

# Technical Evaluation Report™

**TER 2202-02**

Rmax® Durasheath® Drainage Performance Under Stucco

**Rmax®**

**Product:**

**Durasheath®**

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 16 00 - Sheathing

SECTION: 06 16 13 - Insulated Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00 - Thermal Insulation

SECTION: 07 21 13 - Foam Board Insulation

SECTION: 07 27 00 - Air Barriers

SECTION: 07 27 23 - Board Product Air Barriers

DIVISION: 09 00 00 - FINISHES

SECTION: 09 24 23 – Cement Stucco

## 1 Innovative Product Evaluated<sup>1,2</sup>

1.1 Durasheath®

## 2 Applicable Codes and Standards<sup>3,4</sup>

2.1 Codes

2.1.1 IBC—15, 18, 21: International Building Code®

2.1.2 IRC—15, 18, 21: International Residential Code®

<sup>1</sup> For more information, visit [drjcertification.org](http://drjcertification.org) or call us at 608-310-6748.

<sup>2</sup> **Federal Regulation Definition.** 24 CFR 3280.2 "Listed or certified" means included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection 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. **International Building Code (IBC) Definition of Listed.** Equipment, materials, products, or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. **IBC Definition of Labeled.** Equipment, materials, or products to which has been affixed a label, seal, symbol, or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material, or product meets identified standards or has been tested and found suitable for a specified purpose.

<sup>3</sup> This Listing is a code defined research report, which is also known as a duly authenticated report, provided by an approved agency (see IBC Section 1703.1) and/or an approved source (see IBC Section 1703.4.2). An approved agency is "approved" when it is ANAB accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory. A professional engineer is "approved" as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a duly authenticated report certified by an approved source. (i.e., Registered Design Professional). DrJ is an ANAB accredited product certification body.

<sup>4</sup> Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service, and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

- 2.1.3 *IECC—15, 18, 21: International Energy Conservation Code®*
- 2.1.4 *FBC-B—17, 20: Florida Building Code – Building<sup>5</sup>*
- 2.1.5 *FBC-R—17, 20: Florida Building Code – Residential<sup>5</sup>*
- 2.1.6 *CBC—16, 19: California Building Code (Title 24, Part 2)<sup>6</sup>*
- 2.1.7 *CRC—16, 19: California Residential Code (Title 24, Part 2.5)<sup>6</sup>*
- 2.1.8 *CEC —16, 19: California Energy Code (Title 24, Part 6)<sup>6</sup>*
- 2.2 *Standards and Referenced Documents*
  - 2.2.1 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*
  - 2.2.2 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
  - 2.2.3 *ASTM E2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials*
  - 2.2.4 *ASTM E2273: Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies*
  - 2.2.5 *NFPA 286: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*

### 3 Performance Evaluation

- 3.1 Tests, testing, test reports, research reports, duly authenticated reports, and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2018 (DTSA).<sup>7</sup>
- 3.2 Testing and/or inspections conducted for this TER were performed at an ISO/IEC 17025 accredited testing laboratory,<sup>8</sup> an ISO/IEC 17020 accredited inspection body,<sup>9</sup> which are internationally recognized accreditations through International Accreditation Forum (IAF), and/or a licensed Registered Design Professional (RDP).
- 3.3 Rmax® Durasheath® was evaluated to determine the following:
  - 3.3.1 Stucco finish with drainage per IBC Section 1407.4.1 and IRC Section R703.9.2.
  - 3.3.2 Foam plastic insulation performance in accordance with IBC Section 2603 and IRC Section R316.
  - 3.3.3 Performance for use as a continuous air barrier in accordance with IECC Section C402.
  - 3.3.4 Surface burning characteristics in accordance with IBC Section 2603.5.4 and IRC Section R316.3.
  - 3.3.5 Special approval for use without a thermal barrier or ignition barrier in accordance with IBC Section 2603.4.1.6, IRC Section R316.5.3 and IRC Section R316.5.4.

<sup>5</sup> All references to the FBC-B and FBC-R are the same as the 2018 IBC and IRC unless otherwise noted in the Florida Supplement at the end of this TER.

<sup>6</sup> All references to the CBC, CRC, and CEC are the same as the 2018 IBC, IRC, and IECC unless otherwise noted in the California Supplement at the end of this TER.

<sup>7</sup> <https://www.law.cornell.edu/uscode/text/18/part-11/chapter-90>. Given our professional duty to inform, please be aware that whoever, with intent to convert a trade secret (TS), that is related to a product or service used in or intended for use in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; shall be fined under this title or imprisoned not more than 10 years, or both. Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

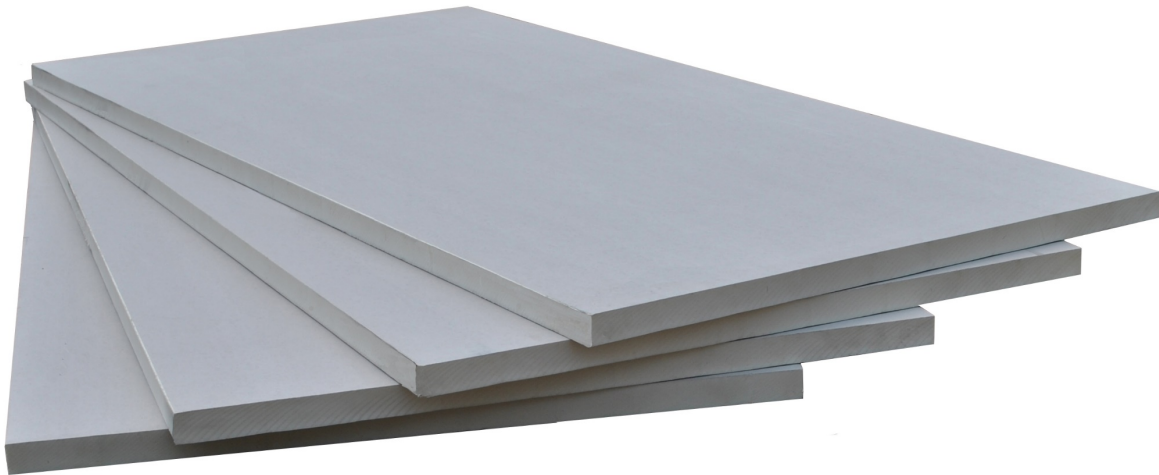
<sup>8</sup> Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

<sup>9</sup> Ibid.

- 3.4 Any building code and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an [ISO/IEC 17065 accredited certification body](#) and a professional engineering company operated by RDPs/[approved sources](#). DrJ is qualified<sup>10</sup> to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.
- 3.5 Engineering evaluations are conducted with DrJ's ANAB [accredited ICS code scope](#), which are also its areas of professional engineering competence.
- 3.6 Any regulation specific issues not addressed in this section are outside the scope of this TER.

## 4 Product Description and Materials

- 4.1 The Product evaluated in this TER is shown in Figure 1.



**Figure 1.** Durasheath®

- 4.1.1 Durasheath® is a proprietary Foam Plastic Insulating Sheathing (FPIS) panel.
- 4.1.2 Durasheath® consists of closed-cell rigid polyisocyanurate (polyiso) foam core bonded to inorganic, polymer coated glass fiber mat facers on both sides (ASTM C1289 Type II, Class 2).
- 4.2 *Material Availability*
  - 4.2.1 Thickness: 0.5" (12.7 mm) through 4.5" (114 mm)
  - 4.2.2 Standard product width: 48" (1219 mm)
  - 4.2.3 Standard product length: 96", 108", 120", and 144" (2438 mm, 2743 mm, 3048 mm, and 3658 mm)
  - 4.2.4 Custom lengths, widths, and thicknesses available upon request.

## 5 Applications

- 5.1 *General*
  - 5.1.1 Durasheath® is used as wall sheathing and continuous insulation in buildings constructed in accordance with the IBC and IRC.
  - 5.1.2 Durasheath® is a non-structural FPIS panel used as thermal insulation within the building envelope, including but not limited to, attic, crawlspace, wall, roof, ceiling, floor, and foundation assemblies.

<sup>10</sup> 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](#).



- 5.1.3 Durasheath® shall not be used as a nail base for other building products.
- 5.1.4 Stud walls insulated with Durasheath® must be properly braced for lateral loads per the applicable building code.
- 5.1.5 The wall system shall be designed to handle cladding load and wind load per the applicable code.
- 5.2 **Thermal Resistance (R-Value)**
  - 5.2.1 Rmax® Durasheath® meets the continuous insulating sheathing requirements complying with the provisions of IECC Section C402, IRC Section N1102 and IECC Section R402.
- 5.3 **Drainage Efficiency**
  - 5.3.1 Durasheath® installed over Jumbo Tex-2 Ply weather-resistant barrier may be used as a substrate beneath exterior stucco systems to provide a drainage efficiency of greater than 90% when tested in accordance with ASTM E2273, per IBC Section 1407.4.1 and IRC Section R703.9.2(3).
  - 5.3.2 Use of Durasheath® installed over other water resistant barriers is outside the scope of this TER.
- 5.4 **Air Barrier**
  - 5.4.1 Durasheath® meets the requirements of IECC Section C402, IRC Section N1102 and IECC Section R402 for use as a component of the air barrier when installed in accordance with the manufacturer installation instructions and this TER.
  - 5.4.2 The air barrier material properties of Durasheath® are shown in Table 1.

**Table 1. Air Barrier Material Properties**

Air Permeance <sup>1</sup>
< 0.02 L/(s·m <sup>2</sup> )
IP: 1 L/(s·m <sup>2</sup> )= 0.2 cfm/ft <sup>2</sup> 1. Tested in accordance with ASTM E2178.

- 5.4.3 The air permeance of an air barrier material is defined in IECC Section R303.1.5 as being no greater than 0.02 L/(s·m<sup>2</sup>) at 75 Pa (0.004 cfm/ft<sup>2</sup> at 1.57 psf) pressure difference when tested in accordance with ASTM E2178.
- 5.4.4 When used as part of a continuous air barrier, all sheathing panel joints shall be sealed. The transitions, including top and bottom of walls, and all penetrations shall also be sealed in accordance with the manufacturer installation instructions and this TER.

**5.5 Fire Safety Performance**

**5.5.1 Surface Burning Characteristics**

- 5.5.1.1 Durasheath® has the flame spread and smoke developed ratings shown in Table 2, when tested in accordance with ASTM E84 per IBC Section 2603.3 and IRC Section R316.3.

**Table 2. Surface Burn Characteristics<sup>1,2</sup>**

Thickness (in)	Flame Spread Index	Smoke Developed Index
<1"	≤ 40	≤ 250
≥1"	≤ 25	≤ 250
SI: 1 in = 25.4 mm 1. Tested in accordance with ASTM E84. 2. Foam core only.		

### 5.5.2 Thermal Barrier and Ignition Barrier (IRC and IBC Buildings)

- 5.5.2.1 Durasheath®, up to 4.5" in walls only or ceilings only, is approved for use in attics, crawls 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 R316.6](#).
  - 5.5.2.2 Durasheath®, up to 1" in walls and/or ceilings, is approved for use in attics, crawls 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 R316.6](#).
  - 5.5.2.3 Durasheath®, up to 12" (304.8 mm) in thickness, may be installed within the building envelope (including, but not limited to, attics, crawlspaces, wall, roof, floor, and ceiling assemblies) of all building types when separated from the interior with a thermal barrier consisting of a minimum ½" gypsum wallboard or an approved equivalent in accordance with [IBC Section 2603.4](#) and [IRC Section R316.4](#).
  - 5.5.2.4 In applications where panels are used in both walls and ceilings, but only one is allowed to be left exposed per Section 5.5.2.1, the other must meet the requirements of Section 5.5.2.3.
  - 5.5.2.5 For IRC applications in attics, crawls spaces, or other uninhabited spaces of Section 5.5.2.1 or Section 5.5.2.2, approval is limited to areas where access to the space is required by [IRC Section R807.1](#) or [IRC Section R408.4](#).
  - 5.5.2.6 For IRC and IBC applications in attics, crawls spaces, or other uninhabited spaces of Section 5.5.2.1 or Section 5.5.2.2, approval is limited to areas where entry is made only for the purposes of repairs or maintenance.
  - 5.5.2.7 Panels may be installed in single or multiple layers.
- 5.6 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

## 6 Installation

- 6.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this TER and the applicable building code.
- 6.2 In the event of a conflict between the manufacturer installation instructions and this TER, the more restrictive shall govern.
- 6.3 *Installation Procedure*
  - 6.3.1 *Jumbo Tex-2 Ply WRB*
    - 6.3.1.1 Apply to sheathed wall in strips, overlapping each strip 3" minimum at horizontal seams.
    - 6.3.1.2 At vertical seams and corners Jumbo Tex-2 must overlap a minimum of 6".
    - 6.3.1.3 Do not tape horizontal or vertical seams.
    - 6.3.1.4 Attach to structural sheathing with minimum 5/16" x 5/16" galvanized staples spaced at 12" on center.
  - 6.3.2 *Rmax® Durasheath®*
    - 6.3.2.1 Install vertically or horizontally with all edges tightly butted.
    - 6.3.2.2 Vertical joints must be backed by framing or structural sheathing.
    - 6.3.2.3 Install with 2" diameter cap nails or equivalent. Do not countersink the washers.
    - 6.3.2.4 Fasteners must penetrate the framing or structural sheathing a minimum of 1".
- 6.3.3 Consult the manufacturer for further details.

## 7 Substantiating Data

- 7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
  - 7.1.1 Material properties testing in accordance with ASTM C1289.
  - 7.1.2 Drainage testing in accordance with ASTM E2273.
  - 7.1.3 Air permeance testing in accordance with ASTM E2178.
  - 7.1.4 Flame spread and smoke developed ratings testing in accordance with ASTM E84.
  - 7.1.5 Room corner tests in accordance with NFPA 286.
- 7.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 7.3 Where pertinent, testing and/or engineering analysis is based upon provisions that have been codified into law through state or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published content. DrJ's engineering practice may use a code-adopted provision as the control sample. A control sample versus a test sample establishes a product as being equivalent to the code-adopted provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 7.4 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, Listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies, and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this TER, may be dependent upon published design properties by others.
- 7.5 Testing and engineering analysis: 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.<sup>11</sup>
- 7.6 Where additional condition of use and/or code compliance information is required, please search for Durasheath® on the DrJ Certification website.

## 8 Findings

- 8.1 As delineated in Section 3, Durasheath® has performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.
- 8.2 When used and installed in accordance with this TER and the manufacturer installation instructions, Durasheath® shall be approved for the following applications:
  - 8.2.1 Buildings constructed in accordance with the IBC and the IRC.
  - 8.2.2 Stucco finish with drainage per IBC Section 1407.4.1 and IRC Section 703.9.2(3).
  - 8.2.3 Performance of foam plastics in accordance with IBC Section 2603 and IRC Section R316.
  - 8.2.4 Use as insulating sheathing in accordance with IRC Section N1102.1, IRC Section N1102.2, and IECC Section C402.
  - 8.2.5 Use as a continuous air barrier in accordance with IRC Section N1102.4 and IECC Section C402.
  - 8.2.6 Flame spread and smoke developed indices in accordance with IRC Section R316.3 and IBC Section 2603.5.4.
  - 8.2.7 Use without a thermal barrier or ignition barrier in accordance with IBC Section 2603.4.1.6, IRC Section R316.5.3, and IRC Section R316.5.4.

<sup>11</sup> See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

- 8.3 Unless exempt by state statute, when the Durasheath® is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 8.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Rmax®.
- 8.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10<sup>12</sup> are similar) in pertinent part states:
- 104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.
- 8.6 **Approved:**<sup>13</sup> Building codes require that the building official shall accept duly authenticated reports<sup>14</sup> or research reports<sup>15</sup> from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.
- 8.6.1 Acceptability of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).
- 8.6.2 Acceptability of a licensed RDP, by a building official, is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.
- 8.6.3 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, as denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 8.7 DrJ is an engineering company, employs RDPs and is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131.
- 8.8 Through ANAB accreditation and the IAF Multilateral Agreements, this TER can be used to obtain product approval in any jurisdiction or country that has IAF MLA Members and Signatories to meet the Purpose of the MLA – “certified once, accepted everywhere.” IAF specifically says, *“Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.”*<sup>16</sup>

## 9 Conditions of Use

- 9.1 Material properties shall not fall outside the boundaries defined in Section 3.
- 9.2 As defined in Section 3, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 9.3 Durasheath® is subject to the following conditions:
- 9.3.1 Installation shall comply with this TER and the manufacturer installation instructions. In the event of a conflict between this TER and the manufacturer installation instructions, the more restrictive shall govern.
- 9.3.2 Durasheath® must be protected from the interior of the building by a thermal barrier in accordance with IBC Section 2603.4 and IRC Section R316.4 except as allowed in Section 5.5.2.

<sup>12</sup> 2018 IFC Section 104.9

<sup>13</sup> 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 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<sup>14</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

<sup>15</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

<sup>16</sup> <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>



- 9.3.3 In areas where the probability of termite infestation is “very heavy” as indicated in [IBC Section 2603.8](#) and [IRC Figure R318.4](#),<sup>17</sup> Durasheath® 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”.
- 9.3.3.1 Exceptions:
- 9.3.3.1.1 Buildings where the structural members of the walls, floors, ceilings, and roofs are entirely of noncombustible materials or are pressure preservative treated wood.
- 9.3.3.1.2 When, in addition to the requirements of [IRC Section R318.1](#), an approved method of protecting Durasheath® and the structure from subterranean termite damage is used.
- 9.3.3.1.3 On the interior side of basement walls.
- 9.3.4 Durasheath® is not to be used as a structural nailing base for claddings.
- 9.3.5 Use of Durasheath® to resist structural loads is outside the scope of this TER. Walls shall be braced by other materials in accordance with the applicable code, and the exterior wall covering shall be capable of resisting the full design wind pressure.
- 9.4 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:
- 9.4.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an [approved source](#), shall be approved when requirements of adopted legislation are met.
- 9.4.2 This TER and the installation instructions shall be submitted at the time of [permit](#) application.
- 9.4.3 This Product has an internal quality control program and a third-party quality assurance program.
- 9.4.4 At a minimum, this Product shall be installed per Section 6 of this TER.
- 9.4.5 The review of this TER, by the AHJ, shall be in compliance with [IBC Section 104](#) and [IBC Section 105.4](#).
- 9.4.6 This Product has an internal quality control program and a third party quality assurance program in accordance with [IBC Section 104.4](#), [IBC Section 110.4](#), [IBC Section 1703](#), [IRC Section R104.4](#), and [IRC Section R109.2](#).
- 9.4.7 The application of this Product in the context of this TER 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.
- 9.5 The approval of this TER by the AHJ shall comply with [IBC Section 1707.1](#), where legislation states in pertinent part, “*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 104.11](#),” all of [IBC Section 104](#), and [IBC Section 105.4](#).*
- 9.6 [Design loads](#) shall be determined in accordance with the building code adopted by the [jurisdiction](#) in which the project is to be constructed and/or by the building designer (i.e., [owner](#) or RDP).
- 9.7 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the [owner](#) or the owner’s authorized agent.

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<sup>17</sup> [2018 IRC Figure R301.2\(7\)](#)



## 10 Identification

- 10.1 The Product listed in Section 1.1 is identified by a label on the board or packaging material bearing the manufacturer name, product name, TER number, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at [rmax.com](http://rmax.com).

## 11 Review Schedule

- 11.1 This TER is subject to periodic review and revision. For the most recent version, visit [drjcertification.org](http://drjcertification.org).
- 11.2 For information on the status of this TER, contact [DrJ Certification](http://DrJ Certification).

## 12 Approved for Use Pursuant to US and International Legislation Defined in Appendix A

- 12.1 Durasheath® is included in this TER published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services, and whose TER Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This TER meets the legislative intent and definition of being acceptable to the AHJ.

## Appendix A

### 1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:
  - 1.1.1 Advance Innovation,
  - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
  - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize Durasheath® to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
  - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”
  - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation, and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
  - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2018 (DTSA).
    - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.
  - 1.2.4 For new materials<sup>18</sup> that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
  - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.<sup>19</sup>
  - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
  - 1.2.7 The AHJ 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 IBC Section 104.11.<sup>20</sup>

<sup>18</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>

<sup>19</sup> [IBC 2021, Section 1706.1 Conformance to Standards](#)

<sup>20</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#)

- 1.3 **Approved<sup>21</sup> by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards, which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.<sup>22</sup> The Superintendent of Building roster of approved testing agencies is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a CBI Listing are LAMC approved. In addition, the Superintendent of Building 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 the California Building Code (CBC) Section 1707.1.<sup>23</sup>
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The NYC Building Code 2022 (NYCBC) states in pertinent part that an approved agency shall be deemed<sup>24</sup> an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement<sup>25</sup> (i.e., ANAB, International Accreditation Forum (IAF), etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

<sup>21</sup> See Section 8 for the distilled building code definition of Approved

<sup>22</sup> Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

<sup>23</sup> https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1

<sup>24</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies

<sup>25</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies

- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to Building Code 2018 of New Jersey in [IBC Section 1707.1 General](#),<sup>26</sup> it states: “In the absence of approved rules or other approved standards, 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 the administrative provisions of the [Uniform Construction Code \(N.J.A.C. 5:23\)](#)”.<sup>27</sup> Furthermore N.J.A.C 5:23-3.7 states: Municipal approvals of alternative materials, equipment, or methods of construction. **(a) Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations.
1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. 2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item 2 given that the listed entities are no longer in existence and/or do not provide “reports of engineering findings”.
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#),<sup>28</sup> and [Part 3280](#),<sup>29</sup> the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform with the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow: 1) “All construction methods shall be in conformance with accepted engineering practices”; 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.”; and 3) “The design stresses of all materials shall conform to accepted engineering practice.”
- 1.10 **Approval by US, Local, and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For [new materials](#) that are not specifically provided for in this code, the [design strengths and permissible stresses](#) shall be established by tests.<sup>30</sup>
- 1.10.2 For [innovative alternative products, materials, designs, services and/or methods of construction](#), in the absence of approved rules or other approved standards...the building official shall accept duly authenticated reports (i.e., listing and/or research report) from [approved agencies](#) with respect to the quality and manner of use of [new materials or assemblies](#).<sup>31</sup> A building official [approved agency](#) is deemed to be approved via certification from an [accreditation body](#) that is listed by the [International Accreditation Forum](#)<sup>32</sup> or equivalent.

<sup>26</sup> [https://up.codes/viewer/new\\_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1](https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1)

<sup>27</sup> <https://www.nj.gov/dca/divisions/codes/codereg/ucc.html>

<sup>28</sup> <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>

<sup>29</sup> <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

<sup>30</sup> [IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials](#). Adopted law pursuant to IBC model code language 1706.2.

<sup>31</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#). Adopted law pursuant to IBC model code language 1707.1.

<sup>32</sup> Please see the [ANAB directory](#) for building official approved agencies.

- 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.<sup>33</sup> An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report certified by a PE, shall be approved.
- 1.11 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,
  - 1.11.2 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
  - 1.11.3 State that conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.
  - 1.11.4 **Approved:** The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

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<sup>33</sup> IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.



Issue Date: May 4, 2022  
Subject to Renewal: July 1, 2024

## FBC Supplement to TER 2202-02

REPORT HOLDER: Rmax®

### 1 Evaluation Subject

1.1 Durasheath®

### 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Durasheath®, recognized in TER 2202-02, has 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—17, 20: Florida Building Code – Building*

2.2.2 *FBC-R—17, 20: Florida Building Code – Residential*

### 3 Conclusions

3.1 Durasheath®, described in TER 2202-02, complies with the FBC-B and FBC-R and is 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 TER, they are listed here:

3.2.1 FBC-B Section 104.4 and Section 110.4 are reserved.

3.2.2 FBC-R Section R104 and Section R109 are reserved.

3.2.3 FBC-B Section 1408 replaces IBC Section 1407.

### 4 Conditions of Use

4.1 Durasheath®, described in TER 2202-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 2202-02.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of *FBC-B* Chapter 16 and Chapter 17, as applicable.



Issue Date: May 4, 2022  
Subject to Renewal: July 1, 2024

## CBC and CRC Supplement to TER 2202-02

REPORT HOLDER: Rmax®

### 1 Evaluation Subject

1.1 Durasheath®

### 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Durasheath®, recognized in TER 2202-02, has also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

2.2.1 *CBC—16, 19: California Building Code (Title 24, Part 2)*

2.2.2 *CRC—16, 19: California Residential Code (Title 24, Part 2.5)*

2.2.3 *CEC —16, 19: California Energy Code (Title 24, Part 6)*

### 3 Conclusions

3.1 Durasheath®, described in TER 2202-02, complies with the CBC and CRC and is 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 TER, they are listed here:

3.2.1 CRC Section N1102 is reserved.

### 4 Conditions of Use

4.1 Durasheath®, described in TER 2202-02, must comply with all of the following conditions:

4.1.1 All applicable sections in TER 2202-02.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of the CBC and CRC, as applicable.