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ICC-ES Evaluation Report ESR-1785

Reissued December 2022

Revised May 2023

This report is subject to renewal December 2024.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 16 00—Sheathing

REPORT HOLDER:

HUBER ENGINEERED WOODS, LLC

EVALUATION SUBJECT:

ADVANTECH® AND ADVANTECH® X-FACTOR (AT-SERIES) ENGINEERED PANELS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2021, 2018 and 2015 *International Residential Code*® (IRC)

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-1785 LABC and LARC Supplement](#).

Property evaluated:

Structural

2.0 USES

The AdvanTech® and AdvanTech® X-Factor (AT-Series) FLOOR SPAN® and SHEATHING SPAN® wood structural panels described in this evaluation report are Exposure 1 oriented strand board (OSB) products designed and manufactured for prescriptive and engineered applications.

3.0 DESCRIPTION

AdvanTech® (AT-Series) FLOOR SPAN® and SHEATHING SPAN® are oriented strand board (OSB) panels manufactured with strands from a single wood species or a combination of wood species blended with an exterior-type adhesive system. AdvanTech® X-Factor (AT-Series) FLOOR SPAN® and SHEATHING SPAN® are identical to the AdvanTech® panels, except that they are laminated on one side with a facer consisting of a medium-density, phenolic-impregnated, polymer-modified sheet material. The panels are typically produced in 4-by-8-foot (1219 by 2438 mm) sheets. Oversize panels, wider than 4 feet (1219 mm) or longer than 8 feet (2438 mm), or both, are

also produced. Table 1 specifies the span ratings, grades, and thicknesses of AdvanTech® and AdvanTech® X-Factor panels included in this evaluation report.

AdvanTech® and AdvanTech® X-Factor panels are manufactured to comply with proprietary property requirements and with performance requirements specified in U.S. Voluntary Product Standard PS-2, as outlined in the approved quality control manual.

The AdvanTech® X-Factor panels at a nominal thickness of 23/32-inch have a vapor permeance of greater than 0.1 perm and less than or equal to 1 perm [5.72×10^{-8} g/(Pa·s·m²)], when qualified in accordance with Procedure A of ASTM E96. The panel qualifies as a Class II vapor retarder in accordance with IBC Section 202 and IRC Section R201.

4.0 DESIGN AND INSTALLATION

4.1 Design:

Design capacities provided in this evaluation report supplement the design provisions applicable to wood structural panels provided in Chapter 23 of the IBC. Table 2 provides design capacities for AdvanTech® and AdvanTech® X-Factor panels. Table 3 provides section properties for AdvanTech® and AdvanTech® X-Factor panels. Table 4 provides equivalent specific gravities for use in withdrawal and lateral design of nails under Chapter 12 of the 2018 *National Design Specification® for Wood Construction* (NDS) for compliance with the IBC and IRC (Chapter 12 of the 2015 NDS for the 2015 IBC and IRC).

4.2 Installation:

AdvanTech® and AdvanTech® X-Factor (AT-Series) FLOOR SPAN® and SHEATHING SPAN® panels must be installed in accordance with the applicable code and the manufacturer's published installation instructions. The laminated face of the AdvanTech® X-Factor panels is to be installed facing in the outward direction, away from the supporting framing.

Continuous floor areas must not exceed 80 feet (24.3 m) in length or width, unless separated by 3/4-inch-wide (19.1 mm) expansion joints having separate floor framing. Supporting wall plates must not be continuous over the 3/4-inch-wide (19.1 mm) expansion joints.

5.0 CONDITIONS OF USE

The AdvanTech® and AdvanTech® X-Factor (AT-Series) Engineered Panels 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 The panels are installed in accordance with the applicable building code and the manufacturer’s published installation instructions.
- 5.2 The panels are manufactured in Broken Bow, Oklahoma (Mill 290); Easton, Maine (Mill 228); Commerce, Georgia (Mill 227); Spring City, Tennessee (Mill 230); and Crystal Hill, Virginia (Mill 229); under a quality-control program with inspections conducted by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Wood Structural Panels (AC182), dated April 2001 (editorially revised April 2022).
- 6.2 Test data in accordance with ASTM E96 (Procedure A).

7.0 IDENTIFICATION

- 7.1 Each AdvanTech® and AdvanTech® X-Factor panel has at least one grade stamp for product and field

- 7.2 identification. The grade stamp includes the trademark of the Huber Corporation; the AdvanTech® or AdvanTech® X-Factor trademark, as applicable; the AT-Series; the panel span rating and thickness; exposure durability classification (Exposure 1); panel grade (Structural I SHEATHING SPAN® or FLOOR SPAN®); product standard (PS-2); mill number; and the ICC-ES evaluation report number (ESR-1785). For the AdvanTech® X-Factor panels, the grade stamp is located on the side that is not laminated, and the AdvanTech® X-Factor trademark is printed on the laminated face. Refer to Figure 1 for a typical grade stamp.

- 7.3 The report holder’s contact information is the following:

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TABLE 1—SPAN RATINGS, GRADES AND THICKNESSES OF ADVANTECH® AND ADVANTECH® X-FACTOR PANELS

SPAN RATING	AT-Series	TECO GRADE ¹	NOMINAL PANEL THICKNESS
32/16	AT 1.10	Structural I SHEATHING SPAN®	1/2 inch
40/20	AT 1.10	Structural I SHEATHING SPAN®	5/8 inch
24 o.c.	AT 1.05	Structural I FLOOR SPAN®	23/32 inch

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

¹SHEATHING SPAN® and FLOOR SPAN® are registered trademarks of TECO.

TABLE 2—ADVANTECH® AND ADVANTECH® X-FACTOR PANEL DESIGN CAPACITIES¹

SPAN RATING	NOMINAL THICKNESS (in.)	AT-SERIES	STRENGTH AXIS ²	BENDING STIFFNESS, EI (lbf-in ² /ft)	BENDING STRENGTH, F _b S (lbf-in/ft)	PLANAR SHEAR, F _v (lb/Q) (lbf/ft)
32/16	1/2	AT 1.10	Primary	133,750	665	280
			Secondary	58,000	400	280
40/20	5/8	AT 1.10	Primary	256,000	1,035	350
			Secondary	114,000	625	350
24 o.c.	23/32	AT 1.05	Primary	383,800	1,250	365
			Secondary	155,000	710	365

For **SI**: 1 inch = 25.4 mm, 1 lbf-in²/ft = 9.415 1kN-m²/m, 1 lbf-in/ft = 0.371 N-m/m, 1 lbf/ft = 14.59 N/m.

¹Design capacity is a single value that represents the product of the allowable stress and the corresponding section property per 1-foot width of panel for a given load condition.

²Primary strength axis corresponds to the panel length dimension and the secondary direction to the panel width dimension. If an AdvanTech® or AdvanTech® X-Factor panel is manufactured with the primary direction aligned in the narrow dimension, the primary direction will be stamped on the panel.

TABLE 3—SECTION PROPERTIES FOR ADVANTECH® AND ADVANTECH® X-FACTOR PANELS¹

SPAN RATING	NOMINAL THICKNESS (in.)		PANEL WEIGHT (psf)	AREA, A (in ² /ft)	MOMENT OF INERTIA, I (in ⁴ /ft)	SECTION MODULUS, S (in ³ /ft)	STATICAL MOMENT, Q (in ⁴ /ft)	SHEAR CONSTANT, lb/Q (in ² /ft)
	Fraction	Average						
32/16	1/2	0.500	1.9	6.000	0.125	0.500	0.375	4.000
40/20	5/8	0.625	2.0	7.500	0.244	0.781	0.586	5.000
24 o.c.	23/32	0.715	2.4	8.580	0.366	1.022	0.767	5.720

For **SI**: 1 inch = 25.4 mm, 1 in²/ft = 2117 mm²/m, 1 in³/ft = 53 763 mm³/m, 1 in⁴/ft = 1 365 589 mm⁴/m.

¹Based on a rectangular cross-sectional width of one foot.

TABLE 4—EQUIVALENT SPECIFIC GRAVITY VALUES FOR ADVANTECH® AND ADVANTECH® X-FACTOR PANELS^{1,2}

SPAN RATING	NOMINAL THICKNESS (inch)	AT-Series	NAIL RESISTANCE	
			Lateral	Withdrawal
			Equivalent Specific Gravity	
32/16	1/2	AT 1.10	0.44	0.43
40/20	5/8	AT 1.10	0.44	0.43
24 o.c.	23/32	AT 1.05	0.50	0.44

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

¹Equivalent specific gravity values are provided for use in design of nailed connections (lateral and withdrawal) in accordance with Chapter 12 of the 2018 NDS for compliance with the IBC and IRC (Chapter 12 of the 2015 NDS for compliance with the 2015 IBC and IRC).

²In cases where strand delamination occurs on the opposite face of the panel, the assumed nail embedment length, or penetration depth, must be reduced accordingly for the design of connections in which the nails are loaded laterally. The effect of strand delamination is reflected in the tabulated equivalent specific gravity values for withdrawal.



FIGURE 1—TYPICAL PANEL GRADE STAMP (GRADE STAMP WILL VARY BY THICKNESS, SPAN RATING, AND MILL)

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the ADVANTECH® and ADVANTECH® X-FACTOR (AT-SERIES) engineered panels, described in ICC-ES evaluation report [ESR-1785](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The ADVANTECH® and ADVANTECH® X-FACTOR (AT-SERIES) engineered panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1785](#), comply with the LABC Chapter 23 and the LARC Chapters 5 and 9, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The ADVANTECH® and ADVANTECH® X-FACTOR (AT-SERIES) engineered panels described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1785](#).
- The design, installation, conditions of use and identification are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-1785](#).

This supplement expires concurrently with the evaluation report ESR-1785, reissued December 2022 and revised May 2023.

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Applicable code editions:

- 2022 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The ADVANTECH® and ADVANTECH® X-FACTOR (AT-SERIES) engineered panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-1785, comply with CBC Chapter 23, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 23, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The ADVANTECH® and ADVANTECH® X-FACTOR (AT-SERIES) engineered panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-1785, comply with CRC Chapters 5 and 9, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report.

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