



CERTIFICATION



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ISO/IEC 17065
Product Certification Body



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Technical Evaluation Report

TER 1811-02

Rmax ECOMAXci™ FR Ply

Rmax

Product:

Rmax ECOMAXci™ FR Ply

Issue Date:

January 25, 2019

Revision Date:

April 9, 2020

Subject to Renewal:

July 1, 2020



Technical Evaluation Report (TER)

Rmax ECOMAXci™ FR Ply

TER No. 1811-02

Rmax

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Issue Date: January 25, 2019
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DIVISION: 06 00 00 – WOOD, PLASTICS AND COMPOSITES

Section: 06 16 00 – Sheathing

Section: 06 16 13 – Insulating Sheathing

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION

Section: 07 20 00 – Thermal Protection

Section: 07 21 00 – Thermal Insulation

Section: 07 27 00 – Air Barriers

1. Product Evaluated:

1.1. Rmax ECOMAXci™ FR Ply

1.2. For the most recent version of this Technical Evaluation Report (TER), 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.

1.3. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found [here](#)) and covered by an [IAF MLA Evaluation](#) per the [Purpose of the MLA](#) (as an example, see [letter to ANSI](#) from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other [IAF MLA Signatory Countries](#) and have their products readily approved by authorities having jurisdiction using [DrJ's ANSI accreditation](#).

1.4. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those found in [IBC Section 1703](#). Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's [website](#). For more information, see [drjcertification.org](#).

1.5. Requiring an evaluation report from a specific private company (i.e., ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.

1.6. DrJ's code compliance work:

1.6.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an ANSI or ASTM standard.

1.6.2. Complies with accepted engineering practice, all professional engineering laws and by providing an engineer's seal, DrJ takes professional responsibility for its specified scope of work.

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2. Applicable Codes and Standards:¹

- 2.1. 2012, 2015 and 2018 International Building Code (IBC)
- 2.2. 2012, 2015 and 2018 International Residential Code (IRC)
- 2.3. 2012, 2015 and 2018 International Energy Conservation Code (IECC)
- 2.4. AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members
- 2.5. ANSI/AWC NDS – National Design Specification® (NDS®) for Wood Construction
- 2.6. ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- 2.7. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
- 2.8. ASTM E136 – Standard Test Methods for Behavior of Materials in a Vertical Tube Furnace
- 2.9. ASTM E1354 – Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
- 2.10. ASTM E2178 – Standard Test Method for Air Permeance of Building Materials
- 2.11. NFPA 259 – Standard Test Method for Potential Heat of Building Materials
- 2.12. NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
- 2.13. U.S. Department of Commerce Voluntary Product Standards PS 2, Performance Standard for Wood-Based Structural-Use Panels (DOC PS 2)

3. Performance Evaluation:

- 3.1. Rmax ECOMAXci™ FR Ply was evaluated to determine the following uses in Type I-IV construction:
 - 3.1.1. Connection to light-frame cold-formed steel framing to support cladding weight in accordance with [IBC Section 1609.1.1](#).
 - 3.1.2. Foam plastic insulation performance in accordance with [IBC Section 2603](#) and [IRC Section R316](#).
 - 3.1.3. Performance for use as an air barrier in accordance with [IECC Section C402.5.1](#)².
 - 3.1.4. Performance for use as a vapor retarder in accordance with [IBC Section 202](#) and [Section 1404.3](#) and [IRC Section R202](#) and [Section R702.7](#).
 - 3.1.5. Potential heat in accordance with [IBC Section 2603.5.3](#).
 - 3.1.6. Flame spread and smoke developed indices in accordance with [IBC Section 2603.5.4](#) and [IRC Section R316.3](#).
 - 3.1.7. Vertical and lateral fire propagation in accordance with [IBC Section 2603.5.5](#).
 - 3.1.8. Ignition characteristics in accordance with [IBC Section 2603.5.7](#).
 - 3.1.9. Special approval for use without a thermal barrier or ignition barrier in accordance with [IBC Section 2603.4](#), [Section 2603.5.2](#) and [IRC Section R316.4](#).
- 3.2. ECOMAXci™ FR Ply is not designed as a structural bracing material. Adequate building bracing shall be provided through other means and methods.
- 3.3. Design of cladding fastening to ECOMAXci™ FR Ply is outside the scope of this TER.
- 3.4. ECOMAXci™ FR Ply resistance to transverse wind loading is outside the scope of this TER.
- 3.5. Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

¹ Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 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 2000-2015 versions of the IBC and IRC and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see [Section 8](#).

² 2012 IECC Section C402.4.1

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4. Product Description and Materials:



Figure 1: ECOMAXci™ FR Ply

- 4.1. ECOMAXci™ FR Ply is a composite product whose core consists of Rmax rigid, closed-cell polyisocyanurate (Polyiso) foamed plastic insulation board bonded to glass fiber reinforced aluminum facers on each side. This insulation board is then bonded on one side to fire-retardant treated (FRT) plywood with liquid adhesive.
 - 4.1.1. Rmax Polyiso foam insulation conforms to *ASTM C1289* in accordance with [IBC Section 2303.1.5](#) and [Section 2603](#).
 - 4.1.2. The FRT plywood is manufactured in accordance with *DOC PS 2* and treated for compliance with [IBC Section 2303.2](#).
 - 4.1.3. The rigid insulation portion of ECOMAXci™ FR Ply is available with the following thicknesses: 0.75" (19 mm) through 4.5" (114 mm).
 - 4.1.4. The FRT plywood portion is available in $\frac{5}{8}$ " (16 mm) and $\frac{3}{4}$ " (19 mm) thicknesses.
 - 4.1.5. Standard product width: 48" (1219 mm)
 - 4.1.6. Standard product length: 96" (2438 mm)

5. Applications:

5.1. General

- 5.1.1. ECOMAXci™ FR Ply is a composite insulation panel for use in the following applications:
 - 5.1.1.1. Exterior walls of buildings of any height and of Type I-IV construction in accordance with [IBC Section 2603.5](#).
 - 5.1.1.2. Continuous insulation on buildings constructed in accordance with the *IBC* for light-frame cold-formed steel construction, metal buildings, fire retardant treated wood framed buildings, or masonry buildings.
 - 5.1.1.3. Continuous insulation providing a nail base for cladding materials used in light-frame cold-formed steel construction, metal buildings, fire retardant treated wood framed buildings, or masonry buildings.

5.2. Thermal Insulation

- 5.2.1. ECOMAXci™ FR Ply is intended to be used as exterior continuous insulation under any type of permitted cladding.

5.3. Air Barrier

- 5.3.1. ECOMAXci™ FR Ply meets the requirements of [IECC Section C402](#) for use as a component of the air barrier, when installed in accordance with the manufacturer's installation instructions and this TER, with all seams including the top and bottom edges of walls, taped, and all penetrations flashed and sealed in accordance with the flashing manufacturer's installation instructions.

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ECOMAXci™ FR Ply Air Barrier Material Properties	
<i>ASTM E2178</i>	$< 0.02 \text{ L}/(\text{s}\cdot\text{m}^2)^1$
1. Liter per second per square meter	

Table 1: ECOMAXci™ FR Ply Air Barrier Material Properties

5.3.2. The air permeance of an air barrier material is defined by the *IECC* and the Air Barrier Association of America (ABAA) as being no greater than $0.02 \text{ L}/(\text{s}\cdot\text{m}^2)$ at 75 Pa pressure difference when tested in accordance with *ASTM E2178*.

5.4. Fire Safety Performance

5.4.1. Potential Heat

5.4.1.1. ECOMAXci™ FR Ply has been tested to assess its performance as shown in [Table 2](#) with regard to potential heat in accordance with *NFPA 259* and [IBC Section 2603.5.3](#).

Fire Performance – Potential Heat	
Product	Potential Heat (Btu/lb)
ECOMAXci™ FR Ply ¹	11,054
1. Foam plastic portion of ECOMAXci™ FR Ply tested in accordance with <i>NFPA 259</i> .	

Table 2: Potential Heat of ECOMAXci™ FR Ply

5.4.2. Flame Spread and Smoke Developed Indices

5.4.2.1. ECOMAXci™ FR Ply has the flame spread and smoke developed ratings shown in [Table 3](#), when tested in accordance with *ASTM E84* per [IBC Section 2603.5.4](#) and [IRC Section R316.3](#).

Surface Burn Characteristics of ECOMAXci™ FR Ply		
Product	Flame Spread	Smoke Developed
ECOMAXci™ FR Ply ¹	< 25	< 450
FRT Plywood	< 25	< 450
1. Foam plastic portion of ECOMAXci™ FR Ply tested in accordance with <i>ASTM E84</i> . Flame spread and smoke developed numbers are shown for comparison purposes only and are not intended to represent the performance of ECOMAXci™ FR Ply and related components under actual fire conditions.		

Table 3: Surface Burn Characteristics of ECOMAXci™ FR Ply

5.4.3. Vertical and Lateral Fire Propagation

- 5.4.3.1.** ECOMAXci™ FR Ply has been tested to assess its performance with regard to vertical and lateral fire propagation in accordance with *NFPA 285* and [IBC Section 2603.5.5](#).
- 5.4.3.2.** Engineering analysis has also been conducted to assess substitution of other products within the approved wall assemblies.
- 5.4.3.3.** The wall assemblies listed in [Table 4](#) are approved for use in Type I-IV, light-frame cold-formed steel construction metal buildings, fire retardant treated wood frame construction, or masonry construction with a maximum foam thickness of 4.5" (114 mm).

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5.4.4. Ignition Properties

5.4.4.1. ECOMAXci™ FR Ply was evaluated to assess performance with regard to ignition in accordance with [IBC Section 2603.5.7](#).

5.4.4.1.1. The insulation boards comply with this section when the exterior side of the sheathing is protected with one of the following materials:

5.4.4.1.1.1. A thermal barrier in accordance with [IBC Section 2603.4](#).

5.4.4.1.1.2. Masonry or concrete – minimum 1" (25.4 mm) thick.

5.4.4.1.1.3. Glass-fiber-reinforced concrete panels – minimum 3/8" (9.5 mm) thick.

5.4.4.1.1.4. Metal-faced panels having a minimum 0.019" (0.5 mm) thick aluminum or 0.016" (0.4 mm) thick corrosion-resistant steel outer facings.

5.4.4.1.1.5. Stucco – minimum 7/8" (22.2 mm) thick complying with [IBC Section 2510](#).

5.4.5. Thermal Barrier (IRC and IBC Buildings)

5.4.5.1. Except as provided in [Section 5.4.5.2](#), ECOMAXci™ FR Ply panels, up to 4.5" (114 mm) in foam thickness may be installed within the building envelope (including, but not limited to, attics, crawlspaces, and wall, roof, floor and ceiling assemblies) of all building types when separated from the interior with a thermal barrier consisting of a minimum 1/2" gypsum wallboard or an approved equivalent in accordance with [IBC Section 2603.4](#) and [IRC Section R316.4](#).

5.4.5.2. ECOMAXci™ FR Ply is specifically approved for use without a thermal barrier or ignition barrier as prescribed by [IBC Section 2603.4](#) through [2603.8](#), and [IRC Section R316.4](#) through [R316.5.13](#), based on large-scale testing conducted in accordance with *UL 1715* per [IBC Section 2603.9](#)³ and [IRC Section R316.6](#) as follows:

5.4.5.2.1. Panels may be installed in single or multiple layers.

5.4.5.2.2. In a walls-only application, the panels are permitted to be used without a thermal barrier or ignition barrier in thicknesses not to exceed 4.5" (114 mm).

5.4.5.2.3. In a ceiling-only application, the panels are permitted to be used without a thermal barrier or ignition barrier in thicknesses not to exceed 12" (305 mm).

5.4.5.2.4. In an application where the panels are used on both the walls and ceilings, use of a thermal barrier or ignition barrier is required on either the wall or the ceiling. Panels may be installed in single or multiple layers in thicknesses up to 12" (305 mm) where covered by a thermal barrier or ignition barrier. The exposed wall or ceiling assembly must comply with [Section 5.4.5.2.2](#) or [Section 5.4.5.2.3](#), respectively.

³ [2012 IBC Section 2603.10](#)

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- 5.4.5.2.5.** When the panels are covered, the covering shall comply with the interior finish requirements of [IBC Chapter 8](#) and [IRC Section R702.1](#), as applicable.

Fire Performance – Vertical and Lateral Fire Propagation ¹	
Wall Component	Materials
<p>Base Wall System Use either 1, 2, 3 or 4</p> <p>Note: May use 4 optionally when FRTW framing is allowed by code.</p>	<ol style="list-style-type: none"> 1. Cast Concrete Walls 2. CMU Concrete Walls 3. Minimum 20 GA 3$\frac{5}{8}$" (92 mm) steel studs spaced 24" (610 mm) o.c. (max.) <ol style="list-style-type: none"> a. Minimum ½" (12.7 mm) type X Special Fire Resistant Gypsum Wallboard Interior 4. Where allowed in Types I, II, III or IV construction, FRTW (Fire-retardant-treated wood) studs complying with <i>IBC Section 2303.2</i>, min. nominal 2x4 dimension, spaced 24" o.c. (610 mm) (max.) <ol style="list-style-type: none"> a. 5$\frac{5}{8}$" (15.9 mm) type X Gypsum Wallboard Interior b. Bracing as required by code
<p>Fire-Stopping in Stud Cavity at Floor Lines As an option, use 2 with Fire Retardant Treated Wood (FRTW) framing.</p>	<ol style="list-style-type: none"> 1. 4 pcf mineral fiber insulation installed with z-clips 2. FRTW fire blocking at floor line in accordance with applicable code requirements
<p>Cavity Insulation Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15</p> <p>Note: Items 5-15 are SPF Foam Type</p> <p>EZ FLO may be used inside the box headers and jamb studs for <i>NFPA 285</i> assemblies requiring SPF in stud cavities.</p>	<ol style="list-style-type: none"> 1. None 2. Any noncombustible insulation per <i>ASTM E136</i> 3. Any Mineral Fiber (Board type Class A <i>ASTM E84</i> faced or unfaced) 4. Any Fiberglass (Batt Type Class A <i>ASTM E84</i> faced or unfaced) 5. Maximum 5½" (140 mm) Icynene® LD-C-50 spray foam in 6" deep studs (max.). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 6. Maximum 5½" (140 mm) Icynene® MD-C-200 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap. Use with 5$\frac{5}{8}$" exterior sheathing. 7. Maximum 5½" (140 mm) Icynene® MD-R-210 2 pcf spray foam in maximum 6" (152 mm) deep studs full fill without an air gap. Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 8. SWD Urethane QS 112 2 pcf spray foam in maximum 6" (152 mm) deep studs partial fill with a maximum 2½" (64 mm) air gap or full fill. Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 9. Gaco™ 183M, Maximum 3½" (89 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 10. Gaco™ GacoOnePass™ F1850, maximum 3½" (89 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 11. Demilec Sealection®, 500 maximum 3$\frac{3}{8}$" (89 mm) max). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 12. Demilec HeatLok Soy 200 Plus®, maximum 3.4" (86 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 13. Bayer Bayseal® maximum 3" (76 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 14. Lapolla FoamLok™ FL 2000, maximum 3" (76 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing. 15. BASF SprayTite® 81206 or WallTite® (US & US-N), maximum 3$\frac{5}{8}$" (92 mm). Use with 5$\frac{5}{8}$" (15.9 mm) exterior sheathing.
<p>Exterior Sheathing- Use either 1, 2 or 3</p> <p>Note – Exterior FRTW sheathing or gypsum board is optional for Base Walls 1 and 2. When SPF is used, 5$\frac{5}{8}$" exterior gypsum sheathing must be used.</p>	<ol style="list-style-type: none"> 1. ½" (12.7 mm) or thicker exterior gypsum sheathing 2. None (for maximum 3" (76 mm) exterior insulation with all claddings or maximum 4½" (114 mm) exterior insulation with Claddings 1 - 6) 3. Minimum ½" (12.7 mm) FRTW structural panels complying with <i>IBC Section 2303.2</i> and installed in accordance with code allowances for Types I, II, III or IV construction
(Table continues on next page.)	

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Fire Performance – Vertical and Lateral Fire Propagation ¹	
Wall Component	Materials
<p>Water-Resistive Barrier (WRB) Installed over Exterior Sheathing Use either option 1 or 2 installed per the manufacturer’s installation instructions.</p> <p>Note 1: when using exterior sheathing, option 2 (no exterior sheathing) items 2 a-d may be applied directly to studs.</p> <p>NLA = No longer available. Replaced with Spraywrap MVP.</p>	<ol style="list-style-type: none"> 1. None 2. Any WRB tested in accordance with <i>ASTM E1354</i> (at a minimum of 20 kW/m² heat flux) and shown by analysis to be less flammable (improved T_{ign}, Pk. HRR) than the tested WRB. The following WRB products are allowed: <ol style="list-style-type: none"> a. Pactive Green Guard® Max Building Wrap b. Dupont™ Tyvek® (Various per ESR 2375) c. Dow Weathermate™ d. Dow Weathermate™ Plus e. Carlisle (CCW) Fire Resist 705FR-A f. Carlisle (CCW) Fire Resist Barritech NP g. Carlisle (CCW) Fire Resist Barritech VP h. BASF Enershield® HP i. BASF Enershield® I j. Henry® Air Bloc® 32MR k. Henry® Air Bloc® 31MR l. Henry® EnviroCap m. Henry® Air Bloc® 33MR n. Henry® Air Bloc® 21FR o. Henry® VP 160 p. Henry® Air Bloc® 17 q. Henry® BlueSkin SA r. Henry® FoilSkin s. Henry® MetalClad t. Soprema® Sopraseal® Stick VP, Soprasolin HD or LM 204 VP u. Soprema® Sopraseal® 1100T or Sopraseal Xpress G v. Prosoco R-Guard® Spray Wrap (NLA) w. Prosoco R-Guard® MVP (NLA) x. Prosoco R-Guard® Spraywrap MVP y. Prosoco R-Guard® VB z. Prosoco R-Guard® Cat 5 aa. Vaproshield Revealshield SA® bb. Vaproshield Wrapshield SA® cc. Pecora XL-PermULTRA VP (10 mil DFT) dd. Dryvit Backstop® NT™ ee. Sika® Sikagard® 530 or 535 ff. W.R. Grace Perm-A-Barrier® NPL 10 gg. W.R. Grace Perm-A-Barrier® VPL hh. W.R. Grace Perm-A-Barrier® VPL LT ii. W.R. Grace Perm-A-Barrier® VPS jj. W.R. Grace Perm-A-Barrier® AWM kk. W.R. Grace Perm-A-Barrier® VPL 50 ll. WR Meadows® Air-Shield™ LMP (Gray) mm. WR Meadows® Air-Shield™ LMP (Black) nn. WR Meadows® Air-Shield™ TMP oo. WR Meadows® Air-Shield™ LSR pp. Siga Majvest 500 SA
(Table continues on next page.)	

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Fire Performance – Vertical and Lateral Fire Propagation ¹	
Wall Component	Materials
<p>Exterior Insulation</p> <p>Installation may use FRT plywood on exterior side (installed over exterior sheathing) or interior side (applied direct to studs). This option (plywood on interior) negates use of exterior sheathing since the FRT ply acts as the sheathing.</p>	<p>Rmax ECOMAXci™ FR Ply, Maximum 4.5" (144 mm) foam with 5/8" (min.) FRT plywood thickness.</p> <p>Note: See Exterior sheathing options for thickness limitations when no exterior sheathing is used.</p> <p>Note: FRT plywood may be applied in the field or factory. Adhesive must not be full coverage.</p>
<p>Water-Resistive Barrier (WRB) Installed over Exterior Insulation or FRTW</p> <p>Use any in item 1) or 2) depending on cladding used</p> <p>Note: Exterior WRB Items 1) b-d are not traditional WRB products, but are insulation panel joint tapes. The insulation panel joints shall be staggered.</p> <p>NLA = No longer available. Replaced with Spraywrap MVP</p>	<ol style="list-style-type: none"> 1. For use with all cladding options <ol style="list-style-type: none"> a. None b. 6" (152 mm) (max.) Venture Tape™ CW over insulation joints c. 6" (152 mm) (max.) Rmax® R-SEAL 3000, 6000 or 2000 LF over insulation joints d. 6" (152 mm) (max.) asphalt or butyl based tape, or liquid flashing over insulation joints e. Pactive GreenGuard® Max Building Wrap f. Dupont™ Tyvek® (Various per ESR 2375) g. Dow® Weathermate™ h. Dow® Weathermate™ Plus i. Henry FoilSkin j. Henry MetalClad k. Prosoco Spraywrap MVP l. Soprema® Soprasolin HD m. Carlisle (CCW) Fire Resist 705FR-A n. W.R. Grace Perm-A-Barrier® AWM 2. For use with cladding options 1 - 6 (Brick Equivalent) with non-open joint installation technique. <ol style="list-style-type: none"> o. Henry® Air Bloc® 31MR p. Henry® EnviroCap q. Henry® Air Bloc® 33MR r. Henry® Air Bloc® 21 FR s. Henry® Air Bloc® 17 t. Henry® Blueskin® VP 160 u. Soprema® Sopraseal® Stick VP v. Carlisle (CCW) Fire Resist Barritech NP w. Carlisle (CCW) Fire Resist Barritech VP x. Prosoco R-Guard® Spray Wrap (NLA) y. Prosoco R-Guard® MVP (NLA) z. Prosoco R-Guard® VB aa. Prosoco R-Guard® Cat 5 bb. Vaproshield Revealshield SA® cc. Vaproshield Wrapshield SA® dd. Pecora® XL-PermULTRA VP (10 mil DFT) ee. W.R. Grace Perm-a-Barrier® VPL ff. W.R. Grace Perm-a-Barrier® VPL LT gg. W.R. Grace Perm-a-Barrier® VPS hh. Dryvit Backstop® NT™ ii. WR Meadows Air-Shield™ LMP (Gray) jj. WR Meadows Air-Shield™ LMP (Black) kk. WR Meadows Air-Shield™ TMP ll. WR Meadows Air-Shield™ LSR mm. Siga Majvest 500 SA nn. Sika® Sikagard® 535
(Table continues on next page.)	

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Fire Performance – Vertical and Lateral Fire Propagation ¹	
Wall Component	Materials
<p>Exterior Cladding Use either 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14</p> <p>Note: For WRB over exterior insulation options 1) a. – jj. above, Claddings 1 - 6 shall incorporate non-open joints.</p> <p>Note: WRB over exterior insulation items 1) b. – d. and 2) ll. – nn. are panel joint tapes allowed for all claddings. The panel joints shall be staggered.</p>	<ol style="list-style-type: none"> 1. Brick – Nominal 4" (102 mm) clay brick or veneer with maximum 2½" (64 mm) ± ¼" (6.4 mm) air gap behind the brick. Brick Ties/Anchors 24" o.c. (610 mm) (max.) 2. Stucco – minimum ¾" (19.1 mm) thick exterior cement plaster and lath with an optional secondary water resistive barrier between the exterior insulation and lath. The secondary barrier shall not be full coverage asphalt or self-adhered butyl membrane. 3. Limestone – minimum 2" (51 mm) thick using any standard installation technique 4. Natural Stone Veneer – minimum 2" (51 mm) thick using any standard installation technique 5. Cast Artificial Stone, Precast Concrete Panels or CMU– minimum 1½" (38 mm) thick, using any standard installation technique. Cast stone complying with ICC-ES AC 51. 6. Terra Cotta Cladding – minimum 1¼" (32 mm) thick using any standard installation technique 7. Any MCM or ACM (aluminum, steel, copper, zinc) (w/ 2½" (64 mm) max. air gap) that has successfully passed <i>NFPA 285</i> using any standard installation technique 8. Uninsulated sheet metal building panels including aluminum, zinc, steel or copper using any standard installation technique 9. Uninsulated Fiber-cement siding using any standard installation technique 10. Stone/Aluminum honeycomb composite building panels that have passed <i>NFPA 285</i> or equivalent Stone Panels Inc. Stone Lite Panel system has been analyzed using manufacturer's standard installation technique. 11. Autoclaved-aerated-concrete (AAC) panels that have successfully passed <i>NFPA 285</i> using any standard installation technique 12. Thin Set Brick - Glen Gery Thin Tech Elite has been analyzed using manufacturer's standard installation technique. 13. Natural Stone Veneer – minimum 1¼" (32 mm) (adhered with mortar or concrete/cement based adhesive). 14. FunderMax M.Look using the manufacturer's standard installation technique. The air gap between the cladding and insulation or WRB must not exceed 1½" (38 mm).
<p>1. All WRBs shall be installed at recommended application rates and per the manufacturer's installation instructions.</p> <p>2. Window Headers for all constructions shall incorporate minimum 0.08" (2 mm) aluminum flashing to cover air gaps between the exterior insulation and exterior façade.</p> <p>3. Flashing of sheathing joints, window, door, and other exterior wall penetrations may be done with asphalt, acrylic, butyl based flashing tape or liquid flashing – max. 12" (305 mm) width, R-SEAL 6000 35 mil thick woven polyethylene tape – max. 12" (305 mm) width or R-SEAL 2000 LF liquid flashing – max 12" (305 mm) width.</p>	

Table 4: Vertical & Lateral Fire Propagation of ECOMAXci™ FR Ply

6. Installation:

6.1. General

6.1.1. ECOMAXci™ FR Ply shall be installed in accordance with the manufacturer's published installation instructions and this TER. In the event of any conflicts between the manufacturer's instructions and this TER, the more restrictive instructions shall govern.

6.1.2. A copy of the manufacturer's published installation instructions shall be available at all times on the jobsite during installation.

6.2. Orientation

6.2.1. ECOMAXci™ FR Ply may be installed vertically or horizontally over cold-formed steel studs, with framing that has a nominal thickness of not less than 2" (51 mm) and spaced a maximum of 24" (610 mm) o.c.

6.3. Attachment

6.3.1. Fasteners shall be installed with a nominal edge distance of 3/8" (9.5 mm).

6.3.2. Fasteners, including nuts and washers, for FRT wood used in exterior applications or wet or damp locations shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper in accordance with [IBC Section 2304.10.5](#) for FRT wood.

6.3.3. Fasteners are production self-tapping sheet metal screws or equivalent spaced as indicated in [Table 5](#) and [Table 6](#).

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- 6.3.4.** Bending yield strength of commodity fasteners shall be as shown in *NDS* Table 12N, and footnote 2. Bending yield of proprietary fasteners are as published by the fastener manufacturer.
- 6.3.5. Fastener Attachments for ECOMAXci™ FR Ply to Support Cladding Weight**
- 6.3.5.1.** The fasteners attaching the ECOMAXci™ FR Ply sheathing to the wall framing shall have a maximum spacing as shown in [Table 5](#) and [Table 6](#).
- 6.3.5.2.** Minimum allowable penetration into wall framing is the steel thickness plus three threads plus the tip.
- 6.3.5.3.** Fasteners with equal or greater physical properties shall be permitted:
- 6.3.5.3.1.** #8 screw: 0.164" (4.2 mm) shank diameter, 0.3125" (7.9 mm) head diameter
 - 6.3.5.3.2.** #10 screw: 0.190" (4.8 mm) shank diameter, 0.340" (8.6 mm) head diameter
 - 6.3.5.3.3.** #12 screw: 0.216" (5.4 mm) shank diameter, 0.340" (8.6 mm) head diameter
 - 6.3.5.3.4.** [Rmax Nail Board Fastener](#): 0.190" (4.8 mm) shank diameter, 0.625" (15.9 mm) head diameter
 - 6.3.5.3.5.** [TruFast SIPLD](#): 0.190" (4.8 mm) shank diameter, 0.625" (15.9 mm) head diameter
 - 6.3.5.3.6.** [FastenMaster HeadLOK](#): 0.260" (6.6 mm) shank diameter, 0.465" (11.8 mm) head diameter
- 6.3.5.4.** Fasteners shall be coated to protect against FRT wood per [IBC Section 2304.10.5](#).
- 6.3.5.5.** Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience and technical judgment.

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Table 5 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 16" o.c. (406 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
20 ga. structural (33 mil)	Rmax Nail Board Fastener	1.50	24	16	12	8	8	6
		1.75	24	16	12	8	8	6
		2.30	24	16	8	8	6	4
		2.75	24	12	8	6	4	4
		3.25	24	12	8	6	4	4
		3.75	16	8	6	4	-	-
		4.25	12	6	4	-	-	-
		4.75	8	4	-	-	-	-
	HeadLOK	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	8	6
		3.25	24	16	12	8	6	6
		3.75	24	16	8	8	6	4
		4.25	24	12	8	6	4	4
		4.75	16	8	6	4	4	-
	#12 common screw	1.50	24	16	12	8	8	6
		1.75	24	16	12	8	8	6
		2.30	24	16	12	8	6	6
		2.75	24	16	8	8	6	4
		3.25	24	12	8	6	4	4
		3.75	24	12	8	6	4	4
		4.25	16	8	6	4	-	-
	#10 common screw or TruFast SIPLD	1.50	24	16	12	8	8	6
		1.75	24	16	12	8	8	6
		2.30	24	16	8	8	6	4
		2.75	24	12	8	6	4	4
		3.25	24	12	8	6	4	4
	TruFast SIPLD	3.75	16	8	6	4	-	-
		4.25	12	6	4	-	-	-
		4.75	8	4	-	-	-	-
	#8 common screw	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	4	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	-	-

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Table 5 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 16" o.c. (406 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
18 ga. structural (43 mil)	Rmax Nail Board Screw Fastener	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	6	6
		3.25	24	12	8	6	6	4
		3.75	24	12	8	6	4	4
		4.25	16	8	4	4	-	-
		4.75	8	4	-	-	-	-
	HeadLOK	1.50	24	24	24	16	12	12
		1.75	24	24	24	16	12	12
		2.30	24	24	16	16	12	8
		2.75	24	24	16	12	12	8
		3.25	24	24	16	12	8	8
		3.75	24	16	12	8	8	6
		4.25	24	16	12	8	8	6
		4.75	24	16	8	8	6	4
	#12 common screw	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	8	6
		3.25	24	16	12	8	6	6
		3.75	24	12	8	6	4	4
	#10 common screw or TruFast SIPLD	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	6	6
		3.25	24	12	8	6	6	4
	TruFast SIPLD	3.75	24	12	8	6	4	4
		4.25	16	8	4	4	-	-
		4.75	8	4	-	-	-	-
	#8 common screw	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	4	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	-	-

(Table continues on next page.)

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Table 5 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 16" o.c. (406 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
16 ga. structural (54 mil)	Rmax Nail Board Fastener	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	6	6
		3.25	24	12	8	6	6	4
		3.75	24	12	8	6	4	4
		4.25	16	8	4	4	-	-
		4.75	8	4	-	-	-	-
	HeadLOK	1.50	24	24	24	16	16	12
		1.75	24	24	24	16	12	12
		2.30	24	24	16	16	12	8
		2.75	24	24	16	12	12	8
		3.25	24	24	16	12	8	8
		3.75	24	24	16	12	8	8
		4.25	24	16	12	8	8	6
		4.75	24	16	8	8	6	4
	#12 common screw	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	8	6
		3.25	24	16	12	8	6	6
		3.75	24	12	8	6	4	4
	#10 common screw or TruFast SIPLD	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	6	6
		3.25	24	12	8	6	6	4
	TruFast SIPLD	3.75	24	12	8	6	4	4
		4.25	16	8	4	4	-	-
		4.75	8	4	-	-	-	-
	#8 common screw	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	4	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	-	-

1. Minimum fastener penetration into stud is steel thickness plus three threads plus the tip.
 2. ECOMAXci™ FR Ply is installed with foam directly to the studs.
 3. Screw values determined using NDS® Yield Limit Equations and TR-12 for evaluating the foam as a gap.
 4. Proprietary fastener properties are per published data or testing.

Table 5: ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire Treated Plywood – Vertical Studs 16" o.c. (406 mm)

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Table 6 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 24" o.c. (610 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
20 ga. structural (33 mil)	Rmax Nail Board Fastener	1.50	24	12	8	6	4	4
		1.75	24	12	8	6	4	4
		2.30	16	8	6	4	4	-
		2.75	16	8	6	4	-	-
		3.25	16	8	4	4	-	-
		3.75	12	6	4	-	-	-
		4.25	8	4	-	-	-	-
		4.75	4	-	-	-	-	-
	HeadLOK	1.50	24	16	8	8	6	4
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	24	12	8	6	4	4
		3.75	16	8	6	4	4	-
		4.25	16	8	6	4	-	-
		4.75	12	6	4	-	-	-
	#12 common screw	5.25	12	6	4	-	-	-
		1.50	24	12	8	6	6	4
		1.75	24	12	8	6	4	4
		2.30	24	12	8	6	4	4
		2.75	16	8	6	4	4	-
		3.25	16	8	6	4	-	-
		3.75	16	8	4	4	-	-
	#10 common screw or TruFast SIPLD	4.25	12	6	4	-	-	-
		1.50	24	12	8	6	4	4
		1.75	24	12	8	6	4	4
		2.30	16	8	6	4	4	-
		2.75	16	8	6	4	-	-
	TruFast SIPLD	3.25	16	8	4	4	-	-
		3.75	12	6	4	-	-	-
		4.25	8	4	-	-	-	-
	#8 common screw	4.75	4	-	-	-	-	-
		1.50	24	12	8	6	4	4
		1.75	16	8	6	4	4	-
		2.30	16	8	6	4	-	-
		2.75	16	8	4	4	-	-
		3.25	12	6	4	-	-	

(Table continues on next page.)

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Table 6 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 24" o.c.(610 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
18 ga. structural (43 mil)	Rmax Nail Board Fastener	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	4	-
		3.75	16	8	4	4	-	-
		4.25	8	4	-	-	-	-
		4.75	6	-	-	-	-	-
	HeadLOK	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	8	6
		3.25	24	16	12	8	6	6
		3.75	24	12	8	6	6	4
		4.25	24	12	8	6	4	4
		4.75	16	8	6	4	4	-
	#12 common screw	1.50	24	16	12	8	6	6
		1.75	24	16	12	8	6	6
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	24	12	8	6	4	4
		3.75	16	8	6	4	-	-
		4.25	12	6	4	-	-	-
	#10 common or TruFast SIPLD	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	4	-
	TruFast SIPLD	3.75	16	8	4	4	-	-
		4.25	8	4	-	-	-	-
		4.75	6	-	-	-	-	-
	#8 common screw	1.50	24	12	8	6	4	4
		1.75	16	8	6	4	4	-
		2.30	16	8	6	4	-	-
		2.75	16	8	4	4	-	-
		3.25	12	6	4	-	-	-

(Table continues on next page.)

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Table 6 - ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire-Retardant Treated Plywood – Vertical Studs 24" o.c. (610 mm)								
Framing Member	Screw Fastener Type and Min. Size	Max. Distance from Face of Framing to Underside of Fastener Head (in.)	Max. Vertical Spacing (in.) of fasteners along each stud to support the specified Cladding weight (psf)					
			5	10	15	20	25	30
16 ga. structural (54 mil)	Rmax Nail Board Fastener	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	4	-
		3.75	16	8	4	4	-	-
		4.25	8	4	-	-	-	-
		4.75	6	-	-	-	-	-
	HeadLOK	1.50	24	24	16	12	8	8
		1.75	24	24	16	12	8	8
		2.30	24	16	12	8	8	6
		2.75	24	16	12	8	8	6
		3.25	24	16	12	8	6	6
		3.75	24	16	8	8	6	4
		4.25	24	12	8	6	4	4
		4.75	16	8	6	4	4	-
	#12 common screw	1.50	24	16	12	8	6	6
		1.75	24	16	12	8	6	6
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	24	12	8	6	4	4
		3.75	16	8	6	4	-	-
		4.25	12	6	4	-	-	-
	#10 common screw or TruFast SIPLD	1.50	24	16	12	8	6	6
		1.75	24	16	8	8	6	4
		2.30	24	12	8	6	6	4
		2.75	24	12	8	6	4	4
		3.25	16	8	6	4	4	-
	TruFast SIPLD	3.75	16	8	4	4	-	-
		4.25	8	4	-	-	-	-
		4.75	6	-	-	-	-	-
	#8 common screw	1.50	24	12	8	6	4	4
		1.75	16	8	6	4	4	-
		2.30	16	8	6	4	-	-
		2.75	16	8	4	4	-	-
		3.25	12	6	4	-	-	-

1. Minimum fastener penetration into stud is steel thickness plus three threads plus the tip.
2. ECOMAXci™ FR Ply is installed with foam directly to the studs.
3. Screw values determined using NDS® Yield Limit Equations and TR-12 for evaluating the foam as a gap.
4. Proprietary fastener properties are per published data or testing.

Table 6: ECOMAXci™ FR Ply with 5/8" (15.9 mm) or 3/4" (19 mm) Fire Treated Plywood – Vertical Studs 24" o.c. (610 mm)

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7. Test and Engineering Substantiating Data:

- 7.1. Test reports and data supporting the following material and structural properties of ECOMAXci™ FR Ply:
 - 7.1.1. Flame spread and smoke developed ratings in accordance with *ASTM E84*, performed by Intertek.
 - 7.1.2. Fire performance criteria in accordance with *NFPA 285*, performed by Intertek.
 - 7.1.3. Air permeance testing in accordance with *ASTM E2178*, performed by Intertek.
 - 7.1.4. Vertical and lateral fire propagation tests by Intertek with analysis by Priest and Associates Consulting, LLC.
 - 7.1.5. Heat propagation (potential heat) testing by SwRI.
 - 7.1.6. Water vapor permeance testing by Exova.
- 7.2. Foam Sheathing Committee Tech Matters, *Guide to Attaching Exterior Wall Coverings through Foam Sheathing to Wood or Steel Framing*.
- 7.3. New York State Energy Research and Development Authority, *Fastening Systems for Continuous Insulation*.
- 7.4. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.
- 7.5. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.
- 7.6. 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.
- 7.7. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms with DrJ's procedure for acceptance of data from approved sources.
- 7.8. DrJ's responsibility for data provided by approved sources conforms with [IBC Section 1703](#) and any relevant professional engineering law.
- 7.9. Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IRC, WFCM, IBC, SDPWS, NDS, ACI, AISI, PS-20, PS-2*, etc.). 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, concrete, etc.), DrJ relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8. Findings:

- 8.1. When installed in accordance with the manufacturer's installation instructions and this TER, ECOMAXci™ FR Ply complies with, or is a suitable alternative to, the applicable sections of the codes listed in [Section 2](#) for the following applications:
 - 8.1.1. Buildings constructed in accordance with the *IRC* and the *IBC*.
 - 8.1.1.1. ECOMAXci™ FR Ply is approved for use in exterior walls of buildings when installed in accordance with the *IBC* for Type I-IV construction.
 - 8.1.2. Use as a nailbase for cladding materials when installed in accordance with the manufacturer's installation instructions and this TER.
 - 8.1.3. Performance of foam plastics in accordance with [IBC Section 2603](#) and [IRC Section R316](#).
 - 8.1.4. Performance for use as an air barrier in accordance with [IECC Section C402.5.1](#)⁴.

⁴ [2012 IECC Section C402.4.1](#)

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- 8.1.5. Performance for use as a vapor retarder in accordance with [IBC Section 202](#) and [Section 1404.3](#), and [IRC Section R202](#) and [Section R702.7](#).
 - 8.1.6. Potential heat in accordance with [IBC Section 2603.5.3](#).
 - 8.1.7. Flame spread and smoke developed indices in accordance with [IBC Section 2603.5.4](#) and [IRC Section R316.3](#).
 - 8.1.8. Vertical and lateral fire propagation in accordance with [IBC Section 2603.5.5](#).
 - 8.1.9. Ignition characteristics in accordance with [IBC Section 2603.5.7](#).
 - 8.1.10. Special approval for use without a thermal barrier or ignition barrier in accordance with [IBC Section 2603.4](#) and [Section 2603.5.2](#), and [IRC Section R316.4](#).
 - 8.2. [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, 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*.
 - 8.3. This product has been evaluated with the codes listed in [Section 2](#), and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:
 - 8.3.1. No known variations
 - 8.4. This TER uses professional engineering law, the building code, ANSI/ASTM consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. DrJ's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.
- 9. Conditions of Use:**
- 9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER 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 TER shall be submitted to the code official 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, Registered Design Professional, etc.).
 - 9.4. ECOMAXci™ FR Ply is subject to the following conditions:
 - 9.4.1. Installation shall comply with this TER and the manufacturer's installation instructions. In the event of a conflict between this TER and the manufacturer's installation instructions, the more restrictive shall govern.
 - 9.4.2. Exterior wall coverings capable of resisting the full design wind pressure shall be installed over this product and shall provide a direct load path to the structural frame.
 - 9.4.3. Walls shall be fully braced with other materials in accordance with [IBC Section 2308.6](#)⁴ or [IRC Section R602.10](#).
 - 9.4.4. A separate WRB shall be installed in accordance with [IBC Section 1404.2](#) and [IRC Section R703.2](#).
 - 9.5. Walls shall not be used to resist horizontal loads from concrete and masonry walls.
 - 9.6. ECOMAXci™ FR Ply may be used as a nail base for cladding. Fastener size and spacing shall be in accordance with [Table 5](#) and [Table 6](#).

⁴ [2012 IBC Section 2308.9.3](#)

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- 9.7. Use of these products shall be in accordance with the vapor barrier requirements of [IBC Section 1404.3](#) and [IRC Section R702.7](#).
- 9.8. This product is manufactured by Rmax in Dallas, TX; Fernley, NV; and Greer, SC, under a quality control program with quality control inspections in accordance with [IBC Section 110.3.8](#) and [110.4](#), and [IRC Section R109.2](#).
- 9.9. Design
- 9.9.1. Building Designer Responsibility
- 9.9.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with [IBC Section 107](#) and [IRC Section R106](#).
- 9.9.1.2. 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 [IBC Section 1603](#) and [IRC Section R301](#).
- 9.9.2. Construction Documents
- 9.9.2.1. 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.
- 9.10. Responsibilities
- 9.10.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.
- 9.10.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.
- 9.10.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.
- 9.10.4. 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](#).
- 9.10.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.
- 9.10.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

10. Identification:

- 10.1. ECOMAXci™ FR Ply described in this TER is identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.2. Additional technical information can be found at [Rmax.com](#).

11. Review Schedule:

- 11.1. This TER is subject to periodic review and revision. For the most recent version of this TER, visit [drjengineering.org](#).
- 11.2. For information on the current status of this TER, contact [DrJ Engineering](#).



- [Mission and Professional Responsibilities](#)
- [Product Evaluation Policies](#)
- [Product Approval – Building Code, Administrative Law and P.E. Law](#)