LEGACY REPORT

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Legacy report on the 2000 *International Building Code*®, the BOCA® *National Building Code*/1999, the 1999 *Standard Building Code*©, the 1997 Uniform *Building Code*™ , the 2000 *International Residential Code*® the *2002 Accumulative Supplement to the International Codes*™ and the 1998 *International One- and Two-Family Dwelling Code*®

DIVISION 06 — WOOD AND PLASTICS
Section 06160 — Sheathing

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1.0 SUBJECT

1.1 Thermo-Sheath 16" o.c. Structural Sheathing
1.2 Thermo-Sheath 24" o.c. Structural Sheathing
1.3 Thermo-Sheath Standard Sheathing

2.0 PROPERTIES FOR WHICH EVALUATION IS SOUGHT

2.1 Structural Racking Resistance
2.2 Non-Structural Sheathing

3.0 DESCRIPTION

3.1 General

Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c. Structural Sheathing are used as structural wall sheathing on buildings of combustible construction.

Thermo-Sheath Standard Sheathing is used as non-structural wall sheathing on buildings of combustible construction. Therm-Sheath Standard is used for structural wall sheathing when installed with gypsum wallboard complying with ASTM C 36 in accordance with Table 1 of this report.

3.1.1 Thermo-Sheath 16" o.c. Structural Sheathing: Consists of laminated fibrous boards having a nominal thickness of 0.105 inches and 0.115 inches (2.67 mm and 2.92 mm) and covered with aluminum foil, pigmented polyethylene, unpigmented polyethylene, aluminumized polyethylene, or paper overlay on one or both sides. The sheets are provided in two standard sizes of 48 inch by 96 inch (1219.2 mm by 2438.4 mm), and 48-3/4 inch by 96 inch (1238.25 mm by 2438.4 mm). Other sizes are available by special order.

3.1.2 Thermo-Sheath 24" o.c. Structural Sheathing: Identical to Thermo-Sheath Structural Sheathing except that the nominal thickness is 0.137 inches (3.48 mm).

3.1.3 Thermo-Sheath Standard Sheathing: Identical to Thermo-Sheath Structural Sheathing except the nominal thickness is 0.078 inches (1.98 mm).

3.2 Structural

Thermo-Sheath Structural Sheathing and Thermo-Sheath 24" o.c. Structural Sheathing were tested for wet and dry racking loads under ASTM E 72. The sheathing may be used as components of engineered shear walls when installed as described in Table 1 of this report.

4.0 INSTALLATION

4.1 General

Thermo-Sheath sheathing products shall be installed in accordance with the manufacturer's published installation instructions and this report.

An exterior wall covering in compliance with the code shall be installed over all grades of Thermo-Sheath. The wall covering shall provide weather resistance and wind resistance perpendicular to the wall.

The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's published installation instructions and this report.

4.2 Thermo-Sheath Standard Sheathing

4.2.1 Wall Construction: Installed on studs spaced up to 24 inches on center and fastened with 1-1/8 inch (28.58 mm) long galvanized roofing nails or 1-1/8 inch (28.58 mm) long No. 16 gauge galvanized staples spaced 6 inches (152.4 mm) on center at perimeter of boards and 12 inches (304.8 mm) on center at intermediate supports. Wood stud wall framing shall be braced in accordance with the applicable Code. Joints between panels are butt joints or may be lapped 3/4

inches (19.05 mm) minimum. Joints shall occur over studs, plates or solid blocking.

4.3 Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing

Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing are permitted to brace exterior walls of conventional light-frame wood frame construction as an alternative to the wall bracing in applications where structural analysis for wind and/or seismic forces is not required by the applicable code. Installation shall be in accordance with Section 4.2.1 of this report and this section.

In areas utilizing the *International Building Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type, and fastener spacing required by Table 1 of this report shall be used as an alternative to construction method 4 of Section 2308.9.3 of the code. Location and extent of sheathing shall be in accordance with that noted for construction method 4 of Table 2308.9.3(1) of the code.

In areas utilizing the *Standard Building Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type, and fastener spacing required by Table 1 of this report shall be used in lieu of Table 2308.2.2B of the code. Location and extent of sheathing shall be in accordance with Table 2308.2.2A of the code.

In areas utilizing the *Uniform Building Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type, and fastener spacing required by Table 1 of this report shall be used in lieu of the bracing requirements noted in Section 2320.11.3 of the code. Location and extent of sheathing shall be in accordance with Table 23-IV-C-1 of the code.

In areas utilizing the *International Residential Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type, and fastener spacing required by Table 1 of this report shall be used as an alternative to construction method 4 of Section R602.10.3. Location and extent of sheathing shall be in accordance with that noted for construction method 4 of Table R602.10.3 of the code.

In areas utilizing the *1998 International One- and Two-Family Dwelling Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type, and fastener spacing required by Table 1 of this report shall be used as an alternative to construction method 5 of Section 602.10 Location and extent of sheathing shall be in accordance with that noted in Table 602.10 of the code.

In areas utilizing the *BOCA National Building Code*, the sheathing product, maximum stud spacing, sheathing panel height, fastener type and fastener spacing required by Table 1 of this report shall be used in lieu of Table 2305.13 of the code.

Where structural analysis for wind (greater than 100 mph in areas using the *International Building Code*; 80 mph or greater in areas using the *Standard Building Code*; 80 mph or greater, Exposure C in areas using the *Uniform Building Code*; all design wind speeds for areas utilizing the *BOCA National Building Code*; greater than 100 mph in areas using the *International Residential Code*) is required by the applicable code or construction does not qualify as conventional light-frame construction, walls using Thermo-Sheath Structural Sheathing and Thermo-Sheath 24" o.c. Structural Sheathing shall be designed and installed as components of engineered shear walls. See Table 1, at the end of this report, for the allowable shear values for various combinations of Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing, stud spacing, fastening schedules, etc. However, in no case shall the bracing requirements determined by wind load analysis be taken as less than that determined by the prescriptive bracing requirements noted in previous paragraphs of this section.

The evaluation of Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing for use on buildings for which seismic analysis is required by the applicable code is beyond the scope of this report.

The sheathing is installed on stud framing with the long dimension in a vertical position and fastened at all edges and intermediate supports as described in Table 1. Sheathing is installed on studs spaced a maximum of 16 inches (406.4 mm) on center except the Thermo-Sheath 24" o.c. Structural Sheathing which is installed on studs spaced 24 inches (609.6 mm) on center maximum. Panel edges shall occur over studs, plates or solid blocking.

When other wall bracing is provided, the structural grade Thermo-Sheath sheathing may be installed as non-structural sheathing as described in 4.2.1 above.

5.0 IDENTIFICATION

All sheets and packages of Thermo-Sheath Sheathing products covered by this report shall be labeled with the manufacturer's name/and or trademark, address, the product name, name of quality assurance agency (Ramtech, IAS AA-655, NER-QA293) and NER-583.

6.0 EVIDENCE SUBMITTED

6.1 Manufacturer's descriptive literature, specifications, and installation instructions.

6.2 Test report on structural racking tests under ASTM E 72, RADCO Report No. RAD-658, Project No. C-4513, December 1986, signed by Ronald I. Ogawa, P.E.

6.3 Test report on physical properties under ASTM C 209, RADCO Report No. RAD-672, Project No. C-4513, January 1987, singed by Ronald I. Ogawa, P.E. The following tests were performed:

- Transverse strength MOR, ASTM D 2529
- Tensile strength parallel to surface, ASTM C 209
- Tensile strength perpendicular surface, ASTM C 209
- Mullen burst strength, ASTM D 2529
- Water absorption, ASTM C 209
- Moisture vapor transmission, ASTM E 96, A
- Linear Expansion, ASTM C 209

6.4 Quality Assurance Manual and Inspection Procedures for Thermo-Sheath, Structural Grade, September 1, 1995 by Fiber Converters, Inc., third party inspection by Ramtech Laboratories (NER-QA293), signed by Ronald Ogawa, P.E., 9/6/95 of Ramtech; James D. Stuck, 9/9/95 of Fiber Converters Inc.; and Earl Shepherd, 9/6/95 of National Shelter Products, Inc.

Letter report on inspections of Fiber Converters, Inc. by third party, September 18, 1995, Ronald I. Ogawa, P.E.

6.5 Test reports on racking loads under ASTM E 72, Progressive Engineering, Inc., signed and sealed by Jeffrey R. Walton, P.E. June 8, 2001:

6.5.1 Report 2001-808(D), 0.105" thick Thermo-Sheath and ½ " USG Sheetrock.

6.5.2 Report 2001-808(E), 0.115 thick Thermo-Sheath16"0.c. and ½: USG Sheetrock.

6.5.3 Report 2001-808(F), 0.078" Thick Thermo-Sheath Standard and ½" USG Sheetrock.

6.6 Engineering analysis of structural load testing, Inspection Concepts, Inc., June 11, 2002, signed by Ronald I. Ogawa, P.E.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for the National Evaluation Service finds that National Shelter Products, Inc.'s Thermo-Sheath 16" o.c. Structural Sheathing, Thermo-Sheath 24" o.c. Structural Sheathing, Thermo-Sheath Standard Sheathing, as described in this report complies with or are suitable alternates to that specified in the 2000 *International Building Code®* , the BOCA® *National Building Code*/1999, the 1999 *Standard Building Code©*, the 1997 Uniform *Building Code*™, the 2000 *International Residential Code®* the *2002 Accumulative Supplement to the International Codes*™ and the 1998 *International One- and Two-Family Dwelling Code®* subject to the following conditions:

7.1 This Evaluation Report and the manufacturer's published installation instructions, when required by the code official, shall be submitted at the time of permit application.

7.2 Thermo-Sheath, all grades, shall not be used as a nailing base for exterior siding materials. All nailing shall be made through the sheathing into the wall studs.

7.3 Thermo-Sheath, all grades, shall not be used structurally to resist transverse or vertical loadings.

7.4 Thermo-Sheath, all grades, shall not be used as an exterior wall covering.

7.5 Fire performance is outside the scope of this evaluation report. Thermo-Sheath, all grades, when used as a component in a fire-resistive rated assembly, shall be documented by fire testing from a qualified testing laboratory.

7.6 Engineering calculations shall be submitted to the building official when applying for a permit when using Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing as a component of an engineered shear wall. The individual preparing such documents shall possess the necessary credential regarding competency and qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken.

7.7 The Thermo-Sheath16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing used to brace exterior wood stud walls shall meet the use requirements of Section 4.3 of this report.

7.8 The shear resistance of Thermo-Sheath 16" o.c. Structural Sheathing and Thermo-Sheath 24" o.c Structural Sheathing has not been evaluated for uses where seismic analysis is required by the code.

7.9 Thermo-Sheath, all grades of structural and non-structural wall sheathing, shall be used only on buildings of combustible construction.

7.10 In areas utilizing the BOCA National Building Code, all Thermo-Sheath sheathing shall be installed with a minimum clearance to the ground of 8 inches (203 mm).

7.11 This report is subject to periodic re-examination. For information on the current status of this report, consult the ICC-ES website.

TABLE 1 — ALLOWABLE SHEAR LOADS (PLF)
ENGINEERED WOOD CONSTRUCTION

SHEATHING PRODUCT	MAXIMUM STUD SPACING (inches o.c.)	UNBLOCKED SHEATHING PANEL HEIGHT (feet)	FASTENER TYPE	FASTENER SPACING (inches o.c. Edges, Field)	ALLOWABLE RACKING LOAD (lbs/ft)
0.105" Thermo-Sheath Structural Sheathing	16 (Note 4)	8	7/16 inch crown x 1-1/4 inch x 16 gauge staples	3,6	130
0.115" Thermo-Sheath 16" o.c. Structural Sheathing	16 (Note 4)	8	7/16 inch crown x 1-1/4 inch x 16 gauge staples	3,6	155
0.115" Thermo-Sheath 16" o.c. Structural Sheathing	16 (Note 4)	8	1 inch crown x 1-1/4 inch x 16 gauge staples	2,6	180
0.137" Thermo-Sheath 24" o.c. Structural Sheathing	24 (Note 4)	8	7/16 inch crown x 1-1/4 inch x 16 gauge staples	3,3	185
0.078" Thermo-Sheath Standard Sheathing and ½" gypsum wallboard	16 (Note 5)	8	1 inch crown x 1-1/4 inch x 16 gauge staples for Thermo-Sheath	3,6	159
			#6 x 1-1/4 inches coarse thread drywall screws for gypsum wallboard	7,7	
0.105" Thermo-Sheath Structural Sheathing and ½" gypsum wallboard	16 (Note 5)	8	1 inch crown x 1-1/4 inch x 16 gauge staples for Thermo-Sheath	3,6	206
			#6 x 1-1/4 inches coarse thread drywall screws for gypsum wallboard	7,7	
0.115" Thermo-Sheath 16" o.c. Structural Sheathing and ½" gypsum wallboard	16 (Note 5)	8	1 inch crown x 1-1/4 inch x 16 gauge staples for Thermo-Sheath	3,6	218
			#6 x 1-1/4 inches coarse thread drywall screws for gypsum wallboard	7,7	

SI Units Conversion: 1 in. = 25.4 mm, 1 ft = 305 mm, 1 plf = 14.6 N/m

NOTES TABLE 1:

1. Panel joints shall occur over studs, plates or solid blocking.
2. Staples shall be installed with the crown parallel to the framing member.
3. The staple crown shall be installed so that the staple crown does not puncture the sheathing.
4. Wall studs are 2-by-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.
5. Wall studs are 2-by-4 Spruce-Pine-Fir (SPF) (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.
6. Maximum height-width ratio shall be 2 to 1.
7. Allowable shear values are for short-term loads due to wind. The sheathing has not been evaluated for uses where seismic analysis is required by the applicable Code.
8. Wood stud walls sheathed with Thermo-Sheath shall not be used to resist horizontal loads from concrete or masonry walls.