4 inches). A flame is blown through the tunnel in contact with the underneath side of the sample for a period of 10 minutes. Measurements are made to compare the burn rate and smoke generated of the sample to a standard based on red oak.

3. How are the results classified?

It's simple. Materials are classified based on their performance with the **best-performing materials** achieving a **Class A or Class I rating** followed by Class B (Class II) and finally, Class C (Class III). These classifications are set forth in the building codes and in the *NFPA 101 Life Safety Code*.

4. Is the thickness of the sample tested important?

Yes. Most building codes require the sample to be tested at either the maximum thickness intended for use in the building OR the maximum thickness allowed by the test apparatus, whichever is greater. **Foam insulations for concrete masonry (CMU) structures should always be tested at a nominal thickness of 4 inches.**

5. Can changing the sample thickness alter the results?

Yes. Some foam insulations achieve worse results as the sample thickness increases. That's why some foams are tested at very thin quantities like one inch or less. Chances are they won't achieve the same result at a higher thickness.

6. Are there other factors that could invalidate the results?

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Yes, anything that makes the sample not “truly representative of the materials for which test results are desired¹.” Some examples include:

- Applying the results from one brand of foam to a foam made with a different resin
- Switching sources of resin supply without retesting
- Significantly altering the foaming agent without retesting
- Substituting nitrogen for compressed air when making the test samples
- Adding, deleting or changing any “key ingredients”—ingredients which are used at levels higher than typically 1%. An example would be leaving out “water conditioners” like urea

7. Aren’t all foam-in-place insulations the same in terms of flammability performance?

NO. Recently published results confirm that at least one brand has a less desirable Class B rating²

8. What are the results for C Foam Masonry Foam Insulation?

C Foam Masonry Foam Insulation achieved a **Class I or Class A rating, the highest possible**, when tested by an independent, certified lab at the maximum thickness allowed by the test apparatus³.

C Foam Masonry Foam Insulation is currently the only “dry” foam-in-place insulation for commercial CMU applications with a Class I or Class A rating.

¹ASTM E-84-01 and Subcommittee E05.22 Member(s)

² ICC Legacy Report No. 2319 (Issued August 1, 2003)

³ CTC Report No. 02-08067