Fire Safety & Foam Sheathing Use

The Foam Sheathing Committee of the American Chemistry Council (FSC) focuses on using reliable science in support of sound design and installation of foam sheathing. Member companies include: Atlas Roofing, Dow, GAF, Hunter Panels, Johns Manville, Kingspan Insulation, Owens Corning, and RMAX.

The foam sheathing industry has a long-standing history of advocating for the safe use of foam plastics through U.S. model codes and standards, in particular IBC Chapter 26 and NFPA 285. These provisions together with other fire-safety requirements of the IBC have served to provide a sound basis for reliable use and safe performance of foam sheathing.

Photo courtesy of Jesse Beitel, Jensen Hughes

Recent Widely Reported Exterior Fires Support Value of IBC & NFPA 285 Compliant Design & Installation

Current Code Requirements are Effective

30 Years of Experience has Demonstrated that NFPA 285 is Effective

Renew Emphasis on Compliance and Enforcement

A FRESH LOOK AT FIRE SAFETY

In view of the Grenfell, Torch Tower, and other international fire events, it is important for the building safety community to take a fresh look at the U.S. codes and standards environment compared to those abroad. While these events have raised interest in the use of combustible materials on exterior walls of buildings, U.S. codes and standards for safe use of foam plastics are particularly robust and have performed well due to an effective combination of building and fire code requirements.

CURRENT CODE REQUIREMENTS ARE BOTH EFFECTIVE AND USABLE

Strict regulations for foam plastics in U.S. building and fire codes have been in place since 1976. Current requirements for the use of foam plastic insulation in exterior walls for commercial buildings of Type I, II, III and IV construction of any height are covered in Section 2603.5 of the IBC. These provisions represent some of the most comprehensive, stringent, and effective fire-safety requirements for use of a combustible material on exterior walls of buildings. [1] [2] [3] [4] A key component of Section 2603.5 is the two-story wall fire test known as the NFPA 285 consensus standard. This full-scale test has proven to be a predictable indicator of acceptable fire performance since 1988. As evidenced by exterior fire events reported internationally, there is an absence of adverse life-safety protection consequences for buildings properly designed and constructed with (1) sprinklers and (2) either NFPA 285 and IBC Chapter 26 compliant exteriors (or equal) or non-combustible exteriors. [5] [6] [7]

American Chemistry Council

Foam Sheathing Committee

ENGINEERING EVALUATIONS ARE A CRITICAL COMPONENT

Successful experience in the U.S., as described above, has included appropriate use of the NFPA 285 assembly test data directly and together with small-scale tests and engineering analysis, to evaluate safe substitutions of materials through engineering evaluations by fire engineering experts. Engineering evaluations are necessary because:

- They provide a basis for material substitutions that do not add risk to the tested NFPA 285 assemblies.
- It is impractical to separately test the thousands of potential combinations of materials each as a separate assembly test variation.

COMPLIANCE AND ENFORCEMENT FOCUS

When the reported international fire events are viewed in the context of the effectiveness and reliability of U.S. codes, which govern the use of foam plastics in exterior walls, clearly a crucial focus needs to be on compliance and enforcement. This is a very important and appropriate response. Refer to key resources listed below.

Resources

To promote compliance and enforcement, FSC has developed a resource for use of foam sheathing materials building envelopes at www.continuousinsulation.org and a list of NFPA 285 compliant assemblies by FSC member manufacturers is available at www.drjengineering.org/system/files/drj/ter/node/56/drr120204foamintypeiivconstruction.pdf

References

[1] Beitel, J., Spiewak, B., Code and Fire Test Requirements for Foam Plastic Insulation Used in Exterior Walls, ICC Building Safety Journal, August 2010, http://bsj.iccsafe.org/august/features/code_and_fire.html

[2] DrJ Engineering, Foam Plastic Insulating Sheathing Products in Exterior Walls of Type I, II, III or IV Construction, January 2016, www.drjengineering.org/system/files/drj/ter/node/56/drr120204foamintypeiivconstruction.pdf

[3] Beitel, J. Fire Requirements for Foam Plastic Insulation and WRBs in Exterior Walls, Durability + Design, 2012, www.durabilityanddesign.com/webinars/

[4] Crandell, J.H., Continuous Insulation for Code-Compliant, High-Performance Exterior Walls, RCI Interface, January 2012, www.rci-online.org/wp-content/uploads/2012-01-crandell.pdf

[5] Wieczorek, C.J., Grenfell: The Perfect Formula for Tragedy, FM Global, 2017, www.fmglobal.com/insights-and-impacts/2017/grenfell-tower-white-paper

[6] BRANZ, Fire Performance of Exterior Claddings, Fire Code Research Reform Program, April 2000. http://www.abcb.gov.au/Resources/Publications/Research/FCRC-Fire-Performance-of-Exterior-Claddings

[7] White, N. and Delichatsios, M. (2014). Fire Hazards of Exterior Wall Assemblies Containing Combustible Components, Fire Protection Research Foundation, www.nfpa.org/foundation