Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2105-01

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DuPont™ Styrofoam™ for Use in Extended Plate Wall System

Trade Secret Report Holder:

DuPont™ Performance Building Solutions

Phone: 866-583-2583 Website: www.dupont.com/building

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 10 00 - Rough Carpentry

Section: 06 12 00 - Structural Panels

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 21 00 - Thermal Insulation

1 Innovative Products Evaluated[1]

1.1 DuPont Styrofoam Brand XPS Products:

1.1.1 Styrofoam Residential Sheathing

1.1.2 Styrofoam Scoreboard

1.1.3 Styrofoam Square Edge

1.1.4 Styrofoam Tongue and Groove

1.1.5 Styrofoam UtilityFit™

2 Product Description and Materials

2.1 An example of the innovative products evaluated in this report is shown in **Figure 1**.

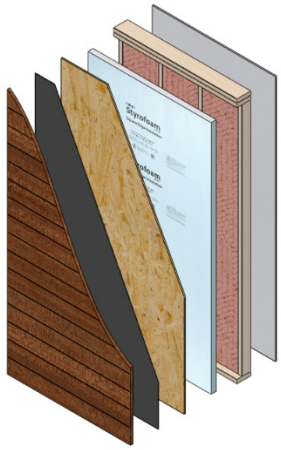

Figure 1. DuPont Styrofoam Extended Plate Wall System

2.2 The DuPont Styrofoam Extended Plate Wall System is composed of the following listed from interior to exterior (See **Figure 1**).

2.2.1 Interior Gypsum Wallboard (GWB)

2.2.2 Nominal 2x studs, with top and bottom plate one dimension larger than the studs.

2.2.2.1 This provides a pocket for a rigid insulation to be applied continuously across the studs.

2.2.3 Insulation within wall cavities

2.2.4 Styrofoam Brand rigid foam insulation products listed in **Section 1.1**.

2.2.5 Wood structural panel

2.2.6 Water-resistive barrier

2.2.7 Exterior wall covering

2.3 This configuration provides more than ninety five percent (95%) of the wall area free of thermal bridging.

2.3.1 Common methods and materials for framing, air sealing, insulation, drainage plane, and siding attachment are used.

2.3.2 Double rim board (beam) that is also a header and is inset to provide space for a thermal break.

2.4 DuPont Styrofoam Brand XPS Products are Extruded Polystyrene (XPS) Foam Plastic Insulation Sheathing (FPIS) manufactured in compliance with ASTM C578:

2.4.1 RS = Residential Sheathing (Type X)

2.4.2 SB = Scoreboard (Type IV)

2.4.3 SE = Square Edge (Type IV)

2.4.4 TG = Tongue and Groove (Type IV)

2.4.5 UtilityFit (Type X)

2.5 *Material Availability*

2.5.1 *Thickness:*

2.5.1.1 0.55" to 2"

2.5.2 *Standard Sheet Sizes:*

2.5.2.1 2' x 8'

2.5.2.2 4' x 8'

2.6 For material properties of DuPont Styrofoam Brand XPS Products, see ESR-2142 and/or ESR-4755.

2.7 The sizes of the DuPont Styrofoam Extended Plate Wall System are as follows:

2.7.1 2 x 4 studs with 2 x 6 plates and 2" of DuPont Styrofoam Brand XPS Products FPIS.

2.7.2 2 x 6 studs with $1^1/_2$" x $7^1/_2$" plates[2] and 2" of DuPont Styrofoam Brand XPS Products FPIS.

2.7.3 2 x 6 studs with 2 x 8 plates and $1^3/_4$" of DuPont Styrofoam Brand XPS Products FPIS.[3]

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

3 Definitions[4]

3.1 New Materials[5] 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.[6] The design strength and permissible stresses shall be established by tests[7] and/or engineering analysis.[8]

3.2 Duly authenticated reports[9] and research reports[10] are test reports and related engineering evaluations that are written by an approved agency[11] and/or an approved source.[12]

3.2.1 These reports utilize intellectual property and/or trade secrets to create public domain material properties for commercial end-use. This report protects confidential Intellectual Property and trade secretes under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[13]

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.[14]

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 ANAB[15] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[16] 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 writing[17] 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.[18]

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.[19] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[20] 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.[21]

4 Applicable Local, State, and Federal Approvals; Standards; Regulations[22]

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.[23]

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.[24]

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[25] and Part 3280[26] 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®*

4.3 *Standards*

4.3.1 *ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

4.3.2 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.3.3 *DOE/EE-1730 Extended Plate and Beam Construction Guide*

4.3.4 *DOE/EE-1785 Extended Plate and Beam Wall System*

5 Listed[27]

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 *Prescriptive IRC Bracing Applications*

6.1.1 The DuPont Styrofoam Extended Plate Wall System may be used on braced wall lines as an equivalent alternative to IRC Method WSP and CS-WSP when installed in accordance with IRC Section R602.10 and this report.

6.1.2 Required braced wall panel lengths for the DuPont Styrofoam Extended Plate Wall System shall be in accordance with IRC Section R602.10.3.

6.2 *Prescriptive IBC Conventional Light-Frame Wood Construction*

6.2.1 The DuPont Styrofoam Extended Plate Wall System may be used to brace exterior walls of buildings as an equivalent alternative to IBC Section 2302.1, Method 3. Bracing shall be in accordance with the conventional light-frame construction method of IBC Section 2308.10[28] and this report.

6.3 *Performance-Based Wood-Framed Construction*

6.3.1 The DuPont Styrofoam Extended Plate Wall System designed as shear walls is permitted to be designed in accordance with the methodology used in SDPWS for WSP using the capacities shown in **Table 1**.

6.3.2 DuPont Styrofoam Extended Plate Wall System shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 1**.

Table 1. Allowable Stress Design (ASD) Capacity – Wind

Product	Joint Condition	Fastener[1]	Fastener Spacing (edge:field) (in)	Maximum Stud Spacing (in)	Gypsum Wallboard (GWB)	Allowable Unit Shear Capacity (plf)
DuPont Styrofoam Extended Plate Wall System	Butted	0.131" x 3½" Nails	3:6	16 o.c.	None	255

SI: 1" = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. See **Table 3** for a full connection schedule.

6.4 *Thermal Performance*

6.4.1 R-values for the DuPont Styrofoam Extended Plate Wall System are provided in **Table 2**.

Table 2. Thermal Performance

DuPont Styrofoam Extended Plate Wall System Assembly	Maximum Stud Spacing (in)	R-Value (F•ft²•hr/Btu)	
		Nominal[1]	Assembly[2]
2 x 4 Studs with 2 x 6 Plates and 2" of Styrofoam Brand Products FPIS	16 o.c.	13 + 10	21.7
		15 + 10	22.8
2 x 6 Studs with 2 x 7.5 Plates[3] and 2" of Styrofoam Brand Products FPIS	24 o.c.	19 + 10	27.8
		21 + 10	29.1
2 x 6 Studs with 2 x 8 Plates and 1 3/4" of Styrofoam Brand Products FPIS	24 o.c.	19 + 8.75	26.6
		21 + 8.75	27.8

SI: 1 in = 25.4 mm, 1 F•ft²•h/Btu = 0.1761 K-m²/W

1. The first value is cavity insulation and the second value is continuous insulation (i.e., *"13+10"* means R-13 cavity insulation plus R-10 continuous insulation).
2. The calculated assembly value assumes typical wall materials of gypsum drywall, SPF lumber, fiberglass batt insulation, Styrofoam Brand Products FPIS, OSB structural sheathing, WRB, and vinyl siding.
3. 16" o.c. framing assumes 75% / 20.6% / 4.4% thermal path ratios (cavity / framing / cantilevered plates)
4. 24" o.c. framing assumes 85% / 10.6% / 4.4% thermal path ratios (cavity / framing / cantilevered plates)
5. Plate dimension is actual dimension achieved by ripping down 2 x 10s.

6.5 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 Performance[29]

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.[30]

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.[31]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 DuPont Styrofoam Brand XPS Products complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 DuPont Styrofoam Brand XPS Products were evaluated for use in the exterior cavity of an Extended Plate Wall (EPW) assembly identified as DuPont Styrofoam Extended Plate Wall System.

8.1.2 The DuPont Styrofoam Extended Plate Wall System is a method of construction, utilizing DuPont Styrofoam Brand XPS Products, along with specific construction detailing to provide enhanced wall performance. The following performance attributes were evaluated:

8.1.2.1 Structural performance under lateral load conditions for use as an alternative to the IRC intermittent wall bracing provisions of IRC Section R602.10 Method WSP (Wood Structural Panel) and the IRC continuous wall bracing provisions of IRC Section R602.10.4 Method CS-WSP (Continuously Sheathed Wood Structural Panel).

8.1.2.2 Structural performance under lateral load conditions for use with the IBC performance based provisions, IBC Section 2306.1 and IBC Section 2306.3, for light-frame wood wall assemblies.

8.1.2.3 Structural performance under lateral load conditions for use as an alternative to SDPWS Section 4.3 Wood Frame Shear Walls.

8.1.2.4 Thermal performance in accordance with IECC Section C402.1 and IECC Section R402.1.

8.1.3 Use in a Continuously Sheathed Portal Frame (CS-PF) is outside the scope of this report.

8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., 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 qualified[32] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[33] respectively.

8.3 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 For more information, see the Home Innovation Research Labs' Reports and resources for builders on Extended Plate Wall (EPW) Systems.

9.4 *Installation Procedure*

9.4.1 Installation shall be in accordance with the US Department of Energy's Build America Program Document, Extended Plate Construction Guide, DOE/EE-1730.

9.4.2 Double rim joists can be installed flush to exterior face of wall or inset by 1" for installation of 1" Styrofoam FPIS.

9.4.3 Single rim joist must be inset 1".

9.4.3.1 Single rim joist shall not be used as a header.

9.4.4 Rim joist(s) may be inset up to 2" only if the WSP sheathing spans from the top plate all the way to the sill plate and is fastened to the sill plate at 3" o.c. with scheduled nails.

9.4.4.1 The aspect ratio for braced wall panels in this case shall be based on the entire length of the WSP sheathing from the top plate to the sill.

9.4.4.2 Double rim joists are allowed to be designed as a header by an RDP.

9.4.5 If the end bearing length for the floor joists is not adequate, the joists must be supported with metal hangers in accordance with IRC Section R502.6.

9.4.5.1 Joist hangers must be used for all floor joists over window and door openings when rim joist(s) are used in place of header or abut into the face of the header.

9.4.6 Fastening shall be in accordance with **Table 3**.

9.4.6.1 Exterior cladding is permitted to be fastened directly to OSB per IRC Section R703.3.3.

Table 3. Connection Schedule[1,2]

Connection	Nails	Schedule
Perimeter (Edge) of Wood Sheathing	0.131" x 3.5"	3" o.c.
Field of Wood Sheathing	0.131" x 3.5"	6" o.c.
Corner Studs in Contact with Each Other	0.131" x 3"	12" o.c.
Corners: WSP from Both Intersecting Walls to a Common 2x Framing Member	0.131" x 2.5"	6" o.c.
Corner Studs Separated by Up to 2" of Styrofoam	0.135" x 5"	6" o.c.
	0.190" x 6" SIP screws	12" o.c.

SI: 1 in = 25.4 mm

1. Use IRC Table R602.3(1) for all other connections.
2. Staples are not an acceptable substitute for nails.

9.4.7 *Roof Detail:*

9.4.7.1 Proper installation of the DuPont Styrofoam Extended Plate Wall System at the roofline is shown in **Figure 2**.

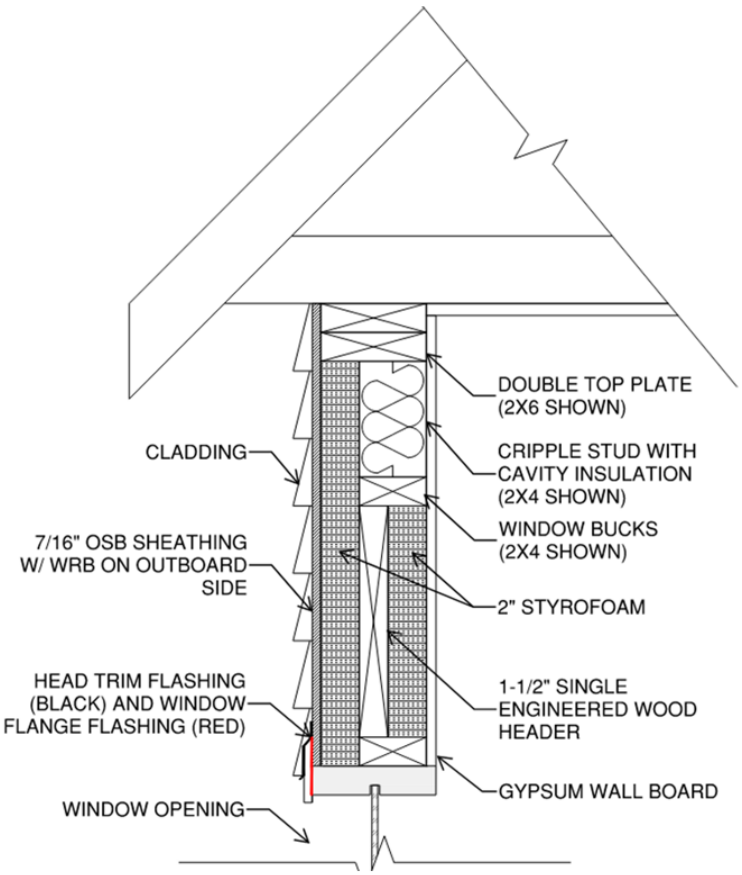

Figure 2. DuPont Styrofoam Extended Plate Wall System Roofline Detail

9.4.8 *Floor Line:*

9.4.8.1 Proper installation of the DuPont Styrofoam Extended Plate Wall System at the floor line is shown in **Figure 3**.

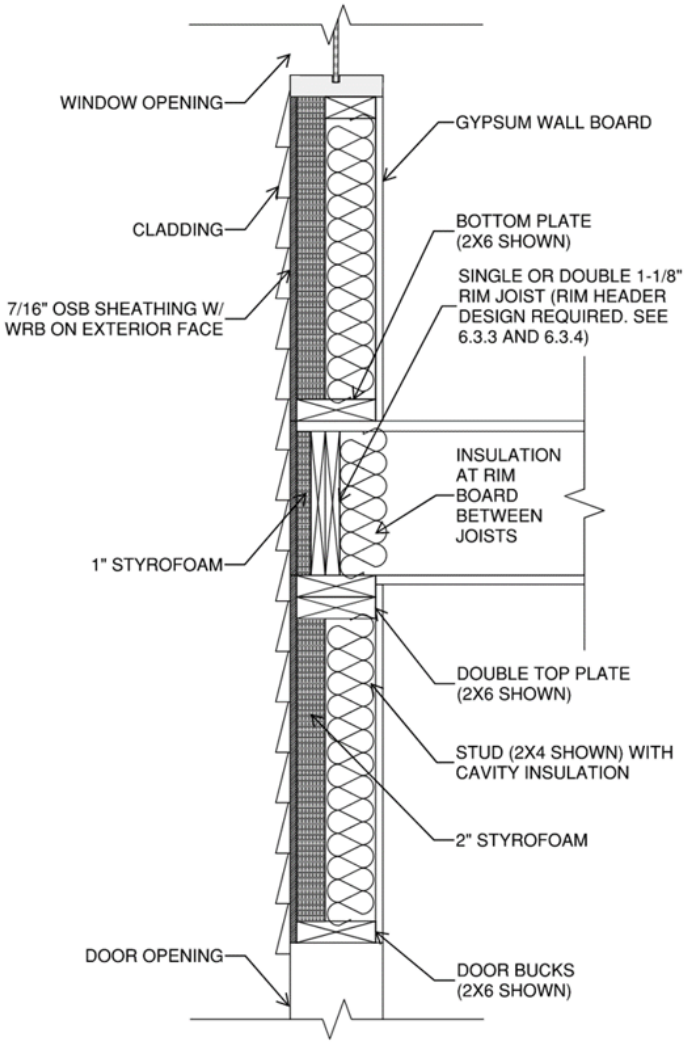

Figure 3. DuPont Styrofoam Extended Plate Wall System Floor Line Detail

9.4.9 *Foundation Line:*

9.4.9.1 Proper installation of the DuPont Styrofoam Extended Plate Wall System at the foundation is shown in **Figure 4**.

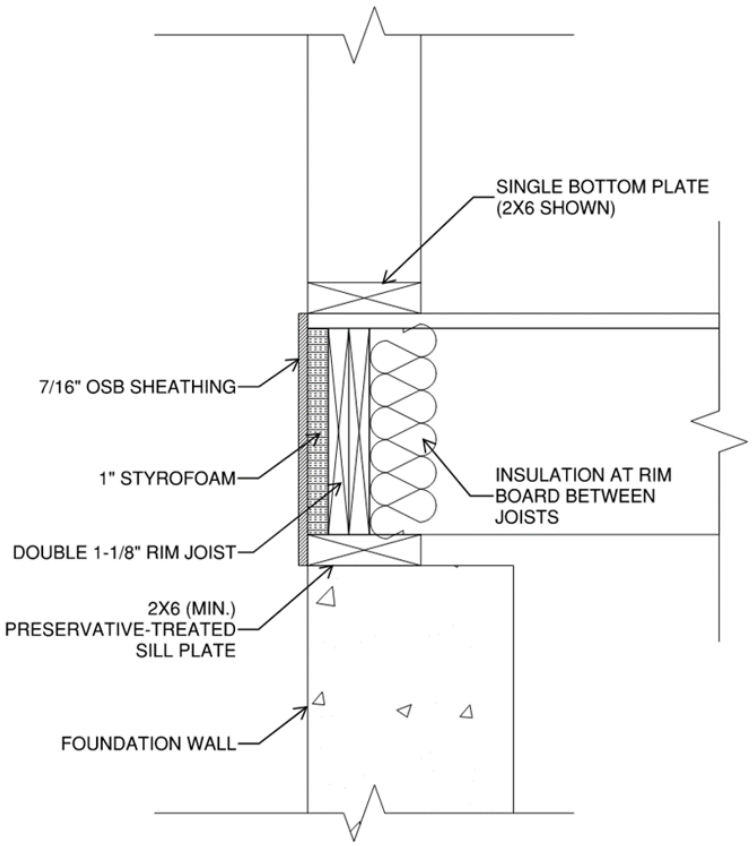

Figure 4. DuPont Styrofoam Extended Plate Wall System Foundation Line Detail

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 Lateral load testing in accordance with ASTM E564 and ASTM E72

10.1.2 DOE/EE-1785 Extended Plate Wall System

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.[34]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for DuPont Styrofoam Brand XPS Products on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, DuPont Styrofoam Brand XPS Products 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, DuPont Styrofoam Brand XPS Products shall be approved for the following applications:

11.2.1 Use to resist lateral loads due to wind loads carried by shear walls

11.2.2 Use as thermal resistance of the exterior wall assembly

11.3 Unless exempt by state statute, when DuPont Styrofoam Brand XPS Products are 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.

11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from DuPont Performance Building Solutions.

11.5 IBC Section 104.2.3[35] (IRC Section R104.2.2[36] and IFC Section 104.2.3[37] 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.

11.6 **Approved:**[38] Building regulations require that the building official shall accept duly authenticated reports.[39]

11.6.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

11.6.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

11.6.3 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. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.8 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.[40]

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 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.

12.2 As listed herein, DuPont Styrofoam Brand XPS Products shall not be used as a nail base for cladding, trim, windows, or doors.

12.3 Fastening to the WSP or to the framing is acceptable.

12.4 Allowable shear loads shall not exceed the value provided in **Table 1** for wind.

12.5 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:

12.5.1 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.

12.5.2 This report and the installation instructions shall be submitted at the time of permit application.

12.5.3 These innovative products have an internal quality control program and a third-party quality assurance program.

12.5.4 At a minimum, these innovative products shall be installed per **Section 9**.

12.5.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

12.5.6 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.

12.5.7 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.

12.6 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.

12.7 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).

12.8 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 DuPont Styrofoam Brand XPS Products (Styrofoam Residential Sheathing, Styrofoam Scoreboard, Styrofoam Square Edge, Styrofoam Tongue and Groove, and Styrofoam UtilityFit), 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.dupont.com/building.

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.

Notes

1 For more information, visit drjcertification.org or call us at 608-310-6748.

2 Plate dimension is actual dimension achieved by ripping down 2 x 10s.

3 Typically two layers with staggered joints.

4 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

5 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702

6 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

7 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

8 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

10 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2

11 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

12 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

13 https://www.law.cornell.edu/uscode/text/18/1832 (b) 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. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

14 https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional AND https://apassociation.org/list-of-engineering-boards-in-each-state-archive/

15 https://www.cbitest.com/accreditation/

16 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code

17 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

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

19 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

20 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

21 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

22 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

23 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by the local jurisdiction. https://up.codes/codes/general

24 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

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

26 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

27 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

28 2021 IBC Section 2308.6

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

30 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

[31] 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

[32] 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.

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

[34] 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

[35] 2021 IBC Section 104.11

[36] 2021 IRC Section R104.11

[37] 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

[38] 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.

[39] https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

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