

ICC-ES Evaluation Report

ESR-1785

Reissued December 1, 2010

This report is subject to re-examination in two years.www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**DIVISION: 06 00 00—WOOD, PLASTICS AND
COMPOSITES****Section: 06 16 00—Sheathing****REPORT HOLDER:****HUBER ENGINEERED WOODS, LLC
10925 DAVID TAYLOR DRIVE
ONE RESOURCE SQUARE, SUITE 300
CHARLOTTE, NORTH CAROLINA 28262
(704) 548-5442**www.huberwood.com**EVALUATION SUBJECT:****ADVANTECH® (AT-SERIES) ENGINEERED PANELS****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2009 *International Building Code*® (2009 IBC)
- 2009 *International Residential Code*® (2009 IRC)
- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)

Property evaluated:

Structural

2.0 USES

The AdvanTech® (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. 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 panels recognized in this evaluation report.

AdvanTech 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.

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 panels. Table 3 provides section properties for AdvanTech panels. Table 4 provides equivalent specific gravities for use in withdrawal and lateral design of nails under Part 11 of the NDS (*National Design Specification for Wood Construction*) for compliance with the IBC and IRC.

4.2 Installation:

AdvanTech FLOOR SPAN® and SHEATHING SPAN® panels must be installed in accordance with the applicable code and the manufacturer's published installation instructions.

Continuous floor areas must not exceed 80 feet (24.38 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® (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; Easton, Maine; Commerce, Georgia; Crystal Hill, Virginia; and Spring City, Tennessee; under a quality control program with inspections conducted by Timberco Inc.—dba TECO Corporation (AA-654).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Wood Structural Panel Products (AC182), dated April 2001, editorially revised November 2009.

7.0 IDENTIFICATION

Each AdvanTech panel has at least one grade stamp for product and field identification. The grade stamp includes

the trademark of the Huber Corporation; the AdvanTech® trademark; the AT-Series; the name or logo of the inspection agency (TECO TESTED); 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). Refer to Figure 1 for a typical grade stamp.

TABLE 1—SPAN RATINGS, GRADES AND THICKNESSES OF ADVANTECH 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	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 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)	AXIAL COMPRESSION, F _c A (lbf/ft)	AXIAL STIFFNESS, EA (lbf/ft)
32/16	1/2	AT 1.10	Primary	133,750	665	280	5,700	4,170,000
			Secondary	58,000	400	280	4,500	2,850,000
40/20	5/8	AT 1.10	Primary	256,000	1,035	350	7,125	5,100,000
			Secondary	114,000	625	350	5,625	3,375,000
24 o.c.	23/32	AT 1.05	Primary	383,800	1,250	365	6,500	5,750,000
			Secondary	155,000	710	365	5,750	4,150,000

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 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 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, Ib/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 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 Section 11 of the NDS (National Design Specification for Wood Construction) for IBC and IRC compliances.

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

ICC-ES SAVE: Verification of Attributes Report™**VAR-1012***

Issued September 1, 2010

This report is subject to renewal in one year.www.icc-es.org/save | 1-800-423-6587 | (562) 699-0543 A Subsidiary of the International Code Council®**DIVISION: 06 00 00—WOOD, PLASTICS AND
COMPOSITES****Section: 06 16 00—Sheathing****DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION****Section: 07 25 00—Water-Resistive Barriers/Weather
Barriers****REPORT HOLDER:**

HUBER ENGINEERED WOODS, LLC
10925 DAVID TAYLOR DRIVE
CHARLOTTE, NORTH CAROLINA 28262
(800) 933-9220
www.huberwood.com

EVALUATION SUBJECT:

**ADVANTECH® (AT-SERIES) SHEATHING SPAN;
ADVANTECH® (AT-SERIES) FLOOR SPAN; ZIP SYSTEM®
ROOF SHEATHING; ZIP SYSTEM® WALL SHEATHING**

1.0 EVALUATION SCOPE**Compliance with the following evaluation guidelines:**

- ICC-ES Evaluation Guideline for Determination of Biobased Material Content (EG102), dated October 1, 2008 (editorially revised July 2009).
- ICC-ES Evaluation Guideline for Determination of Regionally Extracted, Harvested or Manufactured Materials or Products (EG104), dated October 1, 2008
- ICC-ES Evaluation Guideline for Determination of Formaldehyde Emissions of Composite Wood and Engineered Wood Products (EG108), dated October 1, 2008 (editorially revised July 2009).
- ICC-ES Evaluation Guideline for Determination of Certified Wood and Certified Wood Content in Products (EG109), dated October 1, 2008.

Compliance eligibility with the applicable sections of the following green building rating systems, standards and codes:

- National Green Building Standard (ICC 700-2008) (see Table 2 for details)
- LEED for Homes 2008 (see Table 3 for details)
- LEED 2009 for New Construction and Major Renovations (see Table 4 for details)

- LEED 2009 for Schools New Construction and Major Renovations (see Table 5 for details)
- 2010 California Green Building Standards Code (CALGreen), Title 24, Part 11 (see Table 6 for details)
- International Green Construction Code – Public Version 2.0 (IGCC PV2.0) (see Table 7 for details)
- ANSI/GBI 01-2010 – Green Building Assessment Protocol for Commercial Buildings (see Table 8 for details)

2.0 USES

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing are used for a variety of interior and exterior framing and sheathing applications.

3.0 DESCRIPTION

AdvanTech® (AT-Series) Sheathing Span and AdvanTech® (AT-Series) Floor Span wood structural panels are Exposure 1 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 to comply with U.S. Voluntary Product Standard PS-2 and the applicable ICC-ES report as indicated in Table 1.

ZIP System® Roof Sheathing and ZIP System® Wall Sheathing wood structural panels are OSB panels with laminated resin-impregnated Kraft paper facers manufactured to comply with U.S. Voluntary Product Standard PS-2 and the applicable ICC-ES reports as indicated in Table 1. The panels are installed with ZIP System® self-adhering membrane tape. The tape is outside the scope of this evaluation report.

4.0 CONDITIONS**4.1 Code Compliance:**

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing have been evaluated for compliance with the requirements of the International Codes as listed in Table 1 of this report.

4.2 Green Rating Systems, Standards and Code Eligibility:

The information presented in Tables 2 through 8 of this report provides a matrix of areas of evaluation and corresponding limitations and/or additional project-specific requirements, and offer benefit to individuals who are assessing eligibility for credits or points.

***Revised April 2011**

The final interpretation of the specific requirements of the respective green building rating system, standard and/or code rests with the developer of that specific rating system or standard or the Authority Having Jurisdiction, as applicable.

Compliance with items noted as “Verified Attribute” is subject to any conditions noted in the tables. Decisions on compliance with those items noted as “Eligible for Points” in Tables 2 through 8 rests with the user of this report, and those items are subject to the conditions noted. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. Rating systems or standards often provide supplemental information as guidance.

5.0 BASIS OF EVALUATION

The information in this report, including the “Verified Attribute,” is based upon the following supporting documentation:

- 5.1 ICC-ES EG102 [evaluation applies to ICC 700 Section 606.1(2); CALGreen Section A5.405.2; IGCC PV2.0 Section 503.2.4; ANSI/GBI 01-2010 Section 10.1.2.2].
- 5.2 ICC-ES EG104. [evaluation applies to ICC 700 Section 608.1; LEED Homes MR 2.2(c); LEED NC MR 5; LEED Schools MR 5; CALGreen Section A5.405.1; IGCC PV2.0 Section 503.2.5; ANSI/GBI 01-2010 Section 10.1.4.1].
- 5.3 ICC-ES EG108 [evaluation applies to ICC 700 Section 901.4(6); LEED NC IEQ 4.4; LEED Schools IEQ 4.4; IGCC PV2.0 Section 806.1].

- 5.4 ICC-ES EG109 (evaluation applies to ICC 700 Section 606.2; LEED Homes MR 2.1; LEED NC MR 7; LEED Schools MR 7; CALGreen Section A5.405.2.1; ANSI/GBI 01-2010 Section 10.3.2.1).
- 5.5 Documentation establishing and documenting all major sources of primary manufacturing energy (evaluation applies to ICC 700 Section 606.3).
- 5.6 ICC-ES [ESR-1474](#) documenting that ZIP System Wall Sheathing is equivalent to a code-prescribed water-resistive barrier (evaluation applies to ICC 700 Section 602.9).
- 5.7 Refer to ICC-ES [ESR-1474](#) for evaluation of the ZIP System Wall Sheathing as an air barrier assembly (evaluation applies to ICC 700 Section 703.2.1; LEED Homes EA 3).
- 5.8 ICC-ES reports listed in Table 1 [evaluation applies to ICC 700 Section 901.4(1); IGCC Section 806.1].

6.0 IDENTIFICATION

AdvanTech® (AT-Series) Sheathing Span, AdvanTech® (AT-Series) Floor Span, ZIP System® Roof Sheathing and ZIP System® Wall Sheathing products are identified with a stamp noting the manufacturer’s name (Huber Engineered Woods LLC) and address, the product name the manufacturing location, the ICC-ES evaluation report number (if applicable), and the name or logo of the inspection or grading agency. The report subjects are also identified on the product and/or packaging with the VAR number (VAR-1012) and the ICC-ES SAVE Mark, as applicable.

TABLE 1—REFERENCE STANDARD OR EVALUATION REPORT NUMBER FOR HUBER ENGINEERED WOODS LLC PRODUCTS

PRODUCT	REPORT NUMBER/ REFERENCE STANDARD
AdvanTech® (AT-Series) Sheathing Span AdvanTech® (AT-Series) Floor Span	ESR-1785
ZIP System® Roof Sheathing	ESR-1473 ESR-2227
ZIP System® Wall Sheathing	ESR-1474 ESR-2227

TABLES 2 THROUGH 8

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 2—SUMMARY OF AREAS OF ELEGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700-2008)							
602.9	Water-resistive barrier	Mandatory	Install a water-resistive barrier and/or drainage plan system behind exterior veneer and/or siding				●
606.1(2)	Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost AND another bio-based product at 1% of material cost must be used. 1 or 3 points are available for greater than 0.5%	●	●	●	●
606.2(1)	Two certified wood-based products are used for minor elements of the building, such as all walls, floors or roof	3	To earn 3 points a second certified wood product must also be used as a minor element ¹	●	●	●	●
606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●
606.3	Materials are used for major components of the building that are manufactured using a minimum of 33 percent of the primary manufacturing process energy derived from renewable sources, combustible waste sources, or renewable energy credits	2 each 6 max	To earn 6 points the products must be used for at least 3 major components of the building. 2 points may be earned when used for each major component.	●	●	●	●
608.1	Indigenous materials	2 each 10 max	To earn 2 points verify local products are originated, produced, grow naturally or occur naturally within 500 miles (805 km) of job site. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
703.2.1	Insulation and air sealing	3 15 max	Insulation and air sealing is installed in accordance with all the following, as applicable: (1) third-party verification performed 15 pts, no third-party verification performed 3 pts (2)				○
901.4(1)	Structural plywood used for floor, wall, and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. OSB used for floor, wall, and/or roof sheathing complies with DOC PS 2. The panels are made with moisture-resistant adhesives and the trademark indicates the adhesives are Exposure 1 or Exterior (plywood) and Exposure 1 (OSB)	Mandatory	To meet this a minimum of 85% of OSB or plywood in the building must consist of Huber products	●	●	●	●
901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Huber products	●	●	●	●

- = Eligible for points
- = Verified attribute
-
 = This provision does not apply to this product

Note: Footnotes are located after Table 8.

TABLES 2 THROUGH 8 (Continued)

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify for Points	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 3—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED FOR HOMES 2008							
EA 3	Air Infiltration	3 max	To earn 2 or 3 points meet the air leakage requirements shown in Table 17 of the standard, as applicable	○	○	○	○
MR 2.1	FSC certified tropical wood	0.5 each 8 max	To earn 0.5 point per component use FSC-certified tropical wood ²	2	2	2	2
MR 2.2(c)	Environmentally preferable products for roof, wall and floors; interior and exterior framing and sheathing	0.5 each 8 max	To earn points use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
TABLE 4—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATION							
MR 5 (MR 5.1)	Regional materials (10% of content)	1	To earn 1 point use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 10% (by cost) of total materials value. To earn 2 points use a minimum of 20%. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
MR 5 (MR 5.2)	Regional materials (20% of content)	2		○	○	○	○
MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ²	2	2	2	2
IEQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●
TABLE 5—SUMMARY OF AREAS OF ELEGIBILITY WITH USGBC'S LEED 2009 FOR SCHOOLS NEW CONSTRUCTION AND MAJOR RENOVATION							
MR 5 (MR 5.1)	Regional materials (10% of content)	1	To earn 1 point use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 10% (by cost) of total materials value. To earn 2 points use a minimum of 20%. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
MR 5 (MR 5.2)	Regional materials (20% of content)	2		○	○	○	○
MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ²	2	2	2	2
IEQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●
○	= Eligible for points						
●	= Verified attribute						
	= This provision does not apply to this product						

Note: Footnotes are located after Table 8.

TABLES 2 THROUGH 8 (Continued)

Section Number	Section Intent	Possible Points	Conditions of Use to Qualify for Points	AdvanTech Sheathing	AdvanTech Flooring	ZIP System Roof Sheathing	ZIP System Wall Sheathing
TABLE 6—SUMMARY OF AREAS OF ELEGIBILITY WITH 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE							
705.1	Regional materials	N/A	Verify local products that are extracted, processed and manufactured within California or 500 miles (805 km) of the job site. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
705.2	Bio-based materials	N/A	All Huber wood products are qualified as biobased	●	●	●	●
705.2.1	Certified Wood	N/A	Under review by California Building Standards Commission ³	N/A	N/A	N/A	N/A
707.1	Water-resistant exterior wall assembly	N/A	Huber products provide a water-resistant exterior wall envelope				○
804.4.4	Composite wood product emissions	N/A	EWP products do not apply to the composite wood product definition ⁴				
TABLE 7—SUMMARY OF AREAS OF ELEGIBILITY WITH INTERNATIONAL GREEN CONSTRUCTION CODE – PUBLIC VERSION 2.0 (IGCC PV2.0)							
503.2.4(2)	Biobased products	N/A	All Huber wood products are qualified as biobased	●	●	●	●
503.2.5	Indigenous materials	N/A	To earn credits use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
606.1.2.1.1	Air barrier installation		Install the system in accordance with the manufacturer's installation instructions and ICC-ES evaluation report ESR-1474				●
806.1	Formaldehyde emissions	N/A	Huber wood structural panels comply with US DOC PS 2 (See Table 1 of this report) and meet the requirements of Table 806.1	●	●	●	●
TABLE 8—SUMMARY OF AREAS OF ELEGIBILITY WITH ANSI/GBI 01-2010 – GREEN BUILDING ASSESSMENT PROTOCOL FOR COMMERCIAL BUILDINGS							
10.1.2.2	Biobased Products - building assemblies	7 max	All Huber wood products are qualified as biobased	●	●	●	●
10.1.4.1	Regional Materials - building assemblies	5 max	To earn credits use products that are extracted, processed and manufactured within 500 miles (805 km) of the site for a minimum of 90% (by weight or volume of the component. Regional material calculations based on project location provided by Huber upon request.	○	○	○	○
10.3.2.1	Certified wood	6	Between 10% and 60% or more of wood-based products used in the building are third party certified	●	●	●	●
○	= Eligible for points						
●	= Verified attribute						
	= This provision does not apply to this product						

¹Certification is required of the manufacturer only. Vendor Chain of Custody is not required to qualify for this point.

²Forest certification credit currently resources FSC exclusively. Credit of other certification schemes may be at the discretion of the verifier.

³CGBSC recognizes importance of use of certified forest products however the specific requirements are currently under development.

⁴This area is not to be confused with the provisions of EQ 4.4 in LEED (Table 4) because the California Air Resources Board (CARB) does not regulate engineered wood product emissions.

N/A = Not applicable