

# Tech Hotline

**No. 0415-BSc**

## NFPA 285 for Testing of Wall Assemblies with Combustible Components

The use of NFPA 285<sup>1</sup> as a means to gain acceptance of wall assemblies with combustible components in noncombustible Type construction (Types I - IV) has become more prevalent in recent years based on requirements for testing of WRB's (Water-Resistive Barriers) in Chapter 14 of the 2012 IBC (International Building Code). The flow chart on page 2 is intended to facilitate determination of when testing is necessary. It is current to the 2015 IBC and is also applicable where the 2009 or 2012 IBC are in effect.

Determining the necessity for NFPA 285 testing prior to 2012 was relatively straightforward. Testing was for the most part needed only for foam-plastic based wall assemblies, while certain single story structures and buildings of Combustible (Type V) construction were exempt (and still are). However, in 2012 the IBC added requirements for combustible WRB's in Section 1403.5:

***1403.5 Vertical and Lateral Flame Propagation.*** Exterior walls on buildings of Type I, II, III, or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible water-resistive barrier shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.



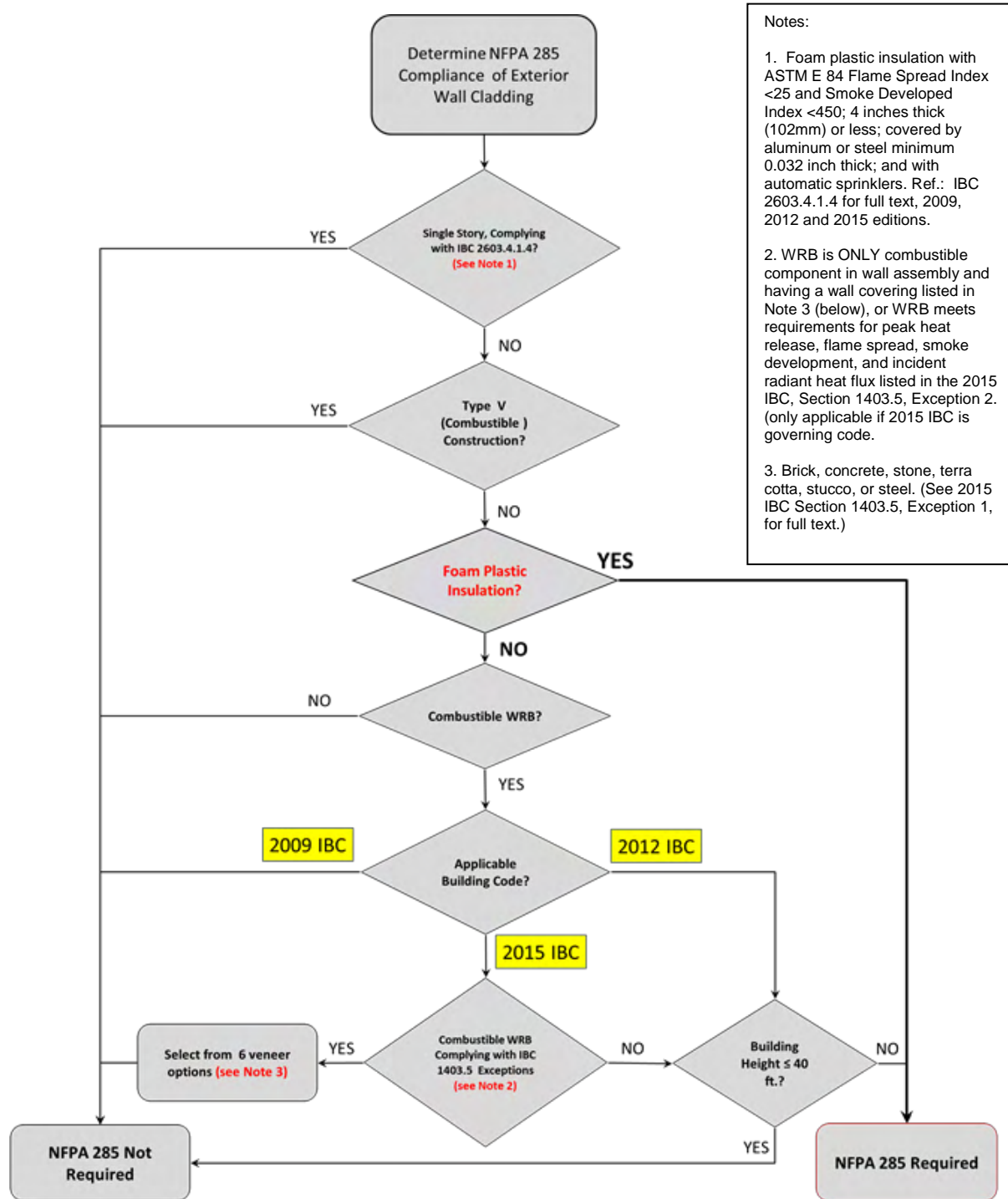
Photo 1. NFPA 285 testing of brick veneer cavity wall with foam plastic and a combustible WRB on gypsum sheathing over steel frame wall construction

This requirement carries over into the 2015 IBC, however, the 2015 code permits several exceptions, use of a "..... wall covering of brick, concrete, stone, terra cotta, stucco, or steel with minimum thickness in accordance with Table 1405.2," or, use of a WRB with a specified maximum combustibility (ASTM E 1354<sup>2</sup>), flame propagation and smoke development (ASTM E 84<sup>3</sup>).

Analysis of fire test results by a qualified fire protection engineer may be used to extend NFPA 285 test results to other assemblies where changes to the tested NFPA 285 assembly would be judged to perform equal to or better than the tested assembly. This allows a manufacturer to gain acceptance of several wall assemblies. Such analysis is reflected in ICC ESR 1233<sup>4</sup>, Tables 1 and 2, where the results from a single test were extended to other wall coverings and back-up wall construction.

1. National Fire Protection Association Standard 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*
2. American Society of Testing and Materials Standard E 1354, *Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*
3. American Society of Testing and Materials Standard E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*
4. International Code Council Evaluation Service Report 1233, *StoGuard with Gold Coat, StoGuard with EmeraldCoat, and StoGuard VaporSeal Water-Resistive Barriers and StoEnergy Guard (StoGuard with Continuous Insulation)*

Figure 1. Use this flow chart as a roadmap of sorts to assist in determining when NFPA 285 testing is necessary.



Notes:

1. Foam plastic insulation with ASTM E 84 Flame Spread Index <25 and Smoke Developed Index <450; 4 inches thick (102mm) or less; covered by aluminum or steel minimum 0.032 inch thick; and with automatic sprinklers. Ref.: IBC 2603.4.1.4 for full text, 2009, 2012 and 2015 editions.
2. WRB is ONLY combustible component in wall assembly and having a wall covering listed in Note 3 (below), or WRB meets requirements for peak heat release, flame spread, smoke development, and incident radiant heat flux listed in the 2015 IBC, Section 1403.5, Exception 2. (only applicable if 2015 IBC is governing code.)
3. Brick, concrete, stone, terra cotta, stucco, or steel. (See 2015 IBC Section 1403.5, Exception 1, for full text.)