



Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1309-03



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Rmax® Thermasheath®, Rmax® TSX-8500, Rmax® TSX-8510, Rmax® ECOMAXci® FR, and Rmax® ECOMAXci® FR White Certification Body Report for the Seal and Insulate with ENERGY STAR® Program

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 16 00 - Sheathing

Section: 06 16 13 - Insulated Sheathing

Section: 06 16 53 - Moisture-Resistant Sheathing Board

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 20 00 - Thermal Protection

Section: 07 21 00 - Thermal Insulation

Section: 07 21 13 - Foam Board Insulation

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

Section: 07 27 00 - Air Barriers

Section: 07 27 23 - Board Product Air Barriers

1 Innovative Products Evaluated¹

1.1 Rmax Insulating Sheathing Panels:

1.1.1 Rmax® Thermasheath®

1.1.2 Rmax® TSX-8500

1.1.3 Rmax® TSX-8510

1.1.4 Rmax® ECOMAXci® FR

1.1.5 Rmax® ECOMAXci® FR White

1.2 Products that meet ENERGY STAR® requirements (See **Appendix A** for additional details):

1.2.1 Rmax® Thermasheath®

2 Product Description and Materials

2.1 Examples of the innovative products evaluated in this report are shown in **Figure 1**.

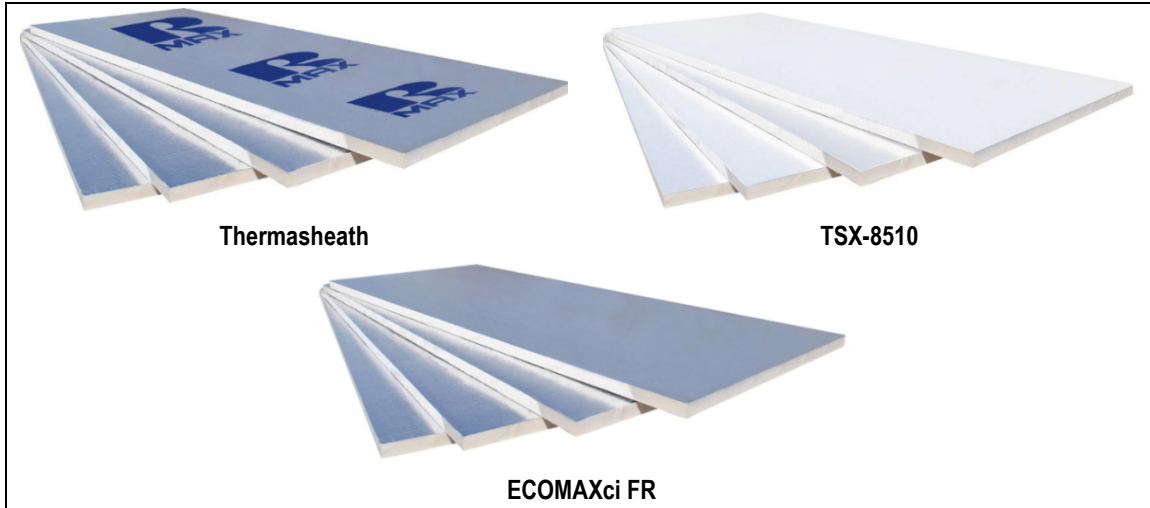


Figure 1. Thermasheath, TSX-8510, and ECOMAXci FR

2.2 Rmax Insulating Sheathing Panels are non-structural Foam Plastic Insulating Sheathing (FPIS) panels consisting of a closed-cell rigid polyisocyanurate (polyiso) foam core bonded to various facers (ASTM C1289 Type I, Class 1 and Class 2).

- 2.2.1 *Thermasheath*: Consists of a polyiso core bonded to reinforced aluminum facers on each side. Both sides have a reflective surface.
- 2.2.2 *TSX-8500*: Consists of a polyiso core bonded to glass fiber reinforced aluminum facers on each side. Both sides have a reflective surface.
- 2.2.3 *TSX-8510*: Consists of a polyiso core bonded to glass fiber reinforced aluminum facers on each side. One side has a white modified acrylic coating. The other side has a reflective surface.
- 2.2.4 *ECOMAXci FR*: Consists of a polyiso core bonded to glass fiber reinforced aluminum facers on each side. Both sides have a reflective surface. The exposed side has a clear modified acrylic coating. Each board is marked on the non-exposed side.
- 2.2.5 *ECOMAXci FR White*: Consists of a polyiso core bonded to glass fiber reinforced aluminum facers on each side. The exposed side has a white modified acrylic coating. The non-exposed side has a reflective surface.

2.3 Material Availability

2.3.1 Thickness:

- 2.3.1.1 0.5" (12.7 mm) through 4.5" (114.3 mm)

2.3.2 Standard Product Width:

- 2.3.2.1 48" (1,219 mm)

2.3.3 Standard Product Length:

- 2.3.3.1 96" (2,438 mm)
- 2.3.3.2 108" (2,743 mm)
- 2.3.3.3 120" (3,048 mm)



2.3.4 Custom lengths, widths, and thicknesses are available upon request.

2.4 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

3 Definitions²

- 3.1 New Materials³ are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.⁴ The design strength and permissible stresses shall be established by tests⁵ and/or engineering analysis.⁶
- 3.2 Duly authenticated reports⁷ and research reports⁸ are test reports and related engineering evaluations that are written by an approved agency⁹ and/or an approved source.¹⁰
 - 3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.
 - 3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.U.S.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).¹¹
- 3.3 An approved agency is “*approved*” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.
- 3.4 An approved source is “*approved*” when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.¹²
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.
 - 3.5.1 The Center for Building Innovation (CBI) is ANAB¹³ ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce¹⁴ the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing¹⁵ stating the nonconformance and the path to its cure.
- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.¹⁶
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.¹⁷ Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,¹⁸ and can be used in any country that is an MLA signatory found at this link: <https://iaf.nu/en/recognised-abs/>
- 3.9 Approval equity is a fundamental commercial and legal principle.¹⁹



4 Applicable Local, State, and Federal Approvals; Standards; Regulations²⁰

4.1 Local, State, and Federal

- 4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.²¹
- 4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.²²
- 4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14²³ and Part 3280²⁴ pursuant to the use of ISO/IEC 17065 duly authenticated reports.
- 4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 Regulations

- 4.2.1 *IBC – 18, 21, 24: International Building Code®*
- 4.2.2 *IRC – 18, 21, 24: International Residential Code®*
- 4.2.3 *IECC – 18, 21, 24: International Energy Conservation Code®*
- 4.2.4 *CBC – 22, 25: California Building Code²⁵ (Title 24, Part 2)*
- 4.2.5 *CRC – 22, 25: California Residential Code²⁵ (Title 24, Part 2.5)*
- 4.2.6 *CEC – 22, 25: California Energy Code (Title 24, Part 6)*
- 4.2.7 *FBC-B – 20, 23: Florida Building Code²⁶ – Building*
- 4.2.8 *FBC-R – 20, 23: Florida Building Code²⁶ – Residential*

4.3 Standards

- 4.3.1 *Seal and Insulate with ENERGY STAR®*
- 4.3.2 *AATCC Test Method 127: Water Resistance: Hydrostatic Pressure Test*
- 4.3.3 *ASTM C209: Standard Test Methods for Cellulosic Fiber Insulating Board*
- 4.3.4 *ASTM C272: Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions*
- 4.3.5 *ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*
- 4.3.6 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*
- 4.3.7 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
- 4.3.8 *ASTM E96: Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials*
- 4.3.9 *ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials*
- 4.3.10 *ASTM E136: Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*
- 4.3.11 *ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*



- 4.3.12 *ASTM E1354: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*
- 4.3.13 *ASTM E2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials*
- 4.3.14 *NFPA 259: Standard Test Method for Potential Heat of Building Materials*
- 4.3.15 *NFPA 285: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components*
- 4.3.16 *NFPA 286: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*
- 4.3.17 *UL 263: Standard for Fire Tests of Building Construction and Materials*
- 4.3.18 *UL 1715: Fire Test of Interior Finish Material*

5 Listed²⁷

- 5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or and approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 General

- 6.1.1 Rmax Insulating Sheathing Panels are used as wall sheathing and continuous insulation in buildings constructed in accordance with the IBC and IRC.
- 6.1.2 Rmax Insulating Sheathing Panels are non-structural FPIS panels used as thermal insulation within the building thermal envelope and exterior wall assembly including, but not limited to, attic, crawl space, wall, roof, ceiling, floor, and foundation assemblies.
- 6.1.3 Rmax Insulating Sheathing Panels may be installed horizontally under floor slabs and vertically on the interior side of footings and exterior side of foundation walls.
- 6.1.4 Rmax Insulating Sheathing Panels are recognized for insulation applications only; use as a nail base for other building products shall be based on a separate engineered design (i.e., furred attachment).
- 6.1.5 Stud walls insulated with Rmax Insulating Sheathing Panels must be properly braced for lateral loads according to the requirements of local building codes.
- 6.1.6 The wall system shall be designed to handle cladding load and wind load per the applicable code.
- 6.1.7 The Environmental Product Declarations (EPD) for Rmax Insulating Sheathing Panels are available at www.polyiso.org/page/EPDs.



6.2 Thermal Resistance (R-Value)

- 6.2.1 Rmax Insulating Sheathing Panels meet the continuous insulating sheathing requirements complying with the provisions of [IRC Section N1102](#), [IECC Section C402](#), and [IECC Section R402](#).
- 6.2.2 Rmax Insulating Sheathing Panels have the thermal properties shown in **Table 1**.

Table 1. Thermal Properties

Nominal Thickness (in)	Thermal R-Value ¹ (°F•ft ² •hr/BTU)
0.50	3.2
1.00	6.0
1.25	7.8
1.50	9.6
1.55	10.0
2.00	13.1
2.50	16.7
3.00	20.3
3.50	23.9
4.00	27.4
4.50	31.0

SI: 1 in = 25.4 mm; 1 °F•ft²•hr/BTU = 0.1761 K•m²/W
 1. Thermal values are determined by using ASTM C518 test method at 75° F mean temperature.

6.3 Water-Resistive Barrier (WRB)

- 6.3.1 Rmax Insulating Sheathing Panels may be used as a WRB as prescribed in [IBC Section 1403.2](#) and [IRC Section R703.2](#), when installed on exterior walls as described in this section and the [manufacturer installation instructions](#).
- 6.3.2 Rmax Insulating Sheathing Panels shall be installed horizontally or vertically with vertical board joints centered directly over exterior framing and spaced a maximum of 24" (610 mm) o.c. The fasteners used to attach the board shall be installed in accordance with **Section 9**.
- 6.3.3 All joints between boards shall be sealed by [Rmax® R-SEAL 3000](#), [Rmax® R-SEAL Construction Tape](#), or [Rmax® R-SEAL 2000 LF Liquid Flashing](#), per the [manufacturer installation instructions](#).
- 6.3.4 A separate WRB may also be provided. If a separate WRB method is used, taping of the sheathing joints is not required.
- 6.3.5 Flashing of corners, windows, doors, and other through-wall penetrations is required and shall comply with the applicable code.
- 6.3.6 Rmax Insulating Sheathing Panels have the water-resistance properties shown in **Table 2**.



Table 2. Water-Resistance Properties

Property	Test Methods	Results
Water Vapor Transmission	ASTM E96	< 0.03 U.S. Perm
Water Absorption	ASTM C209	< 0.2% by Volume
	ASTM C272	< 0.3% by Volume

SI: 1 U.S. Perm [grain/(hr•ft²•inHg)] = 57.2135 ng/(Pa•s•m²)

6.3.7 Rmax Insulating Sheathing Panels are Class I Vapor Retarders in accordance with [IBC Table 1404.3\(1\)](#).

6.4 Air Barrier

6.4.1 Rmax Insulating Sheathing Panels meet the requirements of [IRC Section N1101.10.5](#), [IECC Section R303.1.5](#), and [IECC Section C402.6.2.3.1](#),²⁸ for use as a component of the continuous air barrier when installed in accordance with the [manufacturer installation instructions](#) and this report.

6.4.2 The air barrier material properties of Rmax Insulating Sheathing Panels are shown in **Table 3**.

Table 3. Air Barrier Material Properties¹

Property	Test Method	Results
Air Permeance	ASTM E2178	< 0.005 L/(s•m ²)

Imperial: 1 L/(s•m²) = 0.2 cfm/ft²

6.4.3 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 L/(s•m²) at 75 Pa pressure difference when tested in accordance with ASTM E2178.

6.4.4 When used as part of a continuous air barrier, all sheathing panel joints shall be sealed with R-SEAL 3000, R SEAL Construction Tape, or R-SEAL 2000 LF. The transitions, including top and bottom of walls, and all penetrations shall also be sealed in accordance with the [manufacturer installation instructions](#) and this report.

6.5 Draftstop

6.5.1 Rmax Insulating Sheathing Panels may be used as a draftstop material in accordance with [IBC Section 708.4.3](#),²⁹ [IBC Section 718.3](#), [IBC Section 718.4](#), and [IRC Section R302.12](#).

6.5.2 When installed as a draftstop, Rmax Insulating Sheathing Panels shall be installed in accordance with **Section 9**.



6.6 Fire Safety Performance

6.6.1 Surface Burning Characteristics:

6.6.1.1 Rmax Insulating Sheathing Panels have the flame spread and smoke developed ratings shown in **Table 4**, when tested in accordance with ASTM E84, per IBC Section 2603.3, IBC Section 2603.5.4, and IRC Section R303.3.³⁰

Table 4. Surface Burning Characteristics¹

Product	Flame Spread Index	Smoke Developed Index	Classification
Thermasheath ²	≤ 75	≤ 450	Class B
TSX-8500, TSC-8510, ECOMAXci FR, and ECOMAXci FR White	≤ 25	≤ 250	Class A

SI: 1 in = 25.4 mm
 1. Tested in accordance with ASTM E84
 2. Foam core only

6.6.2 Thermal Barrier and Ignition Barrier (IBC and IRC Buildings):

- 6.6.2.1 *TSX-8500, TSX-8510, ECOMAXci FR and ECOMAXci FR White:* Up to 4.5" in walls only, or up to 12" in ceilings only, are approved for use without a thermal barrier or ignition barrier, based on large scale testing conducted in accordance with UL 1715, per IBC Section 2603.9 and IRC Section R303.6.³¹
- 6.6.2.2 *TSX-8500, TSX-8510, ECOMAXci FR and ECOMAXci FR White:* Up to 4.5" in walls and ceilings are approved for use in attics, crawl spaces, or other uninhabited spaces without a thermal barrier or ignition barrier, based on large-scale testing in accordance with NFPA 286, per IBC Section 2603.9 and IRC Section R303.6.³²
- 6.6.2.3 *Thermasheath:* Up to 4.5" in walls only or ceilings only, is approved for use in attics, crawl spaces, or other uninhabited spaces without a thermal barrier or ignition barrier, based on large-scale testing in accordance with NFPA 286, per IBC Section 2603.9 and IRC Section R303.6.³³
- 6.6.2.4 *Thermasheath:* Up to 1" in walls and/or ceilings is approved for use in attics, crawl spaces, or other uninhabited spaces without a thermal barrier or ignition barrier, based on large-scale testing in accordance with NFPA 286 per IBC Section 2603.9 and IRC Section R303.6.³⁴
- 6.6.2.5 *All Products:* Up to 12" (304.8 mm) in thickness may be installed within the building envelope (including but not limited to, attics, crawl spaces, wall, roof, floor, and ceiling assemblies) of all building types when separated from the interior with a thermal barrier consisting of a minimum 0.5" gypsum wallboard or an approved equivalent in accordance with IBC Section 2603.4 and IRC Section R303.4.³⁵
- 6.6.2.6 In applications where panels are used in both walls and ceilings, but only one is allowed to be left exposed per **Section 6.6.2.1** or **Section 6.6.2.3**, the other must meet the requirements of **Section 6.6.2.5**.
- 6.6.2.7 For IRC applications in attics, crawl spaces, or other uninhabited spaces of **Section 6.6.2.2**, **Section 6.6.2.3**, or **Section 6.6.2.4**, approval is limited to areas where access to the space is required by IRC Section R807.1 or IRC Section R408.4.



- 6.6.2.8 For IRC and IBC applications in attics, crawl spaces, or other uninhabited spaces of **Section 6.6.2.2**, **Section 6.6.2.3**, or **Section 6.6.2.4**, approval is limited to areas where entry is made only for the purposes of repairs or maintenance.
- 6.6.2.9 Panels may be installed in single or multiple layers.
- 6.6.3 *Fire Resistance Ratings (Fire-Rated Assemblies):*
 - 6.6.3.1 Rmax Insulating Sheathing Panels have been tested and meet the requirements of UL 263 (ASTM E119), in accordance with IBC Section 703.2.1, for use in the following assembly designs when installed in accordance with the manufacturer installation instructions and this report:
 - 6.6.3.1.1 45 Minutes: U424, U425, V321, V499, W456
 - 6.6.3.1.2 1-Hour: U026, U326, U330, U349, U354, U355, U364, U424, U425, U460, V454, W417, W429, W448, W451, W452, W456
 - 6.6.3.1.3 1.5-Hour: U424, U425, W456
 - 6.6.3.1.4 2-Hour: U905, U906, U939, V332, V499, W449, W456
 - 6.6.3.1.5 3-Hour: U904, U912, U939, W429, W451
 - 6.6.3.1.6 4-Hour: U904, U912, U939, W429, W451
- 6.6.4 *Potential Heat:*
 - 6.6.4.1 Thermasheath, ECOMAXci FR and ECOMAXci FR White have been tested to assess their performance as shown in **Table 5** with regard to potential heat in accordance with NFPA 259 and IBC Section 2603.5.3.

Table 5. Potential Heat

Product	Potential Heat (BTU/lb)
Thermasheath	11,467
ECOMAXci FR and ECOMAXci FR White	11,054

SI: 1 BTU/lb = 2.326 kJ/kg
 1. Tested in accordance with NFPA 259.

- 6.6.5 *Vertical and Lateral Fire Propagation (NFPA 285 Applications):*
 - 6.6.5.1 Thermasheath, ECOMAXci FR, and ECOMAXci FR White have been tested to assess performance with regard to vertical and lateral fire propagation in accordance with NFPA 285 and IBC Section 2603.5.5.
 - 6.6.5.2 Engineering analysis has also been conducted to assess substitution of other products within the approved wall assemblies.
 - 6.6.5.3 The wall assemblies listed in **Table 6** are approved for use in buildings of Type I-IV construction with ECOMAXci FR and ECOMAXci FR White.



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
Base Wall System Select Option 1, 2, 3, or 4	<ol style="list-style-type: none"> 1. Cast concrete walls 2. CMU Concrete walls 3. 20-gauge (minimum) 3⁵/₈" (minimum) steel studs spaced 24" o.c. (maximum) <ol style="list-style-type: none"> a. 1/2" (minimum) Type X Special Fire Resistant Gypsum Wallboard Interior b. Bracing as required by code 4. Where allowed by code in Types I, II, III, or IV construction, FRTW (Fire-Retardant Treated Wood) studs complying with IBC Section 2303.2, minimum nominal 2 x 4 dimension, spaced 24" o.c. (maximum) <ol style="list-style-type: none"> a. 5/8" Type X Gypsum Wallboard Interior b. Bracing as required by code
Floor Line Firestopping Select Option 1 or 2	<ol style="list-style-type: none"> 1. 4-pcf mineral wool installed with Z-clips 2. FRTW fire blocking at floor line in accordance with applicable code requirements (use with FRTW framing)
Cavity Insulation Select Option 1 - 15	<ol style="list-style-type: none"> 1. None 2. Any noncombustible insulation per ASTM E136 3. Any Mineral Fiber (board type Class A, ASTM E84 faced or unfaced) 4. Any Fiberglass (batt type Class A ASTM E84 faced or unfaced) 5. 5 1/2" (maximum) Icynene LD-C-50 SPF in 6" deep studs (maximum). Use with 5/8" exterior sheathing 6. 5 1/2" (maximum) Icynene MD-C-200 2-pcf SPF in 6" deep studs (maximum) full fill without an air gap. Use with 5/8" exterior sheathing 7. 5 1/2" (maximum) Icynene MD-R-210 2-pcf SPF in 6" deep studs (maximum) full fill without an air gap. Use with 5/8" exterior sheathing 8. SWD Urethane QS 112 2-pcf SPF in 6" deep studs (maximum) partial fill with a maximum 2 1/2" air gap or full fill. Use with 5/8" exterior sheathing. 9. Gaco Western 183M SPF (3 1/2" maximum). Use with 5/8" exterior sheathing 10. Gaco Western F 1850 SPF (3 1/2" maximum). Use with 5/8" exterior sheathing 11. Demilec Sealection 500 SPF (3 5/8" maximum). Use with 5/8" exterior sheathing 12. Demilec HeatLok Soy 200 Plus SPF (3.4" maximum). Use with 5/8" exterior sheathing 13. Bayer Bayseal SPF (3" maximum). Use with 5/8" exterior sheathing 14. Lapolla FoamLok FL 2000 SPF (3" maximum). Use with 5/8" exterior sheathing 15. BASF SprayTite 81206 or WallTite (US & US-N) SPF (3 5/8" maximum). Use with 5/8" exterior sheathing
Exterior Sheathing Select Option 1 – 8 Note: When SPF is used, 5/8" exterior gypsum sheathing must also be used	<ol style="list-style-type: none"> 1. None (when using Base Wall 1 or 2) 2. None (3" maximum exterior insulation with claddings 7 - 15) 3. None (4 1/2" maximum exterior insulation with claddings 1 - 6) 4. 1/2" (minimum) exterior gypsum board sheathing 5. 1/2" (minimum) FRTW structural panels complying with IBC Section 2303.2 and installed in accordance with code allowances for Types I, II, III, or IV construction. 6. 5/8" DensElement with DensDefy or Prosoco FastFlash flashing at joints/fasteners 7. Soprema Sopraseal Xpress G 8. Tremco/USG Securock® ExoAir® 430



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied to Exterior Sheathing Select Option 1 or 2 installed per manufacturer installation instructions Note: WRB over exterior sheathing item numbers 6 – 8 may not be used since they already incorporate a preinstalled WRB Note: When using no exterior sheathing, sheet building wraps may be applied directly to studs. NLA – No Longer Available</p>	<ol style="list-style-type: none"> 1. None 2. Any WRB tested in accordance with ASTM E1354 (at a minimum of 20 kW/m² heat flux) and shown by analysis to be less flammable (improved T_{ign}, Pk. HRR) than the baseline WRB or exterior insulation foam core. The following WRB products are allowed: <ol style="list-style-type: none"> a. Carlisle CCW Fire Resist 705FR-A b. Carlisle CCW Fire Resist Barritech NP™ c. Carlisle CCW Fire Resist Barritech VP d. Dörken Systems Inc, Delta® Stratus SA e. Dörken Systems Inc, Delta®-Fassade S f. Dörken Systems Inc, Delta®-Foxyx/Plus g. Dörken Systems Inc, Delta®-Maxx/Plus h. Dörken Systems Inc, Delta®-Vent S/Plus i. Dörken Systems Inc, Delta®-Vent SA j. Dow Corning DOWSIL DefendAir 200 (or LT version) k. Dow Corning DOWSIL DefendAir 200C (Charcoal) l. Dryvit Backstop® NT™ m. DuPont™ Tyvek® (Various per ESR-2375) n. DuPont™ Weathermate™ Housewrap o. DuPont™ Weathermate™ Plus Housewrap p. GCP PERM-A-BARRIER® Aluminum Wall Membrane q. GCP PERM-A-BARRIER® NPL 10 r. GCP PERM-A-BARRIER® VPL s. GCP PERM-A-BARRIER® VPL 50 Membrane t. GCP PERM-A-BARRIER® VPL Low Temperature u. GCP PERM-A-BARRIER® VPS v. Henry Air-Bloc All Weather STPE w. Henry® Air-Bloc® 16 MR x. Henry® Air-Bloc® 17 MR y. Henry® Air-Bloc® 21 FR z. Henry® Air-Bloc® 31MR [NLA] aa. Henry® Air-Bloc® 32MR [NLA] bb. Henry® Air-Bloc® 33MR [NLA] cc. Henry® Blueskin® Metal Clad® dd. Henry® Blueskin® SA ee. Henry® Blueskin® VP 160 ff. Henry® EnviroCap gg. Henry® FoilSkin hh. Henry® Super Jumbo Tea 60 Minute® (Fortifiber) ii. Henry® WeatherSmart® Drainable Housewrap (Fortifiber) jj. Kingspan (Pactiv) GreenGuard® MAX™ Building Wrap kk. MBCC MasterSeal® AWB 660 (Formerly BASF Enershield® HP) ll. MBCC MasterSeal® AWB 660 I (Formerly BASF Enershield® I) mm. NaturaSeal AirSeal NS A-250LP™



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied to Exterior Sheathing Continued</p>	<p>nn. NaturaSeal NS-A-250HP™ oo. Parex WeatherSeal Spray & Roll-On pp. Pecora ProPerm VP qq. Pecora XL-PermULTRA NP rr. Pecora XL-PermULTRA VP (10 mil DFT) ss. Prosoco R-Guard® Cat 5™ tt. Prosoco R-Guard® MVP (NLA) uu. Prosoco R-Guard® Spray Wrap (NLA) vv. Prosoco R-Guard® Spray Wrap MVP ww. Prosoco R-Guard® VB xx. Siga Majvest® 500 SA yy. Sika Sikagard®-530 zz. Sika Sikagard®-535 aaa. Soprema Sopraseal® LM 204 VP bbb. Soprema Sopraseal® Stick 1100T ccc. Soprema Sopraseal® Stick VP ddd. Soprema Soprasolin HD eee. Tremco ExoAir 110AT fff. Tremco ExoAir 230 ggg. Vaproshield RevealShield SA® hhh. Vaproshield WrapShield SA® iii. W.R. Meadows® Air-Shield™ LMP (Black) jjj. W.R. Meadows® Air-Shield™ LMP (Gray) kkk. W.R. Meadows® Air-Shield™ LSR lll. W.R. Meadows® Air-Shield™ SMP mmm. W.R. Meadows® Air-Shield™ TMP</p>
<p>Exterior Insulation Select 1 or 2 Note: See Exterior Sheathing options for thickness limitations when no exterior sheathing is used</p>	<p>1. 4½" (maximum consisting of a single panel or multiple thinner panels) Rmax® ECOMAXci® FR 2. 4½" (maximum consisting of a single panel or multiple thinner panels) Rmax® ECOMAXci® FR White</p>
<p>FRTW Structural Panels Over Exterior Insulation (Optional)</p>	<p>1. For use with all cladding options, installed in accordance with applicable code requirements. Must be applied with joints staggered. Fasteners used for securing FRTW panels must penetrate through the foam plastic into FRTW or steel framing. The system must be designed to handle the cladding load and wind load per the applicable code. Note: May be applied in the field or factory applied. Adhesive must not be full coverage.</p>



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied Over Exterior Insulation (or FRTW)</p> <p>Use in item 1 or 2, depending on the cladding used</p> <p>Note: Exterior WRB items in 1.b. are not traditional WRB products, but are insulation panel joint tapes. The insulation panel joints shall be staggered</p> <p>NLA = No Longer Available</p>	<ol style="list-style-type: none"> 1. For use with all claddings <ol style="list-style-type: none"> a. None b. 6" (maximum) tape or flashing over insulation joints <ol style="list-style-type: none"> i. Rmax® R-SEAL 3000 ii. Rmax® R-SEAL 6000 iii. Rmax® R-SEAL 2000 LF iv. Venture Tape CW v. Asphalt or butyl based tape vi. Liquid flashing c. Carlisle (CCW) Fire Resist 705FR-A d. DuPont™ Tyvek® (Various per ESR-2375) e. DuPont™ Weathermate™ Housewrap f. DuPont™ Weathermate™ Plus Housewrap g. GCP PERM-A-BARRIER® Aluminum Wall Membrane h. Henry® Blueskin® Metal Clad® i. Henry® FoilSkin j. Kingspan (Pactiv) GreenGuard® MAX™ Building Wrap k. Prosoco R-Guard® Spray Wrap MVP l. Soprema Soprasolin® HD 2. For use with cladding options 1 - 6 (heavy masonry) with non-open joint installation techniques (e.g., shiplap, etc.) <ol style="list-style-type: none"> a. Carlisle CCW Fire Resist Barritech NP™ b. Carlisle CCW Fire Resist Barritech VP c. Dörken Systems Inc. Delta®-Fassade S d. Dörken Systems Inc. Delta®-Foxx/Plus e. Dörken Systems Inc. Delta®-Maxx/Plus f. Dörken Systems Inc. Delta®-Vent S/Plus g. Dow Corning DOWSIL™ DefendAir 200 h. Dow Corning DOWSIL™ DefendAir 200C i. Dryvit Backstop® NT™ j. GCP PERM-A-BARRIER® VPS k. GCP PERM-A-BARRIER® VPL l. GCP PERM-A-BARRIER® VPL Low Temperature m. Henry Air-Bloc All Weather STPE n. Henry Super Jumbo Tex 60 minutes (only with 3/4" stucco cladding) (Fortifiber) o. Henry WeatherSmart Drainable (Fortifiber) p. Henry® Air-Bloc® 16 MR q. Henry® Air-Bloc® 17 MR r. Henry® Air-Bloc® 21 FR s. Henry® Air-Bloc® 31MR t. Henry® Air-Bloc® 33MR u. Henry® Blueskin® VP160



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied Over Exterior Insulation (or FRTW) Continued</p>	<ul style="list-style-type: none"> v. Henry® EnviroCap w. Parex WeatherSeal Spray & Roll-On x. Pecora ProPerm VP y. Pecora XL-Perm^{ULTRA} NP z. Pecora XL-Perm^{ULTRA} VP (10 mil DFT) aa. Prosoco R-Guard® Cat 5™ bb. Prosoco R-Guard® MVP [NLA] cc. Prosoco R-Guard® Spray Wrap [NLA] dd. Prosoco R-Guard® VB ee. Siga Majvest® 500 SA ff. Sika SikaGard® 535 gg. Soprema Sopraseal® Stick VP hh. Vaproshield RevealShield SA® ii. Vaproshield WrapShield SA® jj. W.R. Meadows® Air-Shield™ LMP (Black) kk. W.R. Meadows® Air-Shield™ LMP (Gray) ll. W.R. Meadows® Air-Shield™ LSR mm. W.R. Meadows® Air-Shield™ SMP nn. W.R. Meadows® Air-Shield™ TMP oo. Henry® Air-Bloc® 31MR
<p>Exterior Cladding Select Option 1 – 17 Note: For WRB over exterior insulation option 2 above, heavy masonry claddings 1 – 6 shall incorporate non-open joints</p>	<p>Heavy Masonry</p> <ol style="list-style-type: none"> 1. Brick - nominal 4" clay brick or veneer with a maximum 2" air gap behind brick. Brick ties/anchors – 24" o.c. (maximum) 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath with an optional secondary water resistive barrier between the exterior insulation and lath.* 3. Limestone - minimum 2" thick any using standard installation technique. 4. Natural Stone Veneer – Minimum 2" thick using any standard installation technique. 5. Cast Artificial Stone, Precast Concrete Panels, or CMU – Minimum 1 1/2" thick, using any standard installation technique. Cast stone complying with ICC-ES AC 51. 6. Terra Cotta Cladding – Minimum 1 1/4" thick using any standard installation technique. <p>Other</p> <ol style="list-style-type: none"> 1. Any MCM or ACM (aluminum, steel, copper, zinc) (with 2 1/2" maximum air gap) that has successfully passed NFPA 285 using any standard installation technique, such as Carter Companies EVO Architectural Panel Systems for use with any FR ACM/MCM NFPA 285 material. 2. Uninsulated sheet metal building panels including aluminum, zinc, steel, or copper using any standard installation technique. 3. Uninsulated fiber-cement board siding using any standard installation technique. 4. Stone/Aluminum honeycomb composite building panels that have passed NFPA 285 or equivalent. <ol style="list-style-type: none"> a. Stone Panels, Inc Stone Lite Panel system has been analyzed using manufacturer standard installation technique



Table 6. Fire Performance – Vertical and Lateral Fire Propagation (ECOMAXci FR and ECOMAXci FR White)

Wall Component	Materials
<p>Exterior Cladding Continued</p>	<ol style="list-style-type: none"> 5. Autoclaved-Aerated-Concrete (AAC) panels that have successfully passed NFPA 285 using any standard installation technique. 6. Thin Set Brick: <ol style="list-style-type: none"> a. Glen-Gary Thin Tech™ Elite Series has been analyzed using manufacturer standard installation technique. b. Tabs II Panel System with 1/2" bricks using Tabs Wall Adhesive 7. Natural Stone Veneer – minimum 1 1/4" (adhered with mortar or concrete/cement based adhesive). 8. FunderMax m.look exterior panels using the manufacturer standard installation technique. The air gap between cladding and insulation or WRB must not exceed 1 1/2". 9. Glen-Gery Tru-Brix (only with optional non-combustible mortar) 10. Thin brick (minimum 3/4" thick clay brick) fully adhered with cementitious mortar (standard or polymer-modified) to minimum 1/2" thick cement backer board or gypsum sheathing. A secondary water resistive barrier can be installed between the exterior sheathing and the brick.* 11. Natural stone or artificial stone (minimum 3/4" thick) fully adhered with cementitious mortar (standard or polymer-modified) to minimum 1/2" thick cement backer board or gypsum sheathing. A secondary water resistive barrier can be installed between the exterior sheathing and the brick.* <p>*Note: The secondary barriers shall consists of materials other than full-coverage asphalt or butyl-based self-adhered membranes.</p>
<p>Rough Openings Note: Must cover both the air gap between the cladding and the exterior insulation and the exposed edge of the exterior insulation</p>	<ol style="list-style-type: none"> 1. Rough opening perimeters shall incorporate one of the following, spanning at a minimum from the interior edge of the cladding to the interior edge of the exterior insulation at the rough opening: <ol style="list-style-type: none"> a. 0.08" (minimum) aluminum (examples include window frame, flashing, lintel, c-channel) b. 20-gauge (minimum) sheet steel (examples include window frame, flashing, lintel, c-channel) c. 1/2" (minimum) 4-pcf (minimum) mineral wool d. 3/4" (minimum) FRT wood buck e. 3/4" (minimum) FRT plywood f. 5/8" (minimum) Type X GWB g. 1/4" (minimum) fiber cement board 2. All fenestrations and penetrations shall be flashed in accordance with the applicable code using asphalt, acrylic, or butyl flashing tape, liquid flashing, R-SEAL 6000 or R-SEAL 2000 LF up to 12" maximum width.
<p>SI: 1 in = 25.4 mm</p> <ol style="list-style-type: none"> 1. All WRB shall be installed at recommended application rates and per the manufacturer installation instructions. 	



6.6.5.4 The wall assemblies listed in **Table 7** are approved for use in buildings of Type I-IV construction with Thermasheath.

Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Base Wall System Select 1, 2, 3, or 4</p>	<ol style="list-style-type: none"> 1. Cast Concrete Walls 2. CMU Concrete Walls 3. 20-gauge (minimum) 3⁵/₈" (minimum) steel studs spaced 24" o.c. (maximum) <ol style="list-style-type: none"> a. 5⁸/₈" (minimum) type X Gypsum Wallboard Interior b. Bracing as required by code 4. Where allowed by code in Types I, II, III, or IV construction, FRTW, studs complying with <u>IBC Section 2303.2</u>, minimum nominal 2 x 4 dimension, spaced 24" o.c. (maximum) <ol style="list-style-type: none"> a. 5⁸/₈" type X Gypsum Wallboard Interior b. Bracing as required by code
<p>Floorline Firestopping Select Option 1 or 2</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 (use with FRTW framing)
<p>Cavity Insulation Use Any Option 1 – 15 EZ FLO may be used inside the box headers and jamb studs for NFPA 285 assemblies requiring SPF in stud cavities</p>	<ol style="list-style-type: none"> 1. None 2. Any noncombustible insulation per ASTM E136 3. Any Mineral Fiber (board type Class A, faced or un-faced, meeting ASTM E84) 4. Any Fiberglass (batt type Class A, faced or un-faced, meeting ASTM E84) 5. 5¹/₂" (maximum) Icynene LD-C-50 SPF in 6" deep studs (maximum). Use with 5⁸/₈" exterior sheathing 6. 5¹/₂" (maximum) Icynene MD-C-200 2-pcf SPF in 6" deep studs (maximum) full fill without an air gap. Use with 5⁸/₈" exterior sheathing 7. 5¹/₂" (maximum) Icynene MD-R-210 2-pcf SPF in 6" deep studs (maximum) full fill without an air gap. Use with 5⁸/₈" exterior sheathing 8. SWD Urethane QS 112 2-pcf SPF in 6" deep studs (maximum) partial fill with a maximum 2¹/₂" air gap or full fill. Use with 5⁸/₈" exterior sheathing 9. Gaco Western 183M SPF (3¹/₂" maximum). Use with 5⁸/₈" exterior sheathing 10. Gaco Western F1850 SPF (3¹/₂" maximum). Use with 5⁸/₈" exterior sheathing 11. Demilec SELECTION 500 SPF (3⁵/₈" maximum). Use with 5⁸/₈" exterior sheathing 12. Demilec HeatLok Soy 200 Plus SPF (3.4" maximum). Use with 5⁸/₈" exterior sheathing 13. Bayer Bayseal SPF (3" maximum) Use with 5⁸/₈" exterior sheathing 14. Lapolla FoamLok FL 2000 SPF (3" maximum) Use with 5⁸/₈" exterior sheathing 15. BASF SprayTite 81206 or WallTite (US & US-N) SPF (3⁵/₈" maximum). Use with 5⁸/₈" exterior sheathing
<p>Exterior Sheathing Use Any Option 1 – 6 Note: When SPF is used, 5⁸/₈" exterior gypsum sheathing must be used</p>	<ol style="list-style-type: none"> 1. None (when using Base Wall 1 or 2) 2. 1/2" thick or thicker, exterior type gypsum board sheathing 3. 1/2" (minimum) FRTW structural panels complying with <u>IBC Section 2303.2</u> and installed in accordance with code allowances for Types I, II, III, or IV construction 4. 5⁸/₈" DensElement with DensDefy or Prosoco FastFlash flashing at joints/fasteners 5. Soprema Sopraseal Xpress G 6. Tremco/USG Securock® ExoAir® 430



Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied to Exterior Sheathing</p> <p>Use Option 1 or 2 installed per the manufacturer installation instructions</p> <p>Note: WRB over exterior Sheathing items 6 – 8 may not be used, since they already incorporate a pre-installed WRB.</p> <p>Note: When using no exterior sheathing, sheet building wraps may be applied directly to studs</p> <p>NLA = No Longer Available</p>	<ol style="list-style-type: none"> 1. None 2. Any WRB tested in accordance with ASTM E1354 (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. Carlisle CCW Fire Resist 705FR-A b. Carlisle CCW Fire Resist Barritech NP™ c. Carlisle CCW Fire Resist Barritech VP d. Dörken Systems Inc. Delta® Stratus SA e. Dörken Systems Inc. Delta®-Fassade S f. Dörken Systems Inc. Delta®-Foxy Plus g. Dörken Systems Inc. Delta®-Maxx Plus h. Dörken Systems Inc. Delta®-Vent S/Plus i. Dörken Systems Inc. Delta®-Vent SA j. Dow Corning DefendAir 200C (Charcoal) k. Dow Corning DOWSIL™ DefendAir 200 (or LT version) l. Dryvit Backstop® NT™ m. DuPont™ Tyvek® (Various per ESR-2375) n. DuPont™ Weathermate™ Housewrap o. DuPont™ Weathermate™ Plus Housewrap p. GCP PERM-A-BARRIER® Aluminum Wall Membrane q. GCP PERM-A-BARRIER® NPL 10 r. GCP PERM-A-BARRIER® VPL s. GCP PERM-A-BARRIER® VPL 50 Membrane t. GCP PERM-A-BARRIER® VPL Low Temperature u. GCP PERM-A-BARRIER® VPS v. Henry® Air-Bloc® All Weather STPE w. Henry® Air-Bloc® 16 MR x. Henry® Air-Bloc® 17 MR y. Henry® Air-Bloc® 21 FR z. Henry® Air-Bloc® 31MR [NLA] aa. Henry® Air-Bloc® 32MR [NLA] bb. Henry® Air-Bloc® 33MR [NLA] cc. Henry® Blueskin® Metal Clad® dd. Henry® Blueskin® SA ee. Henry® Blueskin® VP160 ff. Henry® EnviroCap gg. Henry® FoilSkin hh. Henry® Super Jumbo Tex 60 Minute® (Fortifiber) ii. Henry® WeatherSmart® Drainable Housewrap (Fortifiber) jj. Kingspan (Pactiv) Green Guard® Max™ Building Wrap kk. MBCC MasterSeal® AWB 660 (Formerly BASF Enershield® HP) ll. MBCC MasterSeal® AWB 660 I (Formerly BASF Enershield® I)



Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied to Exterior Sheathing Continued</p>	<p>mm. NaturaSeal AIRSEAL NS-A250-HP™ nn. NaturaSeal AIRSEAL NS-A250-LP™ oo. Parex WeatherSeal Spray & Roll-On pp. Pecora ProPerm VP qq. Pecora XL-PermULTRA NP rr. Pecora XL-PermULTRA VP (10 mil DFT) ss. Prosoco R-Guard® Cat 5™ tt. Prosoco R-Guard® MVP (NLA) uu. Prosoco R-Guard® Spray Wrap [NLA] vv. Prosoco R-Guard® Spray Wrap MVP ww. Prosoco R-Guard® VB xx. Siga Majvest 500 SA yy. Sika SikaGard®-530 zz. Sika SikaGard®-535 aaa. Soprema Sopraseal® LM 204 VP bbb. Soprema Sopraseal® Stick 1100T ccc. Soprema Sopraseal® Stick VP ddd. Soprema Soprasolin® HD eee. Tremco ExoAir 110AT fff. Tremco ExoAir 230 ggg. Vaproshield RevealShield SA® hhh. Vaproshield WrapShield SA® iii. W.R. Meadows® AIR-SHIELD™ LMP (Black) jjj. W.R. Meadows® AIR-SHIELD™ LMP (Gray) kkk. W.R. Meadows® AIR-SHIELD™ LSR lll. W.R. Meadows® AIR-SHIELD™ SMP mmm. W.R. Meadows® AIR-SHIELD™ TMP</p>
<p>Exterior Insulation Use Option 1, 2, or 3</p>	<ol style="list-style-type: none"> 1. 4 1/2" (maximum consisting of a single panel or multiple thinner panels) Rmax® Thermasheath® 2. 4 1/2" (maximum consisting of a single panel or multiple thinner panels) Rmax® TSX-8500 3. 4 1/2" (maximum consisting of a single panel or multiple thinner panels) Rmax® TSX-8510
<p>FRTW Structural Panels Over Exterior Insulation (Optional)</p>	<ol style="list-style-type: none"> 1. For use with all cladding options installed in accordance with applicable code requirements. Must be applied with joints staggered. Fasteners used for securing FRTW panels must penetrate through the foam plastic into FRTW or steel framing. The system must be designed to handle the cladding load and wind load per the applicable code. <p>Note: May be applied in the field or factory applied. Adhesive must not be full coverage.</p>



Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied Over Exterior Insulation (or FRTW) Select Option 1 or 2 Note: Exterior WRB items in 1.b. are not traditional WRB products, but are insulation panel joint tapes. The insulation panel joints shall be staggered</p>	<ol style="list-style-type: none"> 1. For use with all cladding options: <ol style="list-style-type: none"> a. None b. 6" (maximum) tape or flashing over insulation joints <ol style="list-style-type: none"> i. Rmax® R-SEAL 3000 ii. Rmax® R-SEAL 6000 iii. Rmax® R-SEAL 2000 LF iv. Venture Tape CW v. Asphalt or butyl based tape vi. Liquid flashing c. Carlisle (CCW) Fire Resist 705FR-A d. DuPont™ Tyvek® (Various per ESR-2375) e. DuPont™ Weathermate™ Housewrap f. DuPont™ Weathermate™ Plus Housewrap g. GCP PERM-A-BARRIER® Aluminum Wall Membrane h. Henry® Blueskin® Metal Clad® i. Henry® FoilSkin j. Kingspan (Pactiv) GreenGuard® Max Building Wrap k. Prosoco R-Guard® Spray Wrap MVP l. Soprema Soprasolin® HD 2. For use with cladding options 1 - 6 (heavy masonry) with non-open joint installation techniques (e.g., shiplap, etc.) <ol style="list-style-type: none"> a. Carlisle CCW Fire Resist Barritech NP™ b. Carlisle CCW Fire Resist Barritech VP c. Dörken Systems Inc. Delta®-Fassade S d. Dörken Systems Inc. Delta®-Foxy/Plus e. Dörken Systems Inc. Delta®-Maxx/Plus f. Dörken Systems Inc. Delta®-Vent S/Plus g. Dow Corning DefendAir 200C (Charcoal) h. Dow Corning DOWSIL DefendAir 200 (or LT version) i. Dryvit Backstop® NT™ j. GCP PERM-A-BARRIER® VPL k. GCP PERM-A-BARRIER® VPL Low Temperature l. GCP PERM-A-BARRIER® VPS m. Henry® Air-Bloc® All Weather STPE n. Henry® Air-Bloc® 16MR o. Henry® Air-Bloc® 17MR p. Henry® Air-Bloc® 21 FR q. Henry® Air-Bloc® 31MR r. Henry® Air-Bloc® 33MR s. Henry® Blueskin® VP160 t. Henry® Envirocap u. Henry Super Jumbo Tex 60 minutes (only with 3/4" stucco cladding) (Fortifiber)



Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Weather-Resistive Barrier Applied Over Exterior Insulation (or FRTW) Continued</p>	<ul style="list-style-type: none"> v. Henry WeatherSmart Drainable (Fortifiber) w. Parex WeatherSeal Spray & Roll-On x. Pecora ProPerm VP y. Pecora XL-PermULTRA NP z. Pecora XL-PermULTRA VP (10 mil DFT) aa. Prosoco R-Guard® Cat 5™ bb. Prosoco R-Guard® MVP (NLA) cc. Prosoco R-Guard® Spray Wrap (NLA) dd. Prosoco R-Guard® VB ee. Siga Majvest® 500 SA ff. Sika SikaGard®-535 gg. Soprema Sopraseal® Stick VP hh. Vaproshield Revealshield SA® ii. Vaproshield Wrapshield SA® jj. W.R. Meadows® Air-Shield™ LMP (Black) kk. W.R. Meadows® Air-Shield™ LMP (Gray) ll. W.R. Meadows® Air-Shield™ LSR mm. W.R. Meadows® Air-Shield™ SMP nn. W.R. Meadows® Air-Shield™ TMP
<p>Exterior Cladding Use Any Option 1 – 7 Note: For WRB over exterior insulation, option 2 above, heavy masonry claddings 1 – 6 shall incorporate non-open joints</p>	<p>Heavy Masonry</p> <ol style="list-style-type: none"> 1. Brick – Nominal 4" thick clay brick or veneer with maximum 2" air gap behind the brick. Brick Ties/Anchors 24" o.c. (maximum) 2. Stucco – Minimum 3/4" thick, exterior cement plaster and lath. A secondary WRB shall be installed between the exterior insulation and the lath to provide a bond break.* 3. Limestone – Minimum 2" thick using any standard installation technique 4. Natural Stone Veneer – Minimum 2" thick using any standard installation technique 5. Cast Artificial Stone – Minimum 1 1/2" thick complying with ICC-ES AC 51 using any standard installation technique 6. Terracotta cladding – Minimum 1 1/2" thick using any standard installation technique <p>Other</p> <ol style="list-style-type: none"> 1. Uninsulated fiber-cement panel siding using any standard installation technique <p>*Note: The secondary barriers shall consists of materials other than full-coverage asphalt or butyl-based self-adhered membranes.</p>



Table 7. Fire Performance – Vertical and Lateral Fire Propagation (Thermasheath)

Wall Component	Materials
<p>Rough Openings Note: Must cover both the air gap between the cladding and the exterior insulation and the exposed edge of the exterior insulation.</p>	<ol style="list-style-type: none"> 1. Rough opening perimeters shall incorporate one of the following, spanning at a minimum from the interior edge of the cladding to the interior edge of the exterior insulation at the rough opening: <ol style="list-style-type: none"> a. 20-gauge (minimum) sheet steel (examples include window frame, flashing, lintel, C-channel) b. 1" (minimum) 4-pcf (minimum) mineral wool c. 1½" (minimum) FRT wood buck d. Two layers ¾" (minimum) FRT plywood e. Two layers 5/8" (minimum) type X GWB f. ½" (minimum) fiber cement board (or two layers minimum ¾") 2. All fenestrations and penetrations shall be flashed in accordance with the applicable code using asphalt, acrylic or butyl flashing tape, liquid flashing, R-SEAL 6000, or R-SEAL 2000 LF up to 12" maximum width.
<p>SI: 1 in = 25.4 mm 1. All WRB shall be installed at recommended application rates and per the manufacturer installation instructions.</p>	

6.6.6 Ignition Properties:

6.6.6.1 Thermasheath, ECOMAXci FR and ECOMAXci FR White were evaluated to assess performance with regard to ignition in accordance with [IBC Section 2603.5.7](#).

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

- 6.6.6.1.1.1 A thermal barrier in accordance with [IBC Section 2603.4](#)
- 6.6.6.1.1.2 Masonry or concrete – minimum 1" (25 mm) thick
- 6.6.6.1.1.3 Glass-fiber reinforced concrete panels – minimum 0.375" (9.5 mm) thick
- 6.6.6.1.1.4 Metal-faced panels having a minimum 0.019" (0.48 mm) thick aluminum or 0.016" (0.41 mm) thick corrosion-resistant steel outer facings
- 6.6.6.1.1.5 Stucco – minimum 0.875" (22 mm) thick complying with [IBC Section 2510](#)
- 6.6.6.1.1.6 Fiber cement siding – minimum ¼" (0.4 mm) thickness complying with [IBC Section 1404.17](#),³⁶ and [IBC Section 1404.17.1](#),³⁷ or [IBC Section 1404.17.2](#)³⁸

6.7 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.



7 Certified Performance³⁹

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.⁴⁰
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.⁴¹

8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 Rmax Insulating Sheathing Panels comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
 - 8.1.1 Rmax Insulating Sheathing Panels were evaluated to determine the following:
 - 8.1.1.1 Performance in accordance with foam plastic requirements of IBC Section 2603 and IRC Section R303.6.⁴²
 - 8.1.1.2 Performance for use as insulating sheathing (R-value) in accordance with IRC Section N1102 and IECC Section C402.
 - 8.1.1.3 Performance for use as a WRB in accordance with IBC Section 1403.2 and IRC Section R703.2.
 - 8.1.1.4 Performance for use as a vapor retarder in accordance with IBC Section 202, IBC Section 1404.3, IRC Section R202, and IRC Section R702.7.
 - 8.1.1.5 Performance for use as a continuous air barrier in accordance with IRC Section N1101.10.5, IECC Section R303.1.5, and IECC Section C402.6.2.3.1.⁴³
 - 8.1.1.6 Surface burning characteristics in accordance with IBC Section 2603.3, IBC Section 2603.5.4, and IRC Section R303.3.⁴⁴
 - 8.1.1.7 Special approval for use without a thermal barrier or ignition barrier in accordance with IBC Section 2603.4, IBC Section 2603.5.2, and IRC Section R303.4.⁴⁵
 - 8.1.1.8 Fire resistance rated assembly in accordance with IBC Section 703.2.1.
 - 8.1.2 Thermasheath, ECOMAXci FR and ECOMAXci FR White were evaluated to determine the following:
 - 8.1.2.1 Performance for use in exterior walls of buildings of Type I-IV construction in accordance with IBC Section 2603.5.
 - 8.1.2.1.1 Fire resistance rated assembly in accordance with IBC Section 703.2.1.
 - 8.1.2.1.2 Potential heat in accordance with IBC Section 2603.5.3.
 - 8.1.2.1.3 Flame spread and smoke development ratings in accordance with IBC Section 2603.5.4.
 - 8.1.2.1.4 Vertical and lateral fire propagation in accordance with IBC Section 2603.5.5.
 - 8.1.2.1.5 Ignition characteristics in accordance with IBC Section 2603.5.7.
- 8.2 Use of TSX-8500 and TSX-8510 in exterior walls of buildings of Type I-IV construction, in accordance with IBC Section 2603.5, is outside the scope of this report.
- 8.3 Use of Rmax Insulating Sheathing Panels in structures where the exterior wall covering is unable to resist one-hundred percent (100%) of the transverse wind load is outside the scope of this report.
 - 8.3.1 This report covers products within the range of 0.5" to 4.5".



- 8.4 Any building code, regulation and/or accepted engineering evaluations (e.g., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified⁴⁶ to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,⁴⁷ respectively.
- 8.5 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.
- 9.3 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.4 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 9.5 Fasteners include, but are not limited to, roofing nails, bugle head screws, cap nails, or self-taping screws with washers. Fasteners should penetrate wood framing at least 1" and steel framing at least four (4) threads. All fasteners shall be corrosion resistant.
- 9.6 Other means of fastening may also be used, such as masonry fasteners or construction adhesives that are compatible with the insulation.
- 9.7 Consult the manufacturer installation instructions for further details.
- 9.8 For ENERGY STAR® installation instructions see **Appendix A** in this report.

10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 10.1.1 Material properties testing in accordance with ASTM C1289
 - 10.1.2 Thermal resistance properties testing in accordance with ASTM C518
 - 10.1.3 Water vapor permeance testing in accordance with ASTM E96
 - 10.1.4 WRB testing in accordance with ASTM E331 and AATCC TM 127
 - 10.1.5 Water absorption testing in accordance with ASTM C209 and ASTM C272
 - 10.1.6 Air permeance testing in accordance with ASTM E2178
 - 10.1.7 Flame spread and smoke developed rating tests in accordance with ASTM E84
 - 10.1.8 Room corner tests in accordance with NFPA 286
 - 10.1.9 Fire resistance ratings in accordance with UL 263
 - 10.1.10 Heat propagation (potential heat) testing in accordance with NFPA 259
 - 10.1.11 Vertical and lateral fire propagation tests in accordance with NFPA 285, with analysis by Priest and Associates Consulting, LLC and Hughes Associates
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.



- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis*
- 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.⁴⁸
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Rmax Thermasheath, Rmax TSX-8500, Rmax TSX-8510, Rmax ECOMAXci FR, or Rmax ECOMAXci FR White on the DrJ Certification website.

11 Findings

- 11.1 As outlined in **Section 6**, Rmax Insulating Sheathing Panels have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Rmax Insulating Sheathing Panels shall be approved for the following applications:
- 11.2.1 Buildings constructed in accordance with the IBC and the IRC.
- 11.2.2 Performance of foam plastics in accordance with IBC Section 2603 and IRC Section R303.⁴⁹
- 11.2.3 Use within the building envelope including, but not limited to, attic, crawl space, wall, roof, ceiling, floor, and foundation assemblies.
- 11.2.3.1 For use below grade, products may be installed horizontally under floor slabs and vertically on the exterior side of foundation walls or interior side of footings.
- 11.2.4 Use as insulating sheathing in accordance with IRC Section N1102.1, IRC Section N1102.2, and IECC Section C402.
- 11.2.5 Use as a WRB in accordance with IBC Section 1403.2 and IRC Section R703.2.
- 11.2.6 Use as a continuous air barrier in accordance with IRC Section N1102.5,⁵⁰ IECC Section R402.5,⁵¹ and IECC Section C402.6.⁵²
- 11.2.7 Flame spread and smoke developed indices in accordance with IBC Section 2603.3, IBC Section 2603.5.4, and IRC Section R303.3.⁵³
- 11.2.8 Use without a thermal barrier in accordance with IBC Section 2603.4.1.6, IRC Section R303.5.3,⁵⁴ and IRC Section R303.5.4.⁵⁵
- 11.2.9 Use without a thermal barrier or ignition barrier in accordance with IBC Section 2603.9 and IRC Section R303.6,⁵⁶ when installed in accordance with **Section 9**.
- 11.2.10 Use in a fire resistance rated assembly in accordance with IBC Section 703.2.1.
- 11.2.11 When used and installed in accordance with this report and the manufacturer installation instructions, Thermasheath, ECOMAXci FR and ECOMAXci FR White are approved for the following:



- 11.2.11.1 Use in exterior walls of buildings of Type I-IV construction in accordance with IBC Section 2603.5.
- 11.2.11.2 Use in a fire resistance rated assembly in accordance with IBC Section 703.2.1.
- 11.2.11.3 Flame spread and smoke developed indices in accordance with IBC Section 2603.5.4.
- 11.2.11.4 Potential heat in accordance with IBC Section 2603.5.3.
- 11.2.11.5 Vertical and lateral fire propagation in accordance with IBC Section 2603.5.5.
- 11.2.11.6 Ignition characteristics in accordance with IBC Section 2603.5.7.
- 11.2.12 Flame spread and smoke developed indices in accordance with the Seal and Insulate with ENERGY STAR® program.
- 11.2.13 Thermal resistance in accordance with the Seal and Insulate with ENERGY STAR® program.
- 11.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Rmax.
- 11.4 IBC Section 104.2.3⁵⁷ (IRC Section R104.2.2⁵⁸ and IFC Section 104.2.3⁵⁹ are similar) in pertinent part state:

104.2.3 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 is not specifically prohibited by this code and has been approved.

- 11.5 **Approved:**⁶⁰ Building regulations require that the building official shall accept duly authenticated reports.⁶¹
 - 11.5.1 An approved agency is “*approved*” when it is ANAB ISO/IEC 17065 accredited.
 - 11.5.2 An approved source is “*approved*” when an RDP is properly licensed to transact engineering commerce.
 - 11.5.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.6 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.
- 11.7 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.⁶²

12 Conditions of Use

- 12.1 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the applied loads shall remain within the allowable capacities of the defined properties using the principles of accepted engineering practice.
- 12.2 As listed herein, Rmax Insulating Sheathing Panels are subject to the following:
 - 12.2.1 Installation shall comply with this report and the manufacturer installation instructions. In the event of a conflict between this report and the manufacturer installation instructions, the more restrictive shall govern.
 - 12.2.2 These products are recognized for insulation applications. Cladding attachment shall be supported by separate engineering.
 - 12.2.3 Exterior wall coverings capable of resisting the full design wind pressure shall be installed over these products.
 - 12.2.4 Walls shall be fully braced with other materials in accordance with IBC Section 2308.6.4 or IRC Section R602.10.



- 12.2.5 Where applicable, resistance to horizontal loads from concrete or masonry walls shall be provided by a different means and shall be designed by an RDP.
- 12.2.6 Rmax Thermasheath must be protected from the interior of the building by a thermal barrier in accordance with IBC Section 2603.4 and IRC Section R303.4,⁶³ except as allowed in **Section 6.6.2**.
- 12.2.7 TSX-8500, TSX-8510, ECOMAXci FR and ECOMAXci FR White are specifically approved for use without a thermal barrier as prescribed by IBC Section 2603.4 through IBC Section 2603.8, and IRC Section R303.4⁶⁴ through IRC Section R303.5.13,⁶⁵ subject to the conditions in **Section 6.6.2**. When used as a WRB, all sheathing panel joints shall be sealed with R-SEAL 3000, R-SEAL Construction Tape, or R-SEAL 2000 LF. All penetrations shall be flashed in accordance with the manufacturer installation instructions.
 - 12.2.7.1 When these products are not installed as a WRB, a separate WRB shall be installed in accordance with IBC Section 1403.2 and IRC Section R703.2.
- 12.2.8 Use of these products shall be in accordance with the vapor barrier requirements of IBC Section 1404.3 and IRC Section R702.7.
- 12.2.9 In areas where the probability of termite infestation is “*very heavy*” as indicated in IBC Section 2603.8 and IRC Figure R305.4,⁶⁶ Rmax Insulating Sheathing Panels shall not be installed on the exterior face of foundation walls, under interior or exterior foundation walls, or under slab foundations located below grade. The clearance between the products installed above grade and exposed earth shall be at least 6”.
 - 12.2.9.1 *Exceptions:*
 - 12.2.9.1.1 Buildings where the structural members of the walls, floors, ceilings, and roofs are entirely of noncombustible materials or are pressure preservative treated wood.
 - 12.2.9.1.2 When, in addition to the requirements of IRC Section R305.1,⁶⁷ an approved method of protecting Rmax Insulating Sheathing Panels and the structure from subterranean termite damage is used.
 - 12.2.10 On the interior side of basement walls.
- 12.3 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
 - 12.3.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
 - 12.3.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 12.3.3 These innovative products have an internal quality control program and a third-party quality assurance program.
 - 12.3.4 At a minimum, these innovative products shall be installed per **Section 9**.
 - 12.3.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.



- 12.3.6 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.
- 12.3.7 The application of these innovative products in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.4 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *“the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3”*, all of IBC Section 104, and IBC Section 105.3.
- 12.5 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.6 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

- 13.1 Rmax Insulating Sheathing Panels, as listed in **Section 1.1**, are identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at www.rmax.com or usa.sika.com.

14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.
- 14.2 For information on the status of this report, please contact [DrJ Certification](#).



Appendix A

Seal and Insulate with ENERGY STAR® Program Report

1 Purpose

- 1.1 The purpose of this appendix is to show, Rmax® Thermasheath® recognized in Report Number 1309-03, has also been evaluated for compliance with the program listed below:
 - 1.1.1 Seal and Insulate with ENERGY STAR®
- 1.2 This appendix also shows that DrJ has reviewed all relevant test results and has compared them to the criteria provided in the codes and standards listed below and the EPA Definitions and Testing Requirements for Residential Insulation V1.0.
- 1.3 For the purpose of the ENERGY STAR® program, this product is defined as “Board Insulation”.

2 Description

- 2.1 General installation instructions, warnings, limitations, and warranty information for Rmax Thermasheath insulation boards are provided below. Construction diagrams within this report provide additional details based on various applications. Consult www.rmax.com/wall-products for more information and complete literature including, but not limited to, data sheets, SDS, [Sales Policy](#), etc.

3 Applicable Standards

- 3.1 *Seal and Insulate with ENERGY STAR®*
- 3.2 *AATCC Test Method 27: Water Resistance: Hydrostatic Pressure Test*
- 3.3 *ASTM C209: Standard Test Methods for Cellulosic Fiber Insulating Board*
- 3.4 *ASTM C272: Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions*
- 3.5 *ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*
- 3.6 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*
- 3.7 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
- 3.8 *ASTM E96: Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials*
- 3.9 *ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials*
- 3.10 *ASTM E136: Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*
- 3.11 *ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*
- 3.12 *ASTM E1354: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*
- 3.13 *ASTM E2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials*
- 3.14 *NFPA 259: Standard Test Method for Potential Heat of Building Materials*
- 3.15 *NFPA 285: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components*
- 3.16 *NFPA 286: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*



3.17 *UL 263: Standard for Fire Tests of Building Construction and Materials*

3.18 *UL 1715: Fire Test of Interior Finish Material*

4 ENERGY STAR® Definitions

- 4.1 **Insulation:** Any material mainly used to slow down heat flow. It may be mineral or organic, fibrous, cellular, or reflective (aluminum foil). It may be in rigid, semi-rigid, flexible, or loose-fill form.
- 4.2 **Facing:** A thin covering adhered to the surface of insulation prior to field installation. Facings may include, but are not limited to, kraft paper, metal foil, and polymer.
- 4.3 **Residential Buildings:** Single-family homes (attached or unattached), multifamily buildings with four (4) units or fewer, or multifamily buildings (e.g., condominiums and apartments) with three (3) stories or less in height above grade.
- 4.4 **Board Insulation:** Semi-rigid or rigid insulation preformed into rectangular units having a degree of suppleness particularly related to their geometrical dimensions. Typical materials include, but are not limited to, fiberglass, expanded polystyrene (EPS), extruded polystyrene (XPS), polyisocyanurate, and polyurethane. The product may or may not be faced.
- 4.5 **Radiant Barrier:** A reflective material such as a foil that will reduce radiant heat transfer across open air spaces by use of one or more surfaces of high reflectance and low emittance. The reflective material shall have an emissivity of 0.1 or less, and may, or may not, be factory-applied to a rigid or insulating material.
- 4.6 **Insulation with Reflective Facing:** An assembly consisting of a core insulating material as defined in the Insulation Products Definitions section of this document, and has a reflective facing such as a foil attached to at least one side.
- 4.7 **Structural Insulated Panels (SIP):** A structural sandwich panel which consists of a foam plastic insulation core bonded directly between two structural facings made of wood structural panels.
- 4.8 **R-Value:** The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other surface for a unit temperature difference between the two surfaces, under steady state conditions, per unit area. For the purposes of this program, Imperial units will only be accepted (e.g., (h•ft²•°F)/BTU).
- 4.9 **Smoke-Development Index:** The characteristic of a material to emit smoke when exposed to flame or fire compared to red oak and inorganic cement.
- 4.10 **Flame-Spread Index:** The characteristic of a material to resist the spreading of flames when exposed to flame or fire compared to red oak and inorganic cement.

5 Evaluation

5.1 R-Value

- 5.1.1 Rmax Thermasheath has minimum thermal resistances (R-Values) as shown in **Table 1** of Report Number 1309-03.

5.2 Flame Spread and Smoke Developed Index

- 5.2.1 Rmax Thermasheath has the flame spread and smoke developed indexes as shown in **Table 4** of Report Number 1309-03.
- 5.2.2 DrJ has verified that the test results provided have been generated by a laboratory accredited to perform these tests as required by the Conditions and Criteria for Recognition of Insulation Certification Bodies for the ENERGY STAR® program.
- 5.2.3 DrJ has verified that the products provided for testing were sampled by the testing agency in accordance with their accredited sampling procedures.



6 General Installation Instructions

- 6.1 Special training and/or certification is not required. This product is designed for an easy install for both DIYs and professional contractors.
- 6.2 All boards shall be cut on a level durable surface with a circular saw.
- 6.3 Before beginning installation, all surfaces shall be clean and free of irregularities that will affect the placement or performance of the insulation including, but not limited to, dirt, debris, miscellaneous fasteners, or warped, defective, or otherwise damaged framing.
- 6.4 Installation shall be in accordance with **Section 9** of Report Number 1309-03 and the Installation Instructions at the end of this document.
 - 6.4.1 Rmax Thermasheath is approved for use in:
 - 6.4.1.1 Above grade walls
 - 6.4.1.2 Below grade walls
 - 6.4.1.3 Vaulted ceilings
 - 6.4.1.4 Crawl spaces
 - 6.4.1.5 Attics
 - 6.4.2 See the specific installation instruction details for Rmax Thermasheath specific use case below:
 - 6.4.2.1 *Rmax Thermasheath*: www.rmax.com/thermasheath-applications
- 6.5 Installations utilizing Rmax Thermasheath must be separated from the interior side of the building by a suitable thermal barrier or ignition barrier when required. Refer to the Local Building Official for general exceptions and specific governing codes and requirements. Consult Rmax for special testing and exceptions on thicknesses of 1" or less.
- 6.6 All materials installed over Rmax Thermasheath (e.g., thermal barrier, ignition barrier, furring strips, interior finishes, veneers, roof systems, etc.), must be mechanically attached through the insulation to the framing/structure according to the building code.

7 Limitations

- 7.1 Rmax Thermasheath should not be used as commercial roof insulation directly under membrane systems.
- 7.2 Rmax Thermasheath is not a structural panel and must not be used as a nailing base for any other building products. The structure must be properly braced for lateral loads and uplift according to the requirements of the local building codes.
- 7.3 In "very heavy" termite infestation probability areas, except where permitted by code, boards shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade, and the clearance between insulation boards installed above grade and exposed earth shall be at least 6" (152 mm). Consult the Local Building Official for specific governing codes and requirements.
 - 7.3.1.1 **Exceptions:**
 - 7.3.1.1.1 Buildings where the structural members of the walls, floors, ceilings, and roofs are entirely of noncombustible materials or are pressure preservative treated wood.
 - 7.3.1.1.2 When, in addition to the requirements of [IRC Section R305.1](#),⁶⁸ an approved method of protecting Rmax Thermasheath and the structure from subterranean termite damage is used.
 - 7.3.1.1.3 On the interior side of basement walls.



8 Warnings

- 8.1 Polyisocyanurate foam is an organic material, which will burn when exposed to an ignition source of sufficient heat and intensity and may contribute to flames spreading. Boards must not be in direct contact with hot objects requiring a certain amount of clearance. Refer to equipment/fixture rating for guidance.

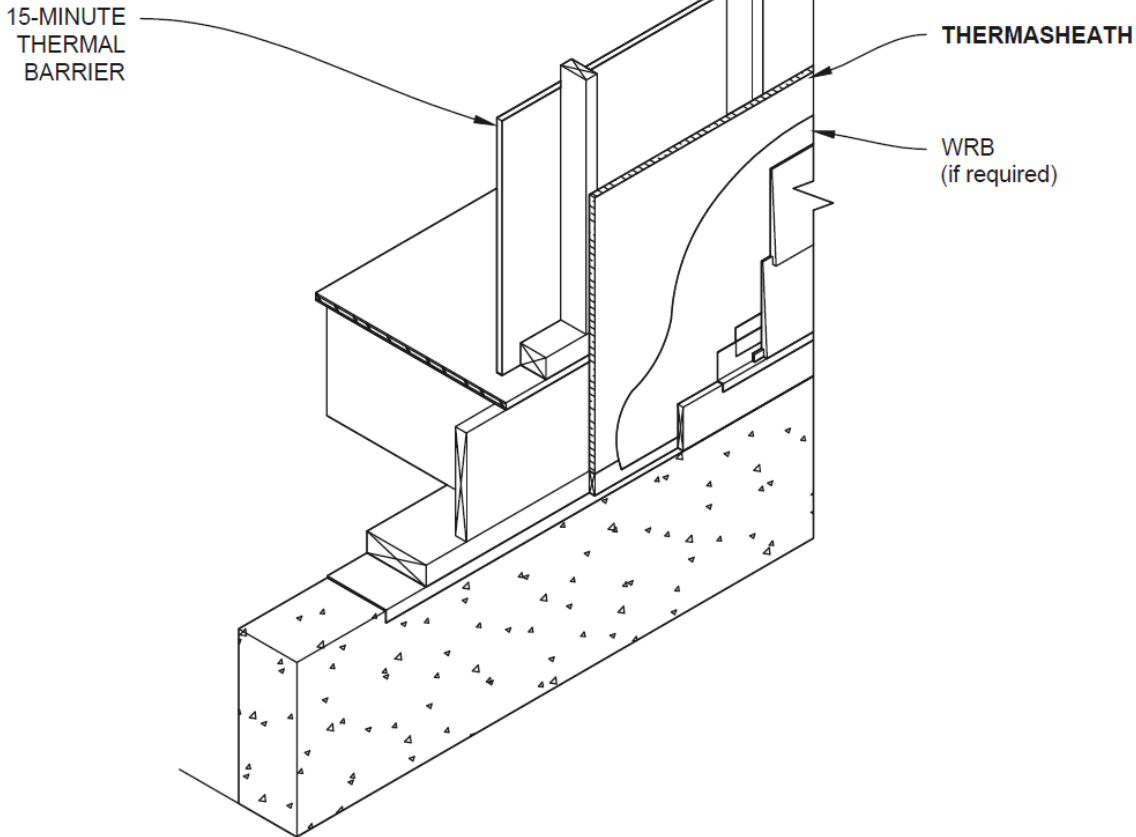
9 Safety

- 9.1 Cutting Rmax Thermasheath produces a nuisance or irritant dust – use of a dust mask may be necessary.
- 9.2 Safety glasses are always recommended when using power tools.
- 9.3 Proper ventilation should be provided to minimize airborne dust and fumes if using construction adhesives.

10 Warranty

- 10.1 See Rmax [“Sales Policy”](#) for warranty conditions, Rmax does not assume any responsibility or liability for the performance of any products other than those manufactured by Rmax.

Note: All Rmax products must be tarped, placed on skids, and kept dry before and throughout construction until proper sealing techniques are employed.



Notes:

1. Veneer shown is lap siding. Other veneers, such as stucco and various siding materials - aluminum, vinyl, fiber cement, wood and wood-based products - are also acceptable. For stucco systems, the secondary barrier is required over the Thermasheath prior to attaching the metal lathe.
2. Thermasheath insulation panels shall be secured to the studs using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails. A quality grade construction adhesive may also be used to secure the Thermasheath. The veneer must be mechanically attached through the Thermasheath to the studs.
3. Where a separate water resistive barrier (WRB) is not included, the joints of the Thermasheath shall be sealed using a pressure sensitive aluminum tape such as Rmax R-SEAL 3000 or R-SEAL Construction Tape.

Stud Wall Construction (Siding) | 01

Thermasheath Exterior Application | A1.00



Rmax
2075 Midway Rd
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Phone: (972) 850-3604
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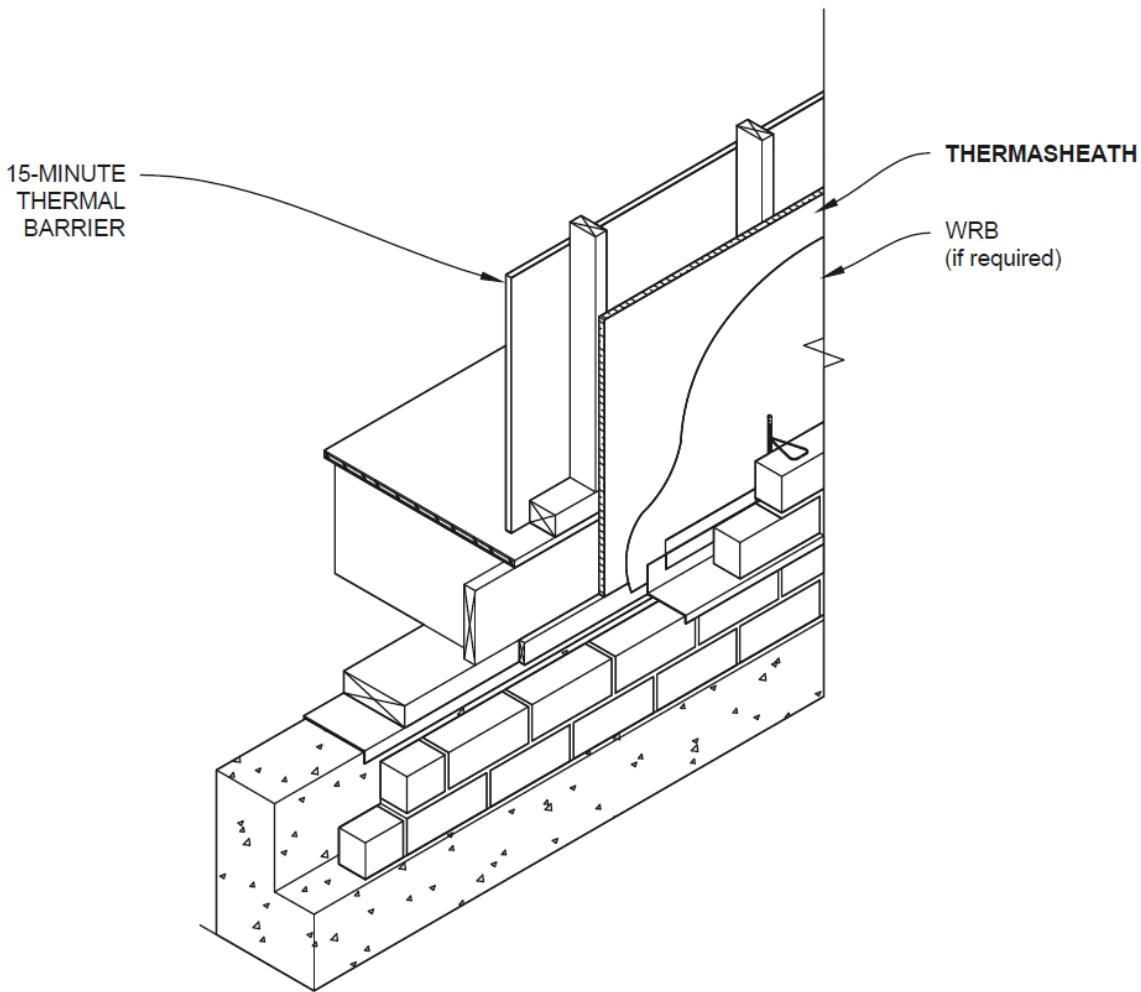
(800) 845-4455 (Eastern)
(800) 527-0890 (Central)
(800) 762-9462 (Western)
Email: Rmax@rmax.com

Title: THERMASHEATH® DETAIL
Reference Data Sheet for Additional Information

Date:
06/28/2023

Scale:
Not To Scale

Sheet:
01 - A1.00



Notes:

1. Veneer shown is brick. Other veneers - artificial stone and natural stone - are also acceptable.
2. Thermasheath panels shall be secured to the studs using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails, or simply cut to fit tightly between existing wall ties. Proper air space must be maintained between the face of the insulation and the veneer.
3. Where a separate water resistive barrier (WRB) is not included, the joints of the Thermasheath shall be sealed using a pressure-sensitive aluminum tape such as Rmax R-SEAL 3000 or R-SEAL Construction Tape.

Stud Wall Construction (Brick Veneer) | 02

Thermasheath Exterior Application | A1.00



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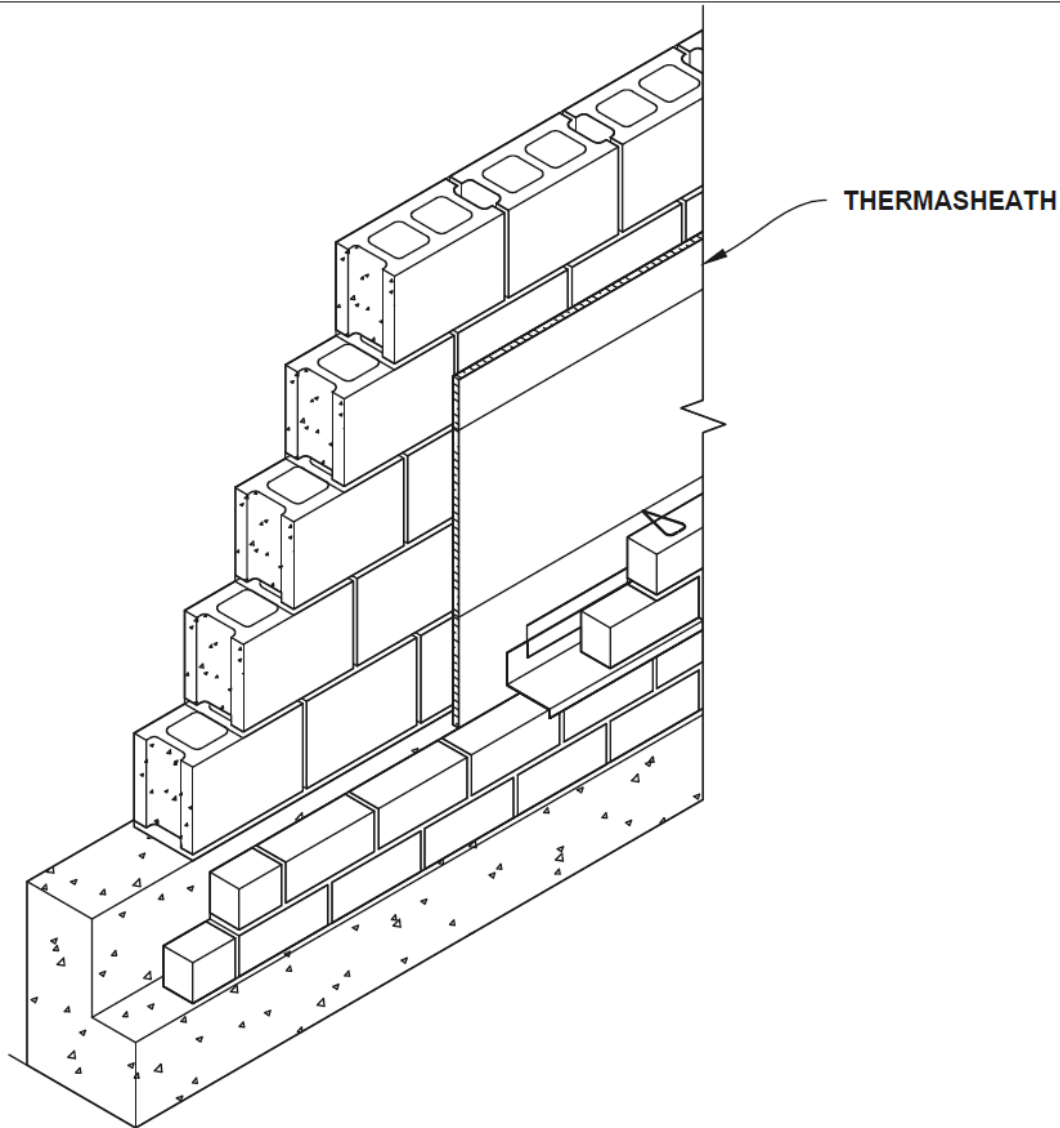
(800) 845-4455 (Eastern)
(800) 527-0890 (Central)
(800) 762-9462 (Western)
Email: Rmax@rmax.com

Title: THERMASHEATH® DETAIL
Reference Data Sheet for Additional Information

Date:
06/28/2023

Scale:
Not To Scale

Sheet:
02 - A1.00



Notes:

1. Veneer shown is brick. Other veneers - artificial stone and natural stone - are also acceptable.
2. Masonry/block wall shall be adequately waterproofed according to local requirements and building design.
3. Thermasheath panels shall be secured to the dry face of concrete or CMU walls with a quality grade construction adhesive or simply cut to fit tightly between existing wall ties. Proper air space must be maintained between the face of the insulation and the veneer.

Masonry Wall Construction (Veneer) | 03

Thermasheath Exterior Application | A1.00



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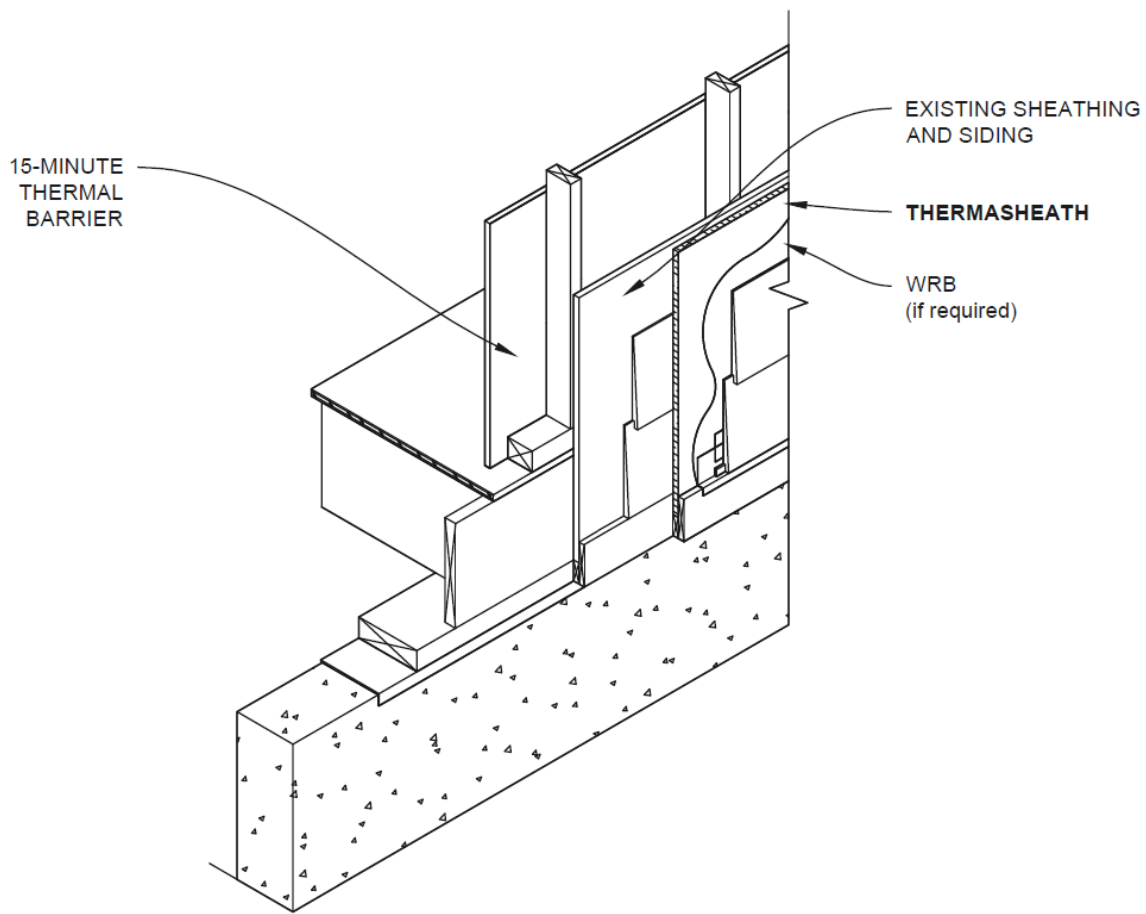
(800) 845-4455 (Eastern)
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(800) 762-9462 (Western)
Email: Rmax@rmax.com

Title: THERMASHEATH® DETAIL
Reference Data Sheet for Additional Information

Date:
06/28/2023

Scale:
Not To Scale

Sheet:
03 - A1.00



Notes:

1. Veneer shown is lap siding. Other veneers - stucco and various siding materials, such as aluminum, vinyl, fiber cement, wood and wood-based products - are also acceptable. For stucco systems, the secondary barrier is required over the Thermasheath prior to attaching the metal lathe.
2. Thermasheath insulation panels shall be secured with galvanized nails of sufficient length to penetrate the old sidings, sheathings below and at least one inch into the existing wall studs. Prior to installation, ensure that the existing siding is sound and solidly attached.
3. Where a secondary water resistive barrier (WRB) is not included, the joints of the Thermasheath shall be sealed using a pressure sensitive aluminum tape such as Rmax R-SEAL 3000 or R-SEAL Construction Tape.

Re-Siding Construction | 04

Thermasheath Exterior Application | A1.00



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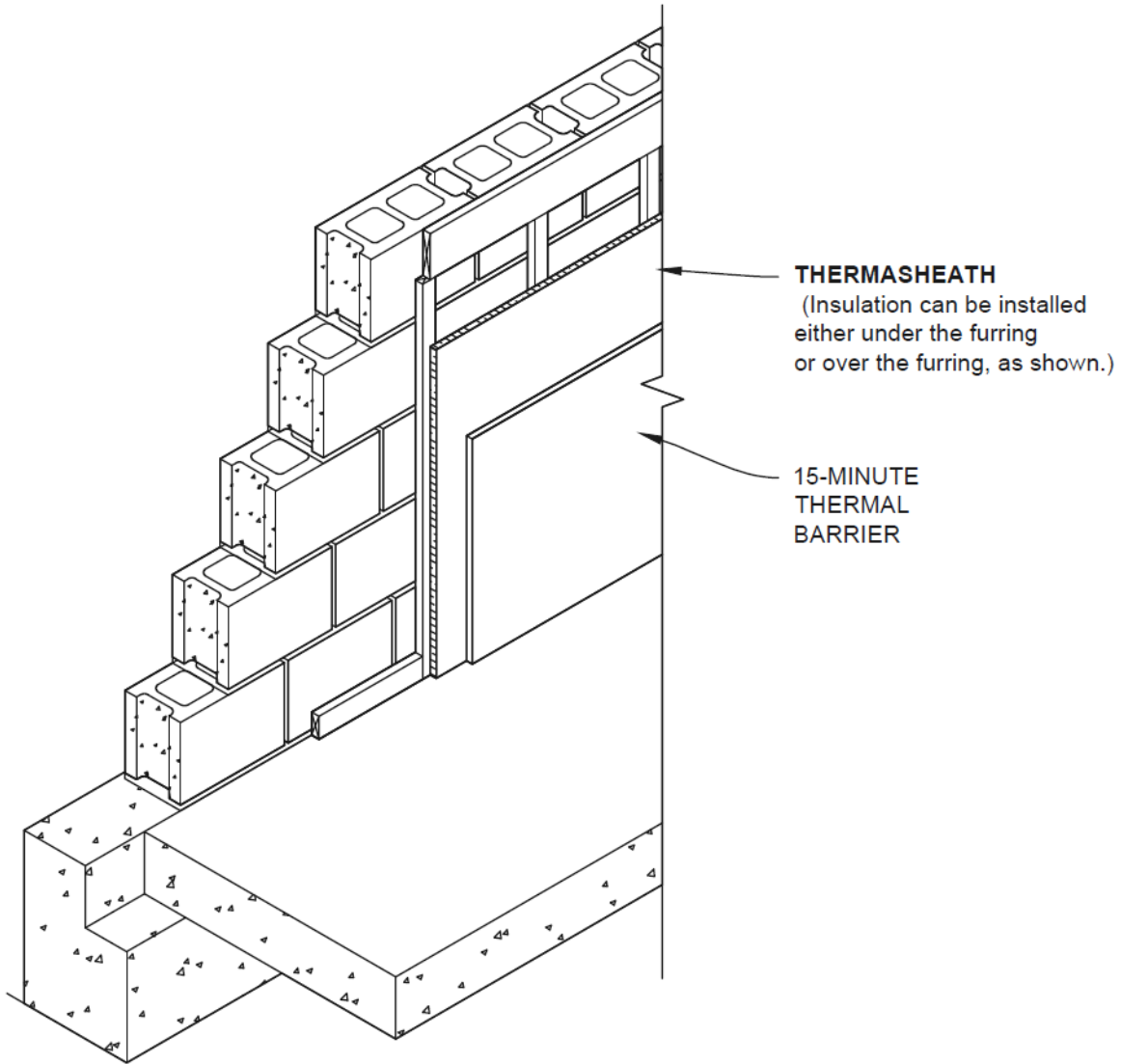
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Email: Rmax@rmax.com

Title: THERMASHEATH® DETAIL
Reference Data Sheet for Additional Information

Date:
06/28/2023

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THERMASHEATH
 (Insulation can be installed either under the furring or over the furring, as shown.)

15-MINUTE THERMAL BARRIER

Notes:

1. Thermasheath insulation panels shall be secured to the furring using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails. When Thermasheath is installed under the furring, adhere panels directly to the masonry/brick wall.
2. Masonry/block wall shall be adequately waterproofed according to local requirements and building design.

Masonry Wall Construction | 05

Thermasheath Exterior Application | A1.00



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 Lewisville, TX 75056
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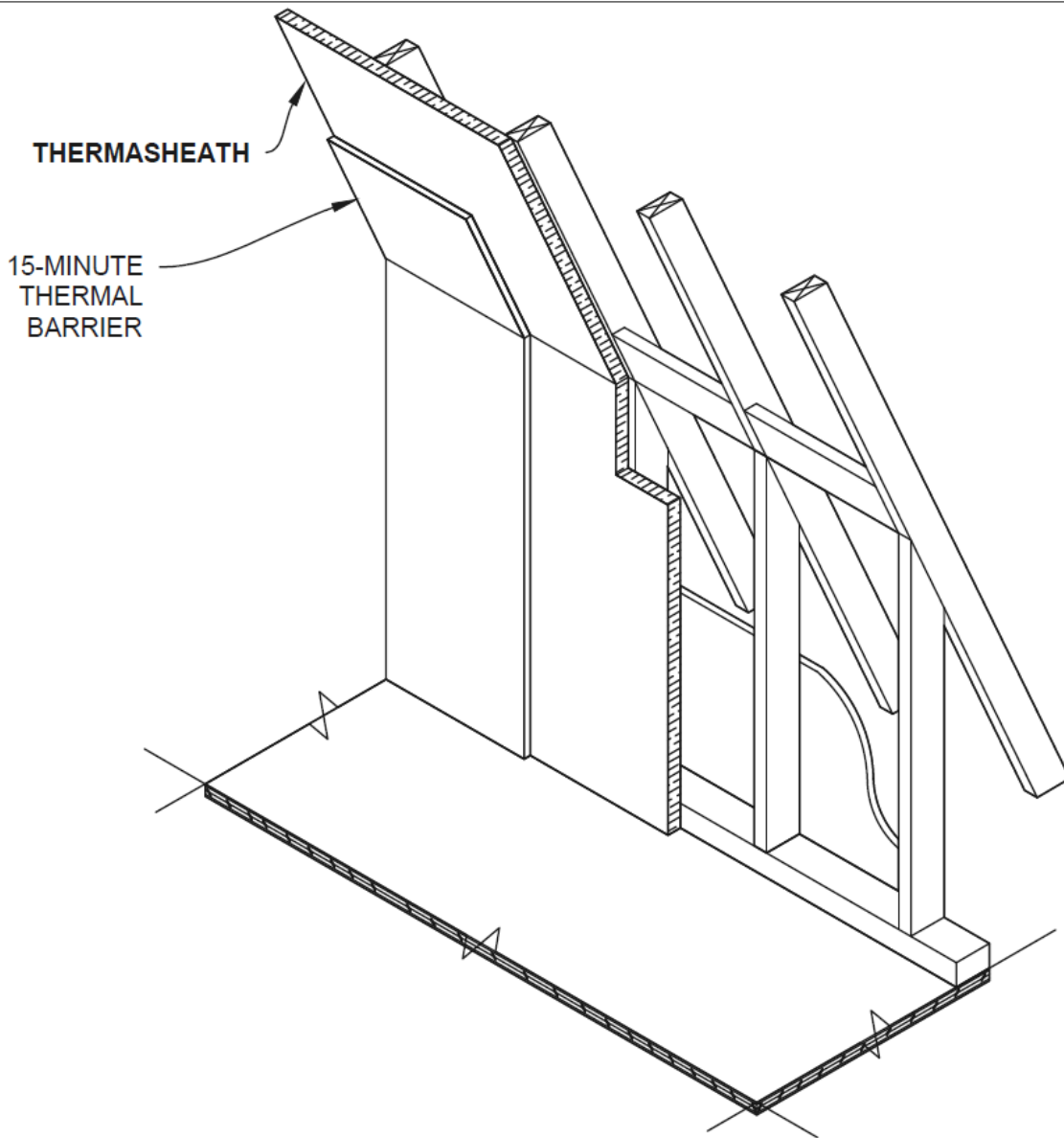
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 (800) 527-0890 (Central)
 (800) 762-9462 (Western)
 Email: Rmax@rmax.com

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 05 - A1.00



Notes:

1. Refer to local building codes for requirements on proper ventilation.
2. Thermasheath insulation panels shall be secured to the rafters/ studs using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails. A quality grade construction adhesive may also be used to secure the Thermasheath.

Stud Wall & Vaulted Ceiling Construction | 06

Thermasheath Exterior Application | A1.00



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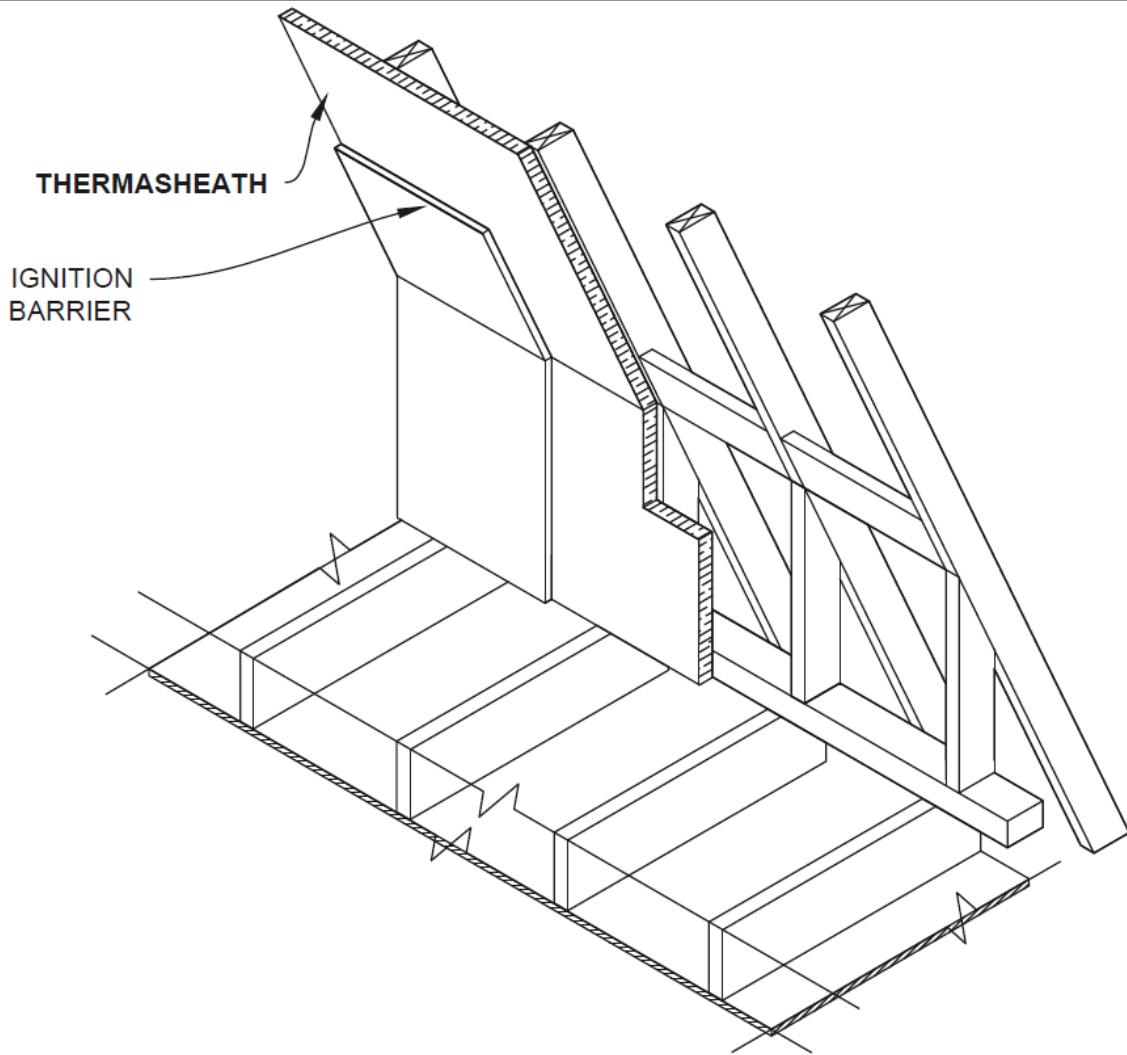
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06 - A1.00



Notes:

1. Refer to local building codes for requirements on proper ventilation.
2. Thermasheath insulation panels shall be secured to the studs/ rafters using bugle-head screws, galvanized roofing nails, or common nails driven through cap washers. A quality grade construction adhesive may also be used to secure the Thermasheath.
3. Where the Thermasheath is being used as a vapor retarder, the panel joints shall be sealed using a pressure sensitive tape such as Rmax R-SEAL 3000 or R-SEAL Construction Tape. Otherwise, a secondary vapor retarder may be required per local Building Codes.

Attic Knee Wall & Ceiling Construction | 07

Thermasheath Exterior Application | A1.00



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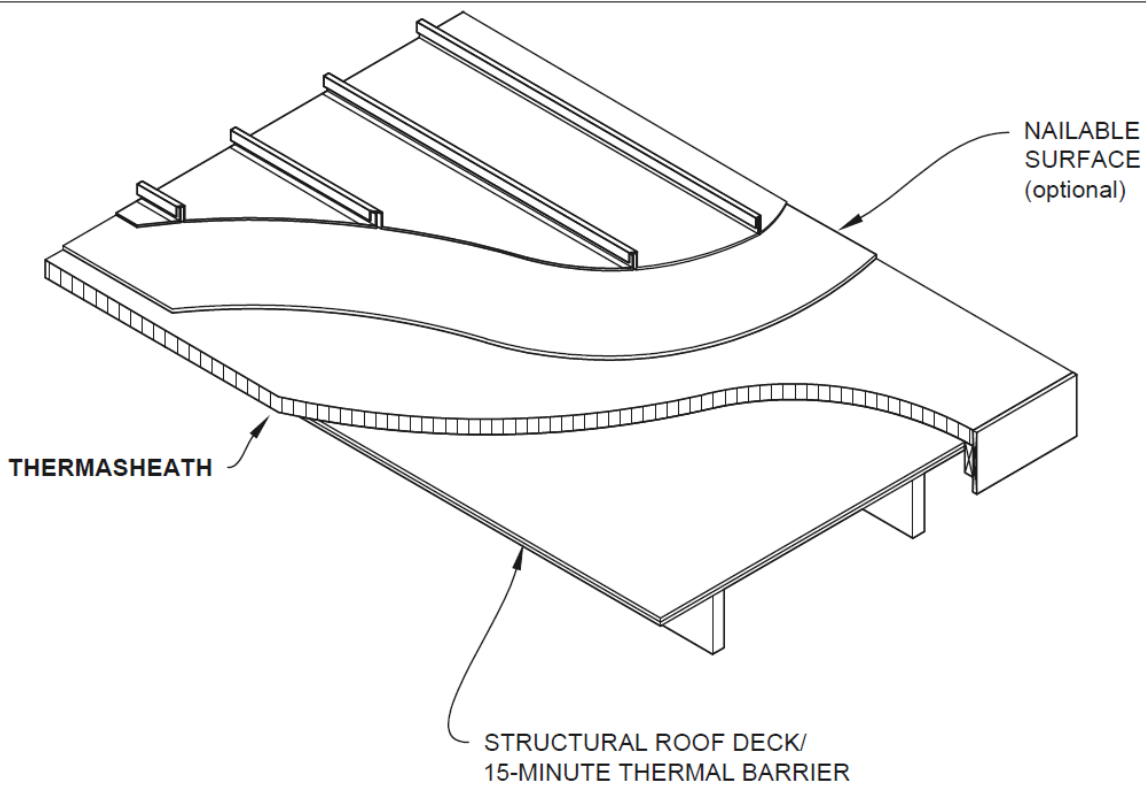
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07 - A1.00



Standing Seam Metal Roof Construction | 08

Thermasheath Exterior Application | A1.00



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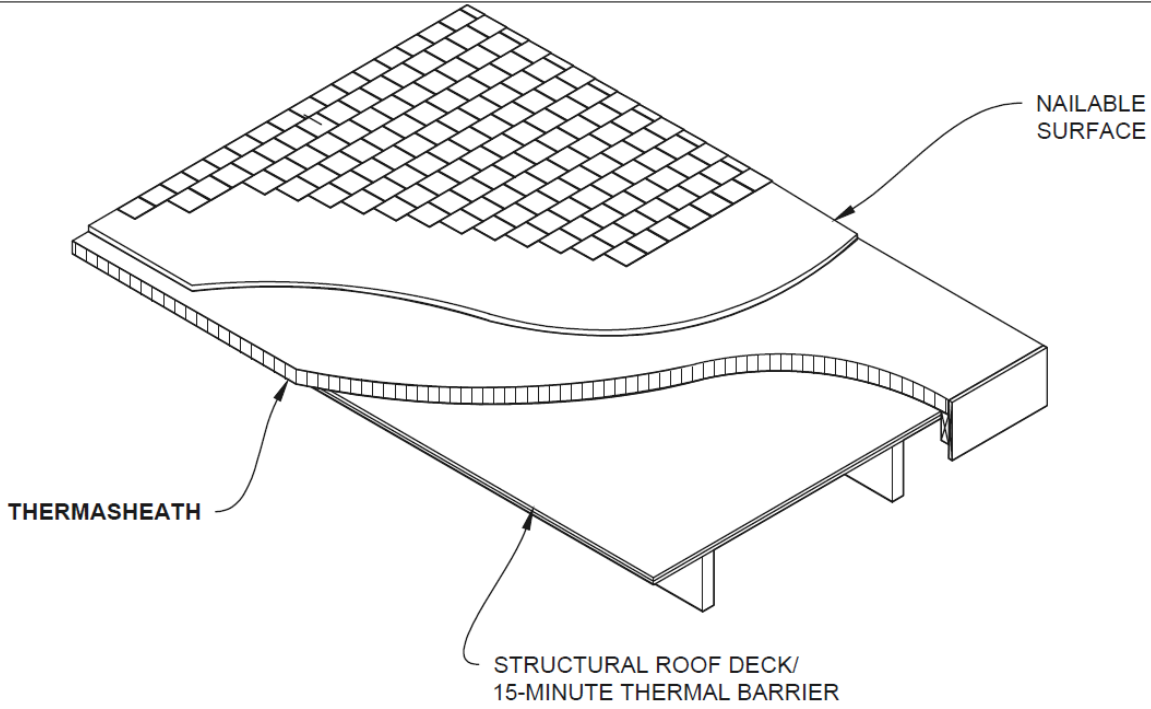
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08 - A1.00



Notes:

1. Roof cover shown is asphalt shingles. Other covers - wood shingles and concrete or clay tiles - are also acceptable. Consult roof cover manufacturer for above deck roof ventilation requirements.

Shingle Roof Construction | 09

Thermasheath Exterior Application | A1.00



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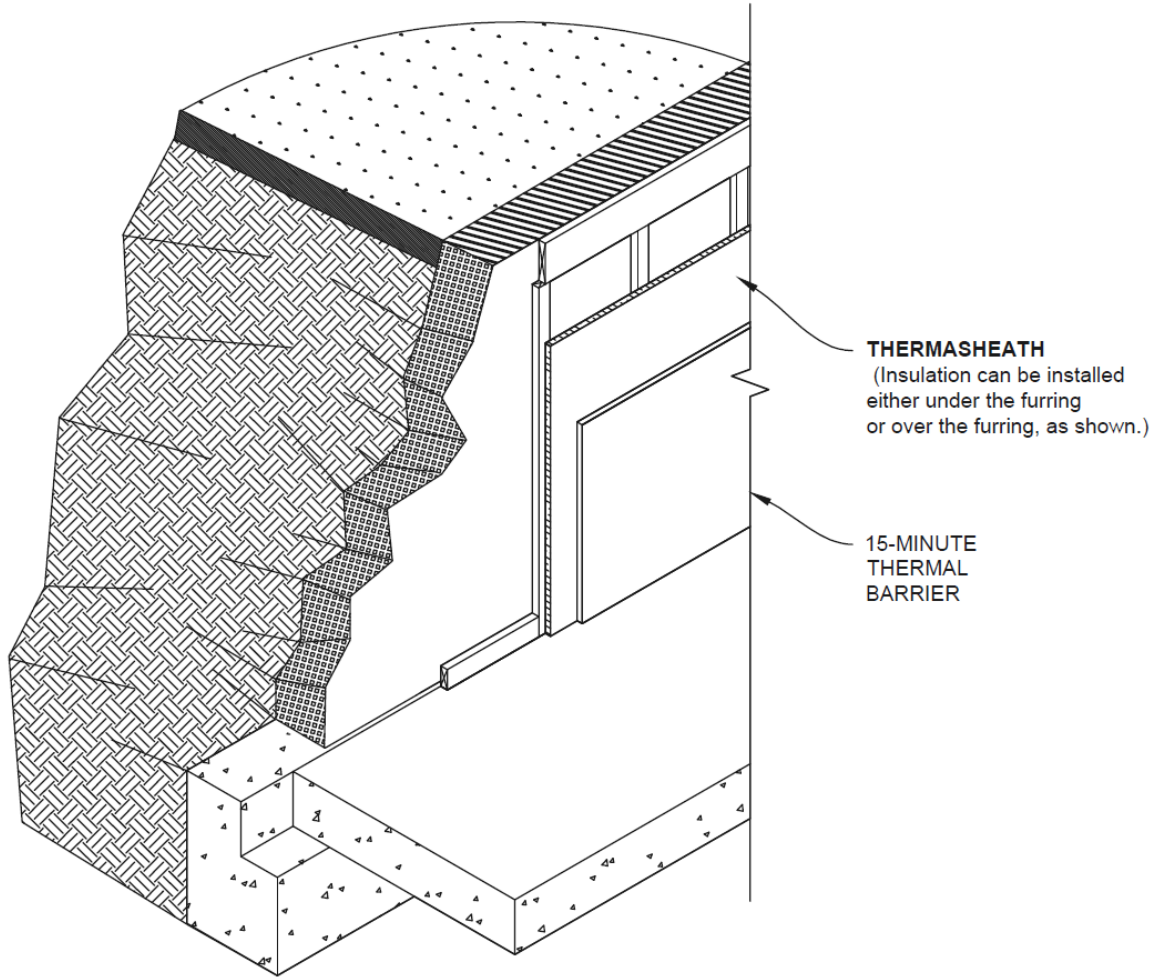
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09 - A1.00



Notes:

1. Thermasheath insulation panels shall be secured to the furring using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails. A quality grade construction adhesive may also be used to secure the Thermasheath.
2. Masonry/block wall shall be adequately waterproofed according to local requirements and building design.

Below Grade Wall Construction | 10

Thermasheath Exterior Application | A1.00



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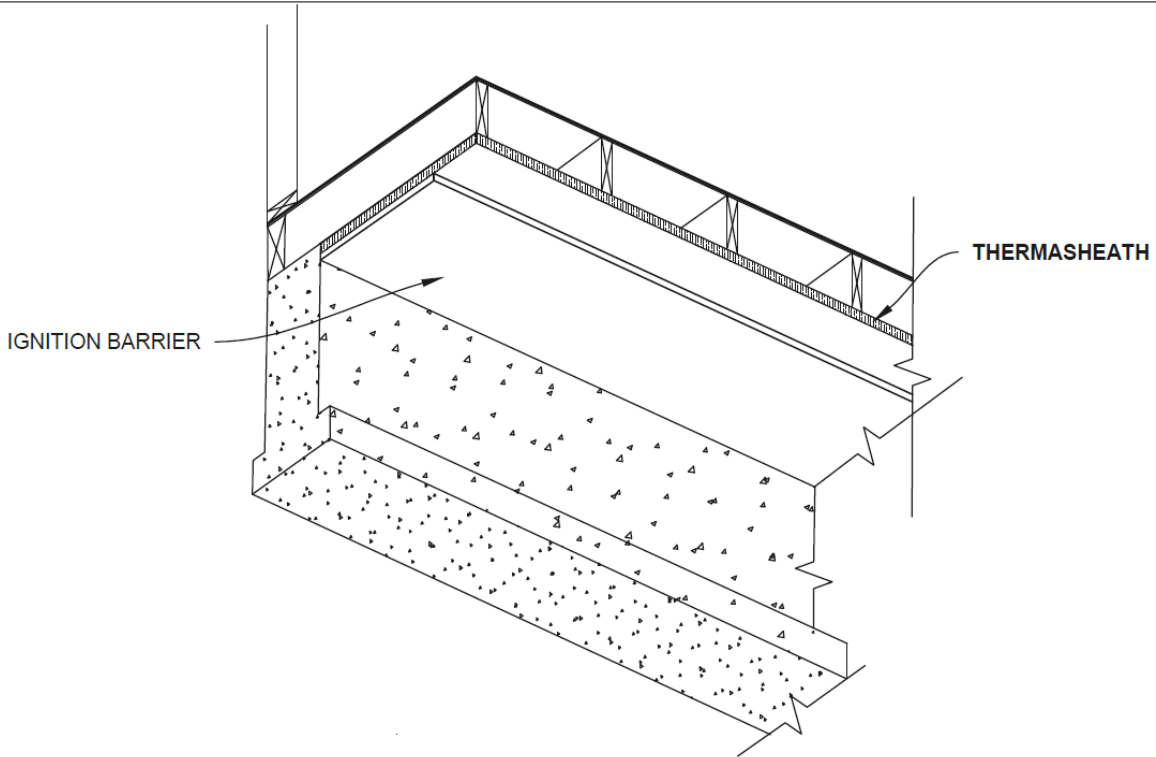
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10 - A1.00



Notes:

1. Refer to local building codes for requirements on proper ventilation and bracing.
2. Thermasheath insulation panels shall be secured to the framing using bugle-head screws, galvanized roofing nails, or minimum 3/4" cap nails. A quality grade construction adhesive may also be used to secure the Thermasheath.

Ceiling Crawl Space Construction | 11

Thermasheath Exterior Application | A1.00



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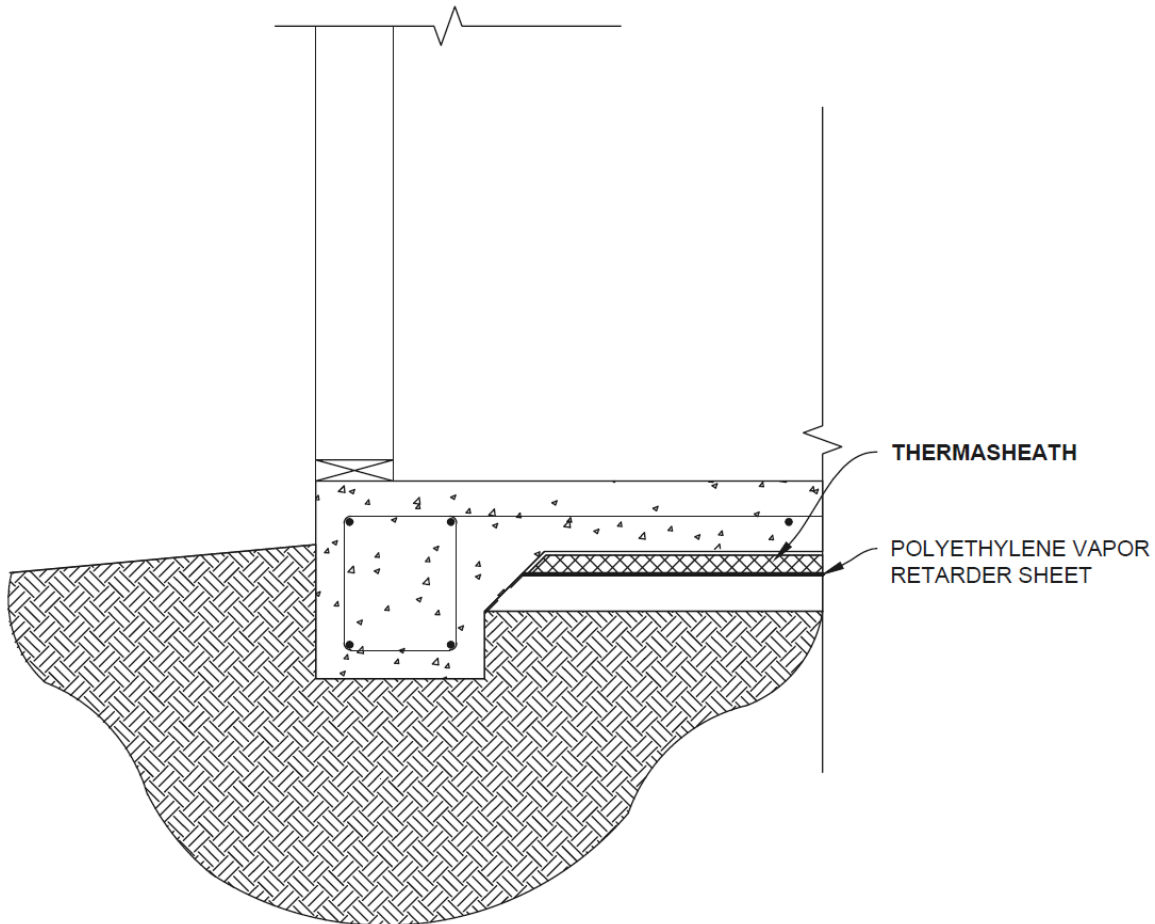
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11 - A1.00



Notes:

1. Thermasheath insulation panels are simply laid over the specially prepared base of crushed stone, sand or other material that is spread for leveling.
2. Exact placement of the polyethylene vapor barrier is up the building designer and local code requirements.

Slab-on-Grade Construction | 12

Thermasheath Exterior Application | A1.00



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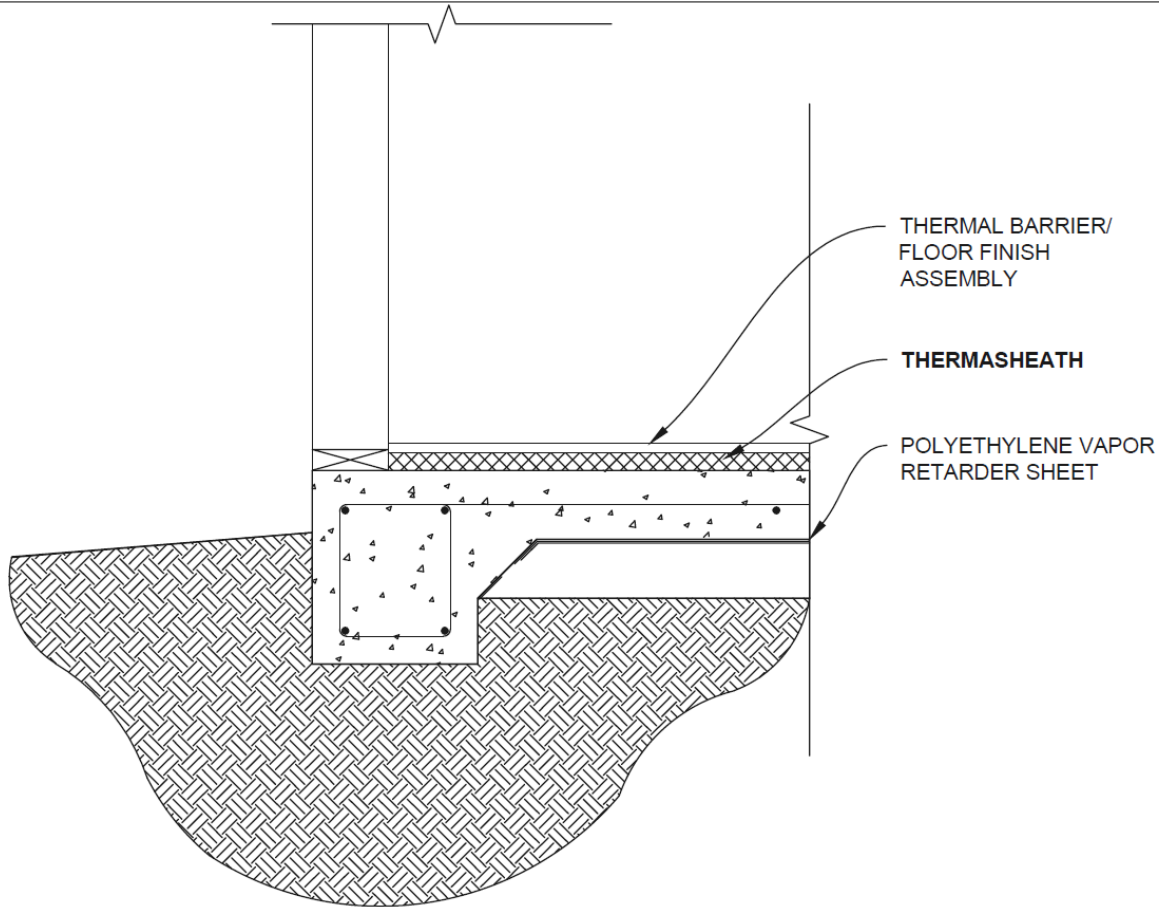
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Sheet:
12 - A1.00



Notes:

1. Thermasheath insulation panels are simply laid over the existing slab.
2. Refer to local building codes for requirements on confined spaces with exposed foam plastic where applicable.

Floor Construction | 13

Thermasheath Exterior Application | A1.00



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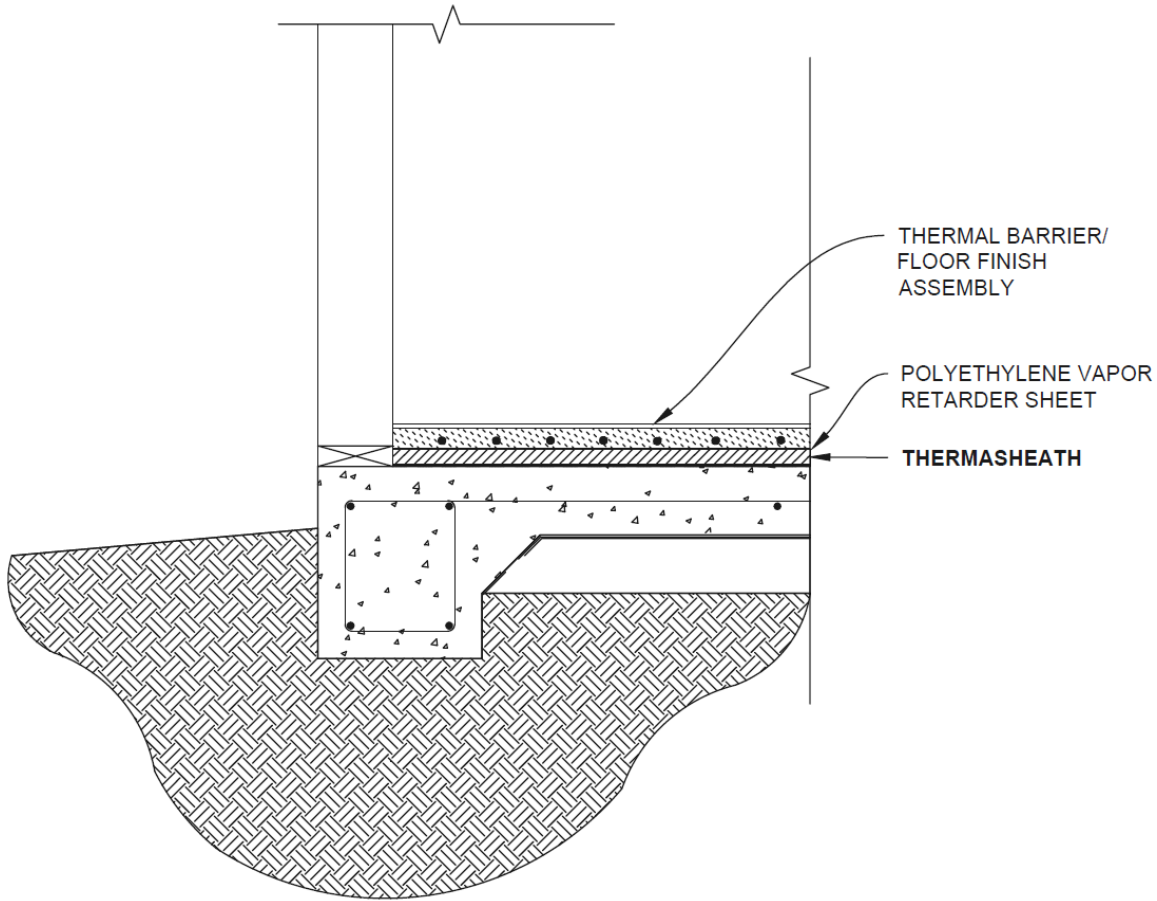
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13 - A1.00



Notes:

1. Thermasheath insulation panels are simply laid over the existing slab.
2. Exact placement of the polyethylene vapor barrier is up the building designer and local code requirements.

Radiant Floor Slab Construction | 14

Thermasheath Exterior Application | A1.00



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Issue Date: June 23, 2022

Supplement Revision Date: June 26, 2025

Subject to Renewal: July 1, 2027

CBC and CRC Supplement to Report Number 1309-03

REPORT HOLDER: Rmax®

1 Evaluation Subject

1.1 Rmax Insulating Sheathing Panels

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show Rmax Insulating Sheathing Panels, recognized in Report Number 1309-03 have also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

2.2.1 *CBC — 22, 25: California Building Code (Title 24, Part 2)*

2.2.2 *CRC — 22, 25: California Residential Code (Title 24, Part 2.5)*

3 Conclusions

3.1 Rmax Insulating Sheathing Panels, described in Report Number 1309-03, comply with the CBC and CRC and are subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the CBC and CRC applicable to this report, they are listed here:

3.2.1 CBC Section 104.2.3 replaces IBC Section 104.2.3.

3.2.2 CBC Section 110.3 replaces IBC Section 110.3.

3.2.3 CBC Section 202 replaces IBC Section 202.

3.2.4 CBC Section 708.4.1 replaces IBC Section 708.4.2.

3.2.5 CBC Section 718.3 replaces IBC Section 718.3.

3.2.6 CBC Section 718.4 replaces IBC Section 718.4.

3.2.7 CBC Section 1403.2 replaces IBC Section 1403.2.

3.2.8 CBC Section 1404.3 replaces IBC Section 1404.3.

3.2.9 CBC Section 1703 replaces IBC Section 1703.

3.2.10 CBC Section 1707.1 replaces IBC Section 1707.1.

3.2.11 CBC Section 2303.2 replaces IBC Section 2303.2.

3.2.12 CBC Section 2603 replaces IBC Section 2603.

3.2.13 CBC Section 2603.3 replaces IBC Section 2603.3.

3.2.14 CBC Section 2603.5.5 replaces IBC Section 2603.5.5.



- 3.2.15 CBC Section 2603.4 replaces IBC Section 2603.4.
- 3.2.16 CBC Section 2603.9 replaces IBC Section 2603.9.
- 3.2.17 CBC Section 2603.5.7 replaces IBC Section 2603.5.7
- 3.2.18 CBC Section 2603.10 replaces IBC Section 2603.10.
- 3.2.19 CRC Section R104.2.2 replaces IRC Section R104.2.2.
- 3.2.20 CRC Section R202 replaces IRC Section R202.
- 3.2.21 CRC Section R303 replaces IRC Section R303.
- 3.2.22 CRC Section R303.3 replaces IRC Section R303.3.
- 3.2.23 CRC Section R303.4 replaces IRC Section R303.4.
- 3.2.24 CRC Section R303.5.3 replaces IRC Section R303.5.3.
- 3.2.25 CRC Section R303.5.13 replaces IRC Section R303.5.13.
- 3.2.26 CRC Section R303.5.4 replaces IRC Section R303.5.4.
- 3.2.27 CRC Section R303.6 replaces IRC Section R303.6.
- 3.2.28 CRC Section R305.1 replaces IRC Section R305.1.
- 3.2.29 CRC Section R408.4 replaces IRC Section R408.4.
- 3.2.30 CRC Section R602.10 replaces IRC Section R602.10.
- 3.2.31 CRC Section R702.7 replaces IRC Section R702.7.
- 3.2.32 CRC Section R703.2 replaces IRC Section R703.2.
- 3.2.33 CRC Section R807.1 replaces IRC Section R807.1.
- 3.2.34 CEC, Title 24, Part 6 replaces IRC Section N1102.
- 3.2.35 CEC, Title 24, Part 6 replaces IECC Sections C402 and C402.5.1
- 3.2.36 CRC Section N1102 is not adopted and replaces IRC Section N1102, IRC Section N1102.1, IRC Section N1102.2 and N1102.4.

4 Conditions of Use

- 4.1 Rmax Insulating Sheathing Panels, described in Report Number 1309-03, must comply with all of the following conditions:
 - 4.1.1 All applicable sections in Report Number 1309-03.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of CBC and CRC, as applicable.



Issue Date: June 23, 2022

Supplement Revision Date: June 26, 2025

Subject to Renewal: July 1, 2027

FBC Supplement to Report Number 1309-03

REPORT HOLDER: Rmax®

1 Evaluation Subject

1.1 Rmax Insulating Sheathing Panels

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show Rmax Insulating Sheathing Panels, recognized in Report Number 1309-03, have also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B—20, 23: Florida Building Code – Building*

2.2.2 *FBC-R—20, 23: Florida Building Code – Residential*

3 Conclusions

3.1 Rmax Insulating Sheathing Panels, described in Report Number 1309-03, comply with the FBC-B and FBC-R and are subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:

- 3.2.1 FBC-B Section 104 is reserved.
- 3.2.2 FBC-B Section 110.4 is reserved and replaces IBC Section 110.4.
- 3.2.3 FBC-B Section 104.6 is reserved and replaces IBC Section 104.4.
- 3.2.4 FBC-B Section 104.11 replaces IBC Section 104.2.3 and Section 104.2.3.2.
- 3.2.5 FBC-B Section 105.3 replaces IBC Section 105.3.
- 3.2.6 FBC-B Section 105.3.1 replaces IBC Section 105.3.1.
- 3.2.7 FBC-B Section 110.3 replaces IBC Section 110.3.
- 3.2.8 FBC-B Section 708.4 replaces IBC Section 708.4.2.
- 3.2.9 FBC-B Section 718.3 replaces IBC Section 718.3.
- 3.2.10 FBC-B Section 718.4 replaces IBC Section 718.4.
- 3.2.11 FBC-B Section 1404.2 replaces IBC Section 1403.2.
- 3.2.12 FBC-B Section 1405.3 replaces IBC Section 1404.3.
- 3.2.13 FBC-B Section 1707.1 replaces IBC Section 1707.1.
- 3.2.14 FBC-B Section 2303.2 replaces IBC Section 2303.2.



- 3.2.15 FBC-B Section 2306.1 replaces IBC Section 2306.1.
- 3.2.16 FBC-B Section 2306.3 replaces IBC Section 2306.3.
- 3.2.17 FBC-B Section 2308 is reserved and replaces IBC Section 2308.6.4.
- 3.2.18 FBC-B Section 2603 replaces IBC Section 2603.
- 3.2.19 FBC-B Section 2603.4 replaces IBC Section 2603.4.
- 3.2.20 FBC-B Section 2603.5 replaces IBC Section 2603.5.
- 3.2.21 FBC-B Section 2603.5.5 replaces IBC Section 2603.5.5.
- 3.2.22 FBC-B Section 2603.5.7 replaces IBC Section 2603.5.7.
- 3.2.23 FBC-B Section 2603.8 replaces IBC Section 2603.8.
- 3.2.24 FBC-B Section 2603.9 replaces IBC Section 2603.9.
- 3.2.25 FBC-B Section 2603.10 replaces IBC Section 2603.10.
- 3.2.26 FBC-R Section N1101.1 replaces IRC Section N1102, IRC Section N1102.1, IRC Section N1102.2 and IRC Section N1102.4.
- 3.2.27 FBC-R Section R104 and Section R109 are reserved.
- 3.2.28 FBC-R Section R202 replaces IRC Section R202.
- 3.2.29 FBC-R Section R316 replaces IRC Section R303.
- 3.2.30 FBC-R Section R316.3 replaces IRC Section R303.3.
- 3.2.31 FBC-R Section R316.4 replaces IRC Section R303.4.
- 3.2.32 FBC-R Section R316.5.3 replaces IRC Section R303.5.3.
- 3.2.33 FBC-R Section R316.5.4 replaces IRC Section R303.5.4.
- 3.2.34 FBC-R Section R316.5.13 replaces IRC Section R303.5.13.
- 3.2.35 FBC-R Section R316.6 replaces IRC Section R303.6.
- 3.2.36 FBC-R Section R318.1 replaces IRC Section R305.1.
- 3.2.37 FBC-R Section R408.4 replaces IRC Section R408.4.
- 3.2.38 FBC-R Section R602.10 is reserved and replaces IRC Section R602.10.
- 3.2.39 FBC-R Section R702.7 replaces IRC Section R702.7.
- 3.2.40 FBC-R Section R703.2 replaces IRC Section R703.2.
- 3.2.41 FBC-R Section R807.1 replaces IRC Section R807.1.

4 Conditions of Use

- 4.1 Rmax Insulating Sheathing Panels, described in Report Number 1309-03, must comply with all of the following conditions:
 - 4.1.1 All applicable sections in Report Number 1309-03.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.



34 [2021 IRC Section R316.6 AND 2018 IRC Section R316.6](#)

35 [2021 IRC Section R316.4 AND 2018 IRC Section R316.4](#)

36 [2021 IBC Section 1404.16](#)

37 [2021 IBC Section 1404.16.1](#)

38 [2021 IBC Section 1404.16.2](#)

39 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4>

40 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades>

41 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur>

42 [2021 IRC Section R316.6 AND 2018 IRC Section R316.6](#)

43 [2021 IECC Section C402.5.1.3 AND 2018 IECC Section C402.5.1.2.1](#)

44 [2021 IRC Section R316.3 AND 2018 IRC Section R316.3](#)

45 [2021 IRC Section R316.4 AND 2018 IRC Section R316.4](#)

46 Qualification is performed by a legislatively defined [Accreditation Body](#). [ANSI National Accreditation Board \(ANAB\)](#) is the largest independent accreditation body in North America and provides services in more than 75 countries. [DrJ](#) is an ANAB accredited [product certification body](#).

47 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-.Accredited%20Scopes-.13%20ENVIRONMENT.%20HEALTH>

48 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

49 [2021 IRC Section R316 AND 2018 IRC Section R316](#)

50 [IRC Section N1102.4](#)

51 [2021 IECC Section R402.4](#)

52 [IECC Section C402.5](#)

53 [2021 IRC Section R316.3 AND 2018 IRC Section R316.3](#)

54 [2021 IRC Section R316.5.3 AND 2018 IRC Section R316.5.3](#)

55 [2021 IRC Section R316.5.4 AND 2018 IRC Section R316.5.4](#)

56 [2021 IRC Section R316.6 AND 2018 IRC Section R316.6](#)

57 [2021 IBC Section 104.11](#)

58 [2021 IRC Section R104.11](#)

59 2018: <https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9> AND 2021: <https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11>

60 Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC [Section 201.4](#) (<https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4>) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

61 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>

62 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

63 [2021 IRC Section R316.4 AND 2018 IRC Section R316.4](#)

64 [2021 IRC Section R316.4 AND 2018 IRC Section R316.4](#)

65 [2021 IRC Section R316.5.13 AND 2018 IRC Section R316.5.13](#)

66 [2021 IRC Figure R318.4 AND 2018 IRC Figure R301.2\(7\)](#)

67 [2021 IRC Section R318.1 AND 2018 IRC Section R318.1](#)

68 [2021 IRC Section R318.1](#)