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DIVISION: 06—WOOD AND PLASTICS
Section: 06160—Sheathing

REPORT HOLDER:

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EVALUATION SUBJECT:

THERMO-SHEATH RED LABEL STRUCTURAL SHEATHING; THERMO-SHEATH BLACK LABEL STRUCTURAL SHEATHING; THERMO-SHEATH BLUE LABEL STRUCTURAL SHEATHING; AND THERMO-SHEATH GREEN LABEL STANDARD SHEATHING

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Physical properties
- Structural

2.0 USES

Thermo-Sheath Red Label Structural Sheathing, Thermo-Sheath Black Label Structural Sheathing and Thermo-Sheath Blue Label Structural Sheathing are used as structural wall sheathing for conventional light-frame wood construction of braced wall panels in braced wall lines for buildings of Type V construction under the IBC and for braced wall panels and continuous sheathed braced walls for structures complying with the IRC. The sheathing may also be used as a component of engineered shear walls when installed as described in Section 4.4.

Thermo-Sheath Green Label Standard Sheathing is used for nonstructural wall sheathing on wood studs on buildings of Type V construction (IBC) and structures complying with the IRC. The sheathing may also be used as a component of engineered shear walls when installed as described in Section 4.4.

3.0 DESCRIPTION

All Thermo-Sheath sheathing products described in this report are fibrous boards laminated with water-resistant adhesive to aluminum foil, pigmented polyolefin film, unpigmented polyolefin film, aluminized polyolefin film or

paper overlay on one or both faces of the sheathing. Thermo-Sheath Red Label Structural Sheathing has a nominal thickness of 0.105 inch (2.67 mm). Thermo-Sheath Black Label Structural Sheathing has a nominal thickness of 0.115 inch (2.92 mm). Thermo-Sheath Blue Label Structural Sheathing has a nominal thickness of 0.137 inch (3.48 mm). Thermo-Sheath Green Label Standard Sheathing has a nominal thickness of 0.078 inch (1.98 mm). Thermo-Sheath sheathing is provided in two standard size sheets of 48 inches by 96 inches (1219.2 mm by 2438.4 mm) and 48³/₄ inches by 96 inches (1238.25 mm by 2438.4 mm). Other sizes are available by special order.

4.0 DESIGN AND INSTALLATION

4.1 Thermo-Sheath Red Label Structural Sheathing, Thermo-Sheath Black Label Structural Sheathing, and Thermo-Sheath Blue Structural Sheathing:

Thermo-Sheath Red Label, Black Label and Blue Label Structural Sheathing must be installed vertically over wood stud walls, with framing having a nominal thickness of not less than 2 inches (51 mm) spaced a maximum of 16 inches (406 mm) on center for Red Label and Black Label sheathing, and 24 inches (610mm) on center for Blue Label sheathing. Fasteners must be installed a minimum of ³/₈ inch (9.5 mm) from sheathing edges. All joints and edges must be backed by studs, plates or blocking of a size at least equal to that of the studs. Sheathing joints are either butt or lapped. Lapped joints must be overlapped a minimum of ³/₄ inch (19.1 mm) at framing members, and fastened with a single row of staples at the overlaps. Butt joints must be at framing members, and a single row of staples must be applied to each panel edge. The sheathing may be installed horizontally on walls 4 feet (1219 mm) high or less, with all edges blocked with framing members having a nominal thickness of not less than 2 inches (51 mm).

The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions must be available at all times on the jobsite during installation.

4.2 Thermo-Sheath Green Label Standard Sheathing:

Thermo-Sheath Green Label Standard Sheathing is installed on studs spaced a maximum of 24 inches on center (610 mm) and fastened only as needed to hold the sheathing in place until the primary wall covering is installed. Wall framing must be braced in accordance with the applicable code, except when installed as engineered shear walls in accordance with Section 4.4. Joints between panels are butt joints or may be overlapped a minimum of ³/₄ inch (19.1 mm). Joints must occur over studs, plates or solid blocking. When installed as engineered shear walls, fastener size, type and spacing must be in accordance with Section 4.4.

The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the

instructions must be available at all times on the jobsite during installation.

4.3 Braced Walls—Conventional Construction:

4.3.1 Thermo-Sheath Red Label Structural Sheathing, Thermo-Sheath Black Label Structural Sheathing, Thermo-Sheath Blue Label Structural Sheathing: Thermo-Sheath Red Label, Black Label and Blue Label Structural Sheathing may be used to brace exterior walls of buildings of conventional light-frame wood construction as an alternative to the fiberboard wall bracing (Method 4) described in Section 2308.9.3 of the IBC and Section R602.10 of the IRC. The sheathing must be installed in accordance with the requirements for bracing Method 4 of Section 2308.9.3 of the IBC, with fastening as described in Table 2 of this report or bracing Method 4 of Section R602.10 of the IRC, and the requirements of Tables 1 and 2 of this report.

4.3.2 Continuous Structural Panel Sheathing—Section R602.10.5 of the IRC: Thermo-Sheath Red Label Structural Sheathing may be used as an alternative continuous structural panel sheathing when installed on all sheathable areas of all exterior- and interior-braced wall lines, including areas above and below openings. Installation must be in accordance with this report and Section R602.10.5, Table R602.10.5 and Figure R602.10.5 of the IRC. Fastener size and spacing are noted in Table 2. A minimum of 2 feet (0.61 m) of sheathing material must be installed at corners, in accordance with Figure R602.10.5 of the IRC.

4.3.3 Seismic Provisions: Thermo-Sheath Red Label, Black Label and Blue Label Structural Sheathing is limited to use as braced walls in Seismic Design Categories A, B and C in accordance with Table 1 of this report. Evaluation of Thermo-Sheath Structural Sheathing grades for use in buildings for which seismic analysis is required by Section 2308.2 of the IBC or Section R301.2.2 of the IRC is outside the scope of this report.

4.4 Engineered Shear Walls-Wind Loads:

Thermo-Sheath sheathing products may be used as components of engineered shear walls for resisting wind loads when installed as described in Table 3. Walls using Thermo-Sheath sheathing products must be designed as engineered shear walls when structural analysis for wind is required by Section 2308.2 of the IBC or Section R301.2.1 of the IRC or when the construction does not qualify as conventional light-frame construction in accordance with Section 2308 of the IBC or Section R602 of the IRC. Design wind loads are determined in accordance with Section 1609 of the IBC. The design wind loads must not exceed the allowable racking shear loads shown in Table 3. The bracing requirements determined by wind load analysis must not be taken as less than those determined by the prescriptive bracing requirements noted in Section 4.3 of this report.

5.0 CONDITIONS OF USE

The Thermo-Sheath sheathing products described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions.

- 5.1 This evaluation report and the installation instructions, when required by the code official, must be submitted at the time of permit application. Installation instructions within this report govern if there are any conflicts with the manufacturer's instructions.
- 5.2 The sheathing material must not be used as a nailing base.
- 5.3 Use of the sheathing as a water-resistive barrier is outside the scope of this evaluation report.

- 5.4 The sheathing material is not rated for resistance to wind pressure acting toward or away from the building surface. The sheathing material must be covered with a code-complying exterior wall covering capable of resisting transverse wind loads in accordance with Section R301.2.1 of the IRC or Section 1609 of the IBC. Exterior veneers must be attached directly to the wood framing members and installed in accordance with the manufacturer's published installation instructions and the applicable code.
- 5.5 Walls sheathed with Thermo-Sheath sheathing must not be used to resist horizontal loads from concrete or masonry walls.
- 5.6 In accordance with Section 4.3 of this report, Thermo-Sheath Red Label Structural Sheathing, Thermo-Sheath Black Label Structural Sheathing and Thermo-Sheath Blue Label Structural Sheathing may be used to brace exterior walls of buildings of conventional light-frame construction.
- 5.7 When the sheathing is not installed as braced wall panels, as described in Section 4.3, the stud walls must be braced by other materials in accordance with the applicable code.
- 5.8 A statement of special inspection complying with Section 1705 of the IBC must be provided for structures assigned to Seismic Design Category C. Special inspections in Seismic Design Category C must be provided for nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system, including connections of the braced wall panels and braced wall lines to drag struts and hold-downs, in accordance with IBC Section 1707.1.
- 5.9 The use of braced wall panels and braced wall lines in Exposure B where the basic wind speed is 120 mph or greater and in Exposures C and D where the basic wind speed is 110 mph or greater, requires that a statement of special inspection be provided in accordance with IBC Section 1705.4, except for buildings designed and constructed in accordance with IBC Section 2308 or the IRC.
- 5.10 Thermo-Sheath Structural Sheathing and Thermo-Sheath Standard Sheathing panels are manufactured by Fibre Converters, Inc., in Constantine, Michigan, under a quality control program with inspections by RI Ogawa and Associates (AA-705).

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Laminated Fibrous Board Sheathing Material (AC295), dated May 2006.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials Used as Braced Wall Panels (AC269), dated October 2006.

7.0 IDENTIFICATION

Each Thermo-Sheath panel bears a label noting the report holder's name (National Shelter Products, Inc.), the address of the manufacturing facility, the product name [Thermo-Sheath (Green, Red, Black or Blue Label)], the panel thickness, the name of the inspection agency (RI Ogawa and Associates), and the evaluation report number (ESR-1577).

**TABLE 1—WALL BRACING REQUIREMENTS FOR THERMO-SHEATH SHEATHING
IN CONVENTIONAL LIGHT-FRAME CONSTRUCTION FOR USE IN SEISMIC DESIGN CATEGORIES A, B AND C^{1,2,3,4}**

SEISMIC DESIGN CATEGORY OR WIND SPEED	CONDITION	LOCATION AND AMOUNT OF STRUCTURAL BRACING
Categories A and B ($S_s \leq 0.35 g$ and $S_{ds} \leq 0.33 g$) or 100 mph or less	One story, or top of two or three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 16% of braced wall line.
	First story of two stories, or second story of three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 25% of braced wall line.
	First story of three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 35% of braced wall line.
Categories C ($S_s \leq 0.6 g$ and $S_{ds} \leq 0.50 g$) or 110 mph or less	One story, or top of two or three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 25% of braced wall line.
	First story of two stories, or second story of three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 45% of braced wall line.
	First story of three stories	Located within 12.5 feet of each end of braced wall line and every 25 feet on center, but not less than 60% of braced wall line.

For **SI**: 1 foot = 0.3 m, 1 mph = 0.447 m/s.

¹Installation must be in accordance with the notes of IRC Table R602.10.1.

²Fastening schedule must comply with the noncontinuous sheathing requirements of Table 2 of this report.

³Continuous sheathing must be installed in accordance with IRC Section R602.10.5. Fastening schedule must comply with the continuous sheathing requirements of Table 2 of this report.

⁴Installation under the IBC must comply with IBC Section 2308.9.3.

**TABLE 2—PRESCRIPTIVE FASTENING REQUIREMENTS FOR THERMO-SHEATH SHEATHING
IN BUILDINGS OF CONVENTIONAL LIGHT-FRAME CONSTRUCTION¹**

THERMO-SHEATH GRADE	MAXIMUM STUD SPACING (inches o.c.)	WALL BRACING SYSTEM	MAXIMUM HEIGHT-TO-WIDTH RATIO	FASTENER TYPE	FASTENER SPACING ¹ (inches o.c. edges, field)
Red	16	IRC & IBC noncontinuous sheathing ³	2:1	$\frac{7}{16}$ inch crown x $1\frac{1}{4}$ inch x 16 gauge staples	3, 6
		IRC continuous sheathing ²	4:1	1 inch crown x $1\frac{1}{4}$ inch x 16 gauge staples	3, 3
Black	16	IRC & IBC noncontinuous sheathing ³	2:1	$\frac{7}{16}$ inch crown x $1\frac{1}{4}$ inch x 16 gauge staples	3, 6
Blue	24	IRC & IBC noncontinuous sheathing ³	2:1	$\frac{7}{16}$ inch crown x $1\frac{1}{4}$ inch x 16 gauge staples	3,6

For **SI**: 1 inch = 25.4 mm.

¹Fastener spacing shown is applicable to panels used to brace exterior walls in buildings of conventional wood framing designed in accordance with the prescriptive provisions of Section 2308 of the IBC or Section R602 of the IRC.

²Continuous sheathing must be installed in accordance with the notes of IRC Table R602.10.5.

³Noncontinuous sheathing must be installed in accordance with Section 4.3.1 of this report.

**TABLE 3—ALLOWABLE SHEAR LOADS (plf) FOR THERMO-SHEATH SHEATHING
IN ENGINEERED WOOD CONSTRUCTION^{1,2,3,6,7}**

THERMO-SHEATH GRADE	MAXIMUM STUD SPACING (inches o.c.)	MAXIMUM HEIGHT-TO-WIDTH ASPECT RATIO	FASTENER TYPE	FASTENER SPACING (inches o.c. edges, field)	ALLOWABLE RACKING LOAD (plf)
Red	16 ⁴	2:1	⁷ / ₁₆ inch crown × 1 ¹ / ₄ inch × 16 gauge staples	3, 6	130
Black	16 ⁴	2:1	⁷ / ₁₆ inch crown × 1 ¹ / ₄ inch × 16 gauge staples	3, 6	155
Black	16 ⁴	2:1	1 inch crown × 1 ¹ / ₄ inch × 16 gauge staples	2, 6	180
Blue	24 ⁴	2:1	⁷ / ₁₆ inch crown × 1 ¹ / ₄ inch × 16 gauge staples	3, 3	185
Green and ¹ / ₂ -inch gypsum wallboard ⁸	16 ⁵	2:1	1 inch crown × 1 ¹ / ₄ inch × 16 gauge staples for Thermo-Sheath	3, 6	159
			#6 × 1 ¹ / ₄ inches coarse thread drywall screws for gypsum wallboard	7, 7	
Red and ¹ / ₂ -inch gypsum wallboard ⁸	16 ⁵	2:1	1 inch crown × 1 ¹ / ₄ inch × 16 gauge staples for Thermo-Sheath	3, 6	206
			#6 × 1 ¹ / ₄ inches coarse thread drywall screws for gypsum wallboard	7, 7	
Blue and ¹ / ₂ -inch gypsum wallboard ⁸	16 ⁵	2:1	1 inch crown × 1 ¹ / ₄ inch × 16 gauge staples for Thermo-Sheath	3, 6	218
			#6 × 1 ¹ / ₄ inches coarse thread drywall screws for gypsum wallboard	7, 7	

For **SI**: 1 inch = 25.4 mm, 1 pound per lineal foot (plf) = 14.6 N/m.

¹Panel joints must occur over studs, plates or solid blocking.

²Staples must be installed with the crown parallel to the framing member.

³The staple crown must be installed so that the staple crown does not puncture the sheathing.

⁴Wall studs are nominal 2 × 4 Hem-Fir ($G = 0.43$) stud grade. Allowable shear values shown above are for installation over lumber framing having a specific gravity equal to or greater than $G = 0.43$.

⁵Wall studs are nominal 2 × 4 Spruce-Pine-Fir ($G = 0.42$) No. 2 grade. Allowable shear values shown above are for installation over lumber framing having a specific gravity equal to or greater than $G = 0.42$.

⁶Allowable shear values are for short-term wind loads.

⁷Wood stud shear walls sheathed with Thermo-Sheath must not be used to resist horizontal loads from concrete or masonry walls.

⁸The interior of a braced wall panel must be sheathed with ¹/₂-inch-thick (12.7 mm) regular gypsum board oriented perpendicular to the studs. The gypsum board must be fastened to each framing member with minimum #6 by 1¹/₄-inch coarse thread drywall screws spaced 7 inches (178 mm) on center at the perimeter and in the field of the board.