



DrJ Research Report

DRR 1202-01

NFPA 285 Tested Assemblies
Using Foam Plastic Insulating Sheathing
Products

**Foam Sheathing Committee
(FSC) Members**

Code Compliance Process:

**Foam plastic insulating
sheathing (FPIS) when used as
insulating material in exterior
wall assemblies**

Issue Date:

May 7, 2012

Revision Date:

October 19, 2020



REPORT HOLDER
INFORMATION:

Foam Sheathing Committee (FSC) Members¹

fsc.americanchemistry.com/Members

continuousinsulation.org

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00 - Thermal Insulation

SECTION: 07 24 00 - Exterior Insulation and Finish Systems

SECTION: 07 25 00 - Water-Resistive Barriers/Weather Barriers

SECTION: 07 27 00 - Air Barriers

1 CODE COMPLIANCE PROCESS EVALUATED²

1.1 Foam plastic insulating sheathing (FPIS) when used as insulating material in exterior wall assemblies

1.1.1 FPIS from manufacturers listed in Table 1.

2 APPLICABLE CODES AND STANDARDS^{3,4}

2.1 Codes

2.1.1 *IBC—12, 15, 18: International Building Code®*

2.1.2 *IRC—12, 15, 18: International Residential Code®*

2.2 Standards and Referenced Documents

2.2.1 *NFPA 285: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components*

3 PERFORMANCE EVALUATION

3.1 *IBC Section 2603.5* Vertical and Lateral Fire Propagation contains a provision that requires wall assemblies in multi-story Type I, II, III, and IV buildings that contain foam plastic insulation products to be tested in accordance with *NFPA 285 (IBC Section 2603.5.5)*.

3.1.1 One-story buildings are an exception and must comply with *IBC Section 2603.4.1.4*.

¹ The Foam Sheathing Committee (FSC) of the American Chemistry Council sponsors research and tools to support the reliable, efficient, and economic design and installation of foam sheathing. This report is developed by DrJ from a grant provided by FSC. Learn more about foam sheathing at continuousinsulation.org.

² Building codes require data from valid [research reports](#) be obtained from [approved sources](#). Work of licensed [registered design professionals](#) (RDPs) meets the [code requirements](#) for approval by the [building official](#).

Building official approval of a licensed RDP is performed by verifying the RDP and/or their business entity complies with all professional engineering laws of the relevant [jurisdiction](#). Therefore, the work of licensed RDPs is accepted by [building officials](#), except when plan (i.e. peer) review finds an error with respect to a specific section of the code. Where this DRR is not approved, the [building official](#) responds in writing stating the reasons for [disapproval](#).

For more information on any of these topics or our mission, product evaluation policies, product approval process, and engineering law, visit drjengineering.org or call us at 608-310-6748.

³ Unless otherwise noted, all references in this DRR are from the 2018 version of the codes and the standards referenced therein (e.g., *ASCE 7*, *NDS*, *ASTM*). This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein.

⁴ All terms defined in the applicable building codes are italicized.



- 3.1.2 Wall assemblies where the foam plastic insulation is covered on each face by not less than 1-inch thickness of masonry or concrete are an exception when meeting one of the following:
 - 3.1.2.1 There is no airspace between the insulation and the concrete or masonry.
 - 3.1.2.2 The insulation has a flame spread index of not more than 25 as determined in accordance with *ASTM E84* or *UL 723* and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch.
- 3.2 As of the revision date of this research report, the companies listed in Table 1 have evaluation reports for the products listed.
- 3.3 The products in Table 1 are approved for use in exterior walls of buildings of Type I, II, III, or IV construction of any height and can be used in assemblies requiring *NFPA 285* tests as specified in the individual reports.
- 3.4 This research report is a code compliance evaluation report that is intended to supplement existing product certifications and is intended only to provide information on *NFPA 285* assemblies that have been approved for the manufacturers listed in Table 1 of this report. For the purposes of this report, DrJ is not certifying the products, but rather is providing the user with direction on where they can obtain specific information for the products shown. For specific details on the assemblies found in Table 1, see the manufacturer's code evaluation reports or listings.
- 3.5 Any code compliance issues not specifically addressed in this section are outside the scope of this DRR.
- 3.6 Any engineering evaluation conducted for this DRR was performed on the dates provided in this DRR and within DrJ's professional scope of work.



4 APPLICATIONS

4.1 NFPA 285 Testing Assemblies

- 4.1.1 The following listing contains the assemblies of the manufacturers who have assemblies that are compliant with the provisions of IBC Section 2603.5.5.
- 4.1.2 In all cases, consult the manufacturer for the specific tested assembly type and installation requirements.

TABLE 1. FOAM SHEATHING

Report Number	Manufacturer	Product(s)
TER 1306-03	Atlas Roofing Corporation	EnergyShield® Pro, EnergyShield® Pro 2, EnergyShield® CGF Pro
ULEX.R16529	Atlas Roofing Corporation	ThermalStar® CVT, ThermalStar® LCi, ThermalStar® Chrome
ESR-4431 ULEX.R5817-02	BASF Corporation	Neopor®
ESR-2142	DuPont de Nemours, Inc.	Styrofoam™ Brand Insulation Boards
ESR-1659	DuPont de Nemours, Inc.	Thermax™ Insulating Sheathing
	DuPont de Nemours, Inc.	Thermax™ Total Wall System
TER 1402-01	Hunter Panels	Xci Foil (Class A), Xci 286, Xci CG (Class A), Xci Ply (Class A)
TER 1402-02	Hunter Panels	Xci Foil, Xci CG, Xci Ply
TER 1407-05	Kingspan Insulation, LLC	GreenGuard® Insulation Boards: CM, SL and SB
TER 1212-03	Rmax	ECOMAXci® Wall Solution
ROL/BI 30-03 , TER 1309-03	Rmax	Durasheath®, Thermasheath®
TER 1309-03	Rmax	Thermasheath®, Thermasheath®-XP, TSX-8500, TSX-8510, ECOMAXci® FR, ECOMAXci® FR White
TER 1504-04	Rmax	ECOMAXci® Ply
TER 1811-02	Rmax	ECOMAXci™ FR Ply

5 INSTALLATION

- 5.1 The products listed in this research report shall be used in accordance with the manufacturer’s installation instructions.
- 5.2 For applications outside the scope of this research report, an engineered design is required.

6 TEST ENGINEERING SUBSTANTIATING DATA

- 6.1 The Extruded Polystyrene Foam Association (XPSA) has sponsored several *NFPA 285* fire tests on various exterior wall systems that incorporated extruded polystyrene foam plastic insulation.
 - 6.1.1 These tests were successful and met the requirements of *NFPA 285*.
 - 6.1.2 The test configurations are detailed in the following test reports:
 - 6.1.2.1 Report No. 01.06440.01.001; Southwest Research Institute; May, 2003.
 - 6.1.2.2 Report 05CA2541, NC2650; Underwriters Laboratories, Inc.; January 10, 2005.
 - 6.1.2.3 Report No. 01.13537.01.106; Southwest Research Institute; September 26, 2008.
- 6.2 Manufacturer evaluation reports as listed in Table 1.
- 6.3 Manufacturer DrJ Technical Evaluation Reports (TER) as listed in Table 1.



- 6.4 UL Certification Directory – Exterior Wall Systems, Evaluation Reports.
- 6.5 Some information contained herein is the result of testing and/or data analysis by other sources which conform to IBC Section 1703 and relevant professional engineering law. DrJ relies on accurate data from these sources to perform engineering analysis. DrJ has reviewed and found the data provided by other professional sources to be credible.
- 6.6 Where appropriate, DrJ’s analysis is based on design values that have been codified into law through codes and standards (e.g., *IBC*, *IRC*, *NDS®*, and *SDPWS*). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, and concrete), DrJ relies upon the grade mark, stamp, and/or design values provided by raw material suppliers to be accurate and conforming to the mechanical properties defined in the relevant material standard.

7 FINDINGS

- 7.1 When used in accordance with this research report and the manufacturer’s installation instructions, the products listed in this report are a suitable alternative to the requirements of IBC Section 2603.5.
- 7.2 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.9 are similar) states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code...Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.

8 REFERENCES

- 8.1 The Foam Sheathing Committee (FSC) of the American Chemistry Council sponsors research and tools to support the reliable, efficient, and economic design and installation of foam sheathing. This report is developed by DrJ from a grant provided by FSC. Learn more about foam sheathing at continuousinsulation.org.

9 CONDITIONS OF USE

- 9.1 Where required by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed, this DRR and the installation instructions shall be submitted at the time of permit application.
- 9.2 Any generally accepted engineering calculations needed to show compliance with this DRR shall be submitted to the AHJ for review and approval.
- 9.3 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., owner or registered design professional).
- 9.4 At a minimum, this product shall be installed per Section 5 of this DRR.
- 9.5 This product is manufactured under a third-party quality control program in accordance with IBC Section 104.4 and 110.4 and IRC Section R104.4 and R109.2.
- 9.6 The actual design, suitability, and use of this DRR, for any particular building, is the responsibility of the owner or the owner's authorized agent. Therefore, the DRR shall be reviewed for code compliance by the building official for acceptance.

10 IDENTIFICATION

- 10.1 The product packaging shall include the company name and address, inspection agency (if applicable), and any applicable report numbers.



10.2 Additional technical information can be found at the respective FSC member websites found at fsc.americanchemistry.com/Members.

11 REVIEW SCHEDULE

11.1 For the most recent version or current status of this DRR, visit drjengineering.org or contact [DrJ Engineering](#).