



Code Compliance Research Report

- Subject:** DC 315 Alternate Ignition Barrier
- Date:** January 14, 2014
- Materials:**
1. NCFI Polyurethanes Sealite™ 12-002 Open-Cell Spray Polyurethane Foam (SPF)
 2. International Fireproof Technology DC 315 Fireproof Paint
- Test Standard:** AC 377 Appendix X Testing for Use in Attics and Crawl Spaces with Alternatives to Code-prescribed Ignition Barrier (modified NPFA 286)

Summary:

Based on the test data submitted and the reference documents, NCFI Sealite SPF (spray polyurethane foam) at a maximum thickness of 12 inches in walls (and other vertical surfaces) and 14 inches in ceilings (including the underside of other overhead surfaces) coated with 4 wet mils (or 3 dry mils) of DC 315 coating qualifies under 2006 IBC, 2006 IRC, 2009 IBC, 2009 IRC, 2012 IBC and 2012 IRC as an alternative assembly to covering the spray foam with a prescriptive ignition barrier in attics and crawl spaces.

Limitations: AC 377, Appendix X requires the following limitations when tested under that procedure:

1. Entry to the attic or crawl space is only to service utilities, and no storage is permitted.
2. There are no interconnected attic or crawl space areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with the 2012 IRC Section R806.5, 2009 IRC Section R806.4. Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.
5. The foam plastic insulation is limited to the maximum thickness and density tested.
6. Combustion air is provided in accordance with 2012 and 2009 IMC Section 701, or 2006 IMC Sections 701 and 703.
7. The installed coverage rate or thickness of coatings, if part of the insulation system, shall be equal to or greater than that which was tested.

Labeling Requirements:

R-component for Sealite 12-002 insulation must be identified with the manufacturer's name (NCFI Polyurethanes), address and telephone number; the name of the insulation product (Sealite); the flame spread and smoke developed indices; and the name of the third-party inspection agency.

Discussion:

The 2012 IBC and IRC (and earlier editions) permit the use of ignition barriers in attics and crawl spaces in lieu of thermal barriers provided access is required by the building code and entry is limited to service of utilities (IBC) or repair or maintenance (IRC). The codes prescribe several ignition barrier materials and thicknesses which may be used in lieu of the thermal barrier. (Note: A thermal barrier must still be provided between the foam plastic insulation and the interior of the building; the placement and use of ignition barriers and alternatives are limited to the surfaces of the foam plastic insulation facing the space within the attic or crawl space.)

There is no method within the various building codes to qualify alternative (i.e., non-prescriptive) ignition barriers. Hence, their qualification falls within the Special Approval (IBC) or Specific Approval (IRC) sections of the codes. ICC Evaluation Service has promulgated a widely accepted test method for alternates to prescriptive ignition barriers in Appendix X of Acceptance Criteria AC 377: "Testing for Use in Attics and Crawl Spaces with Alternatives to Code-prescribed Ignition Barrier." Appendix X uses a modified version of NFPA 285, a room corner test.

DC 315 Fireproof Paint and NCFI Sealite SPF were tested together at QAI Laboratories (Tulsa, OK) on December 5, 2013 in accordance with Appendix X. The tested system exceeded the passing requirements as defined in Appendix X. The thicknesses of the various tested components are listed in Table 1.

Table 1
Tested Material Thicknesses

Material	Location	Thickness
NCFI Sealite	Ceiling	14 inches
	Walls	12 inches
DC 315 Fireproof Paint	Ceiling and walls	4 mils WFT 3 mils DFT

Application Rate Calculations:

To achieve 4 mils WFT (wet film thickness), the theoretical rate of application is:

$$Rate = \frac{WFT}{1604} = \frac{4}{1604} = 0.0025 \frac{gal}{ft^2}$$

Equivalent expressions of the theoretical application rate to achieve 4 mils WFT are:

Theoretical Application Rate	Units
0.25	gal / 100 ft ²
400	ft ² / gal
5 gallons @ 4 mils WFT covers 2000 square feet	

NOTE: The above theoretical application rates must be increased for actual application rates to account for spray foam surface texture, overspray and miscellaneous losses. Adjustments must be based on job site conditions and individual practices. Adjustments of up to 50% are common.

Conclusions:

International Fireproof Technology DC 315 Fireproof Paint applied at a thickness of 4 mils wet film thickness or 3 mils dry film thickness to NCFI's Sealite open-cell SPF **qualifies** under the 2006, 2009 and 2012 International Building Code and the 2006, 2009 and 2012 International Residential Code as a non-prescriptive alternate ignition barrier for use in attics and crawl spaces. Limitations specified within AC 377, Appendix X, Section X2.2 apply.

Respectfully submitted,
Deer Ridge Consulting, Inc.



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President

Reference Documents:

1. 2006, 2009 and 2012 International Building Code
2. 2006, 2009 and 2012 Residential Building Code
3. AC 377 Acceptance Criteria for Spray-Applied Foam Plastic Insulation
5. QAI Test Report No. TJ1615, January 10, 2014.
6. DC 315 Technical Data Sheet