



NFPA 285 Tested Assemblies Using Polyisocyanurate Insulation Products

DRR No. 1404-01

Polyisocyanurate Insulation Producing FSC Members

Issue Date: June 3, 2015

Updated: May 8, 2019

Atlas Roofing Corporation – atlasroofing.com, atlaswallci.com, atlaseps.com

Dow Building Solutions – building.dow.com

GAF – gaf.com

Hunter Panels – hpanels.com

Johns Manville – jm.com

Rmax Operating, LLC – rmax.com

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. Product Lines Evaluated:

- 1.1. Polyisocyanurate (ISO) insulation from the following manufacturers, when used as insulating material in exterior wall assemblies
 - 1.1.1. Atlas Roofing Corporation – “EnergyShield® Pro”, EnergyShield® Pro 2”, “Rboard® Pro”, “ThermalStar® CVT”, “ThermalStar® LCi” and “ThermalStar® Chrome”
 - 1.1.2. Dow Chemical Company – “STYROFOAM™”, DOW Fan-Fold Products and “THERMAX™”
 - 1.1.3. Hunter Panels – “Xci Class A”, “Xci 286”, “Xci Foil”, “Xci CG” and “Xci Ply”
 - 1.1.4. Johns Manville – “JM AP™ Foil-Faced” and “JM CI Max®”
 - 1.1.5. Rmax Operating, LLC – “Durasheath®”, “ECOMAXci® Ply”, “ECOMAXci® Wall Solution”, “Thermasheath®”, “Thermasheath®-XP”, “ECOMAXci® FR”, and “ECOMAXci® FR White”
- 1.2. For the most recent version of this report, visit drjengineering.org. For more detailed state professional engineering and code compliance legal requirements and references, visit drjengineering.org/statelaw. DrJ is fully compliant with all state professional engineering and code compliance laws.

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2. Applicable Codes and Standards:¹

- 2.1. 2009, 2012 and 2015 International Building Code (IBC)
- 2.2. 2009, 2012 and 2015 International Residential Code (IRC)
- 2.3. NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non Load-Bearing Wall Assemblies Containing Combustible Components

3. Evaluation Scope:

- 3.1. [IBC Section 2603.5](#) 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 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components* ([Section 2603.5.5](#)).
 - 3.1.1. One-story buildings are an exception and must comply with [Section 2603.4.1.4](#).
 - 3.1.2. In the 2006 and 2009 IBC, [Section 2603.5.5](#) is titled Test Standard.
 - 3.1.3. In the 2012 IBC, [Section 2603.5.5](#) is titled Vertical and Lateral Fire Propagation.
- 3.2. As of the updated date of this research report, the companies listed in [Section 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 [Section 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 evaluation.

4. Applications:

4.1. NFPA 285 Tested Assemblies

- 4.1.1. The following listing contains the assemblies of the manufacturers listed in [Section 1](#) 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.

¹ Unless otherwise noted, all references in this research report are from the 2012 version of the codes and the standards referenced therein, including, but not limited to, ASCE 7, SDPWS and WFCM. This product also complies with the 2000-2009 and 2015 versions of the IBC and IRC and the standards referenced therein. As required by law, where this research report is not approved, the building official shall respond in writing, stating the reasons this research report was not approved.

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Foam Plastic Insulating Sheathing		
Report Number	Manufacturer	Product(s)
TER No. 1306-03	Atlas Roofing Corporation	RBoard® Pro, EnergyShield® Pro & EnergyShield® Pro2
ULEX.R16529	Atlas Roofing Corporation	ThermalStar® CVT, ThermalStar® LCI, ThermalStar® Chrome
ICC-ES 2142	Dow Chemical Company	Styrofoam™ Brand Insulation Boards
ICC-ES 1659	Dow Chemical Company	THERMAX™ Insulating Sheathing
	Dow Chemical Company	THERMAX™ Total Wall System
TER No. 1402-01	Hunter Panels	Xci Class A, Xci 286
TER No. 1402-02	Hunter Panels	Xci Foil, Xci CG, Xci Ply
ICC-ES 3398	Johns Manville	JM AP™ Foil-Faced & JM CI Max®
TER No. 1212-03	Rmax® Operating, LLC	ECOMAXci® Wall Solution
ROL/BI 30-03, TER No. 1309-03	Rmax® Operating, LLC	Durasheath®, Thermasheath®
TER No. 1309-03	Rmax® Operating, LLC	Thermasheath®-XP ECOMAXci® FR, ECOMAXci® FR White
TER No. 1504-04	Rmax® Operating, LLC	ECOMAXci® Ply

Table 1: Foam Sheathing

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 and 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
 - 6.1.2.2. Report 05CA2541, NC2650; Underwriters Laboratories, Inc
 - 6.1.2.3. Report No. 01.13537.01.106; Southwest Research Institute
- 6.2. Manufacturer reports as listed in [Table 1](#).
- 6.3. Manufacturer DrJ Technical Evaluation Reports 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 DrJ relies on to be accurate as it undertakes its engineering analysis.
- 6.6. DrJ has reviewed and found the data provided by other professional sources are credible. This information has been approved in accordance with DrJ's procedure for acceptance of data from approved sources.
- 6.7. DrJ's responsibility for data provided by approved sources is in accordance with professional engineering law.
- 6.8. Where appropriate, DrJ relies on the derivation of design values, which have been codified into law through codes and standards (e.g., *IRC, WFCM, IBC, SDPWS*, etc.). This includes review of code provisions and any

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related test data that helps with comparative analysis or provides support for equivalency to an intended end-use application.

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](#) and [IRC Section R104.11](#) ([IFC Section 104.9](#) is similar) state:

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, at least 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*.²

8. Conditions of Use:

8.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this report and the installation instructions shall be submitted at the time of permit application.

8.2. The products covered by this research report shall be installed in accordance with this report and the manufacturer's installation instructions.

8.3. Design

8.3.1. Building Designer Responsibility

8.3.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer (e.g., Owner, Registered Design Professional, etc.) for the Building and shall be in accordance with [IRC Section R106](#) and [IBC Section 107](#).

8.3.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with [IRC Section R301](#) and [IBC Section 1603](#).

8.3.2. Construction Documents

8.3.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.

8.4. Responsibilities

8.4.1. The information contained herein is a product, engineering or building code compliance research report performed in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering procedures, experience and good technical judgment.

8.4.2. Product, design and code compliance quality control are the responsibility of the referenced company. Consult the referenced company for the proper detailing and application for the intended purpose. Consult your local jurisdiction or design professional to assure compliance with the local building code.

8.4.3. DrJ research reports provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated section.

8.4.4. The engineering evaluation was performed on the dates provided in this research report, within DrJ's professional scope of work.

8.4.5. This product is manufactured under a third-party quality control program in accordance with [IRC Section R104.4](#) and [R109.2](#) and [IBC Section 104.4](#) and [110.4](#).

8.4.6. The actual design, suitability and use of this research report for any particular building is the responsibility of the Owner or the Owner's authorized agent, and the report shall be reviewed for code compliance by the Building Official.

² The last sentence is adopted language in the 2015 codes.

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8.4.7. The use of this research report is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party inspection process, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to assure accurate compliance with the applicable building code.

9. Identification:

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

9.1.1. Additional technical information and related research reports can be found at the company websites listed on [Page 1](#).

10. Review Schedule:

10.1. This research report is subject to periodic review and revision. For the most recent version of this report, visit drjengineering.org.

10.2. For information on the current status of this report, contact [DrJ Engineering](#).