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Technical Evaluation Report

DIVISION: 06 00 00–WOOD, PLASTIC, & COMPOSITE
SECTION: 05 05 23–WOOD, PLASTIC, & COMPOSITE - FASTENINGS

EVALUATION SUBJECT: **OWT Timber Screws Item #: 56625 to 56629; 56647; 56648** **TER-1205**

REPORT HOLDER:

OZCO BUILDING PRODUCTS
216 N. INTERURBAN
RICHARDSON, TEXAS 75081
(469) 916-7503 | OZCOBP.COM

SCOPE OF EVALUATION (compliance with the following codes):

This Product Evaluation Report is being issued in accordance with the requirements of the 2012 International Building Code for generic use within the state seal shown per Section 104.11. The product noted on this report has been tested and/or evaluated as summarized herein. Re-evaluation of this product shall be required following pertinent International Building Code and local state code modifications or revisions.

SUBSTANTIATING DATA:

• Product Evaluation Documents Test Reports

Reference lateral design and withdrawal design values for structural performance has been tested using the methods described by ASTM D 1761 Standard Test Methods for Mechanical Fasteners in Wood as per test report # 29758 and 31224 by Metallurgical Engineering Services, Inc. (Report date: 08/25/14).

• Structural Engineering Calculations

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

Maximum allowable tension connection capacity
Maximum allowable shear connection capacity
Anchor capacity

No 33% increase in allowable stress has been used in the design of this product.

INSTALLATION:

The product listed above shall be installed in strict compliance with the Product Evaluation Document (i.e. engineering drawing), along with all components noted therein.

The product components shall be of the material specified in the Product Evaluation Document (i.e. engineering drawing). All screws must be installed in accordance with the applicable provisions in the 2012 NDS and anchor manufacturer's published installation instructions.

LIMITATIONS & CONDITIONS OF USE:

Use of this product shall be in strict accordance with the Product Evaluation Documents as noted herein.

All supporting host structures shall be designed to resist all superimposed loads and shall be of a material listed in this report. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered professional engineer.

Adjustment factors noted herein and the applicable codes must be considered, where applicable.

All components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times.

The fasteners must penetrate the main member such that the full length of the threaded portion is embedded within the main member.

When the capacity of a connection is controlled by fastener metal strength, rather than wood strength, the allowable strength of the connection is not permitted to be multiplied by the adjustment factors specified in the NDS.

Fasteners, including nuts and washers, for use in exterior conditions and in contact with preservative-treated wood or for fire-retardant-treated wood shall be of hot-dipped zinc-coated galvanized steel or stainless steel. Wood screws shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum.

Fastener in wood with a moisture content exceeding 19%, either at time of fabrication or in service, is outside the scope of this report.

This evaluation report does not address fastener corrosion when the fastener is installed in chemically treated wood.

OWT TIMBER SCREWS FOR WOOD-TO-WOOD CONNECTIONS

The OWT timber screws architectural line provides strength with additional aesthetical finishing, eliminating any further paint steps.

MATERIAL:

The fasteners described in this report met the requirements of UNS G10220, Carbon Steel and ASTM A29, grade 1022. All fasteners are coated with proprietary finish. Minimum bending yield strength, tensile strength, yield strength and shear strength capacities of the fasteners are listed in Table 1.

INSTALLATION:

Use all specified fasteners. Assembly kit includes fasteners for uniform finishing. See General Notes.

The use of OTW timber screws with engineered wood products and different wood species other than listed herein with specific gravity, G, less than 0.35 are not covered under this report and shall be evaluated by designer.

Reference design values for direct withdrawal connections are specified in Table 2 of this report. Reference design values for lateral resistance in wood-to-wood connections loaded parallel to the grain are specified in Table 3 (connections loaded perpendicular to the grain is outside the scope of this report). Reference design values for fastener head pull-through resistance for connections having a minimum side member thickness of 1.5 inches are specified in Table 2.

The allowable load for a single screw connection in which the screw is subject to tension is the least of:

a) Allowable screw tension strength given in Table 1;
b) Reference head pull-through design value given in Table 2 adjusted by all applicable adjustment factors by NDS sec. 11.3;
c) Reference withdrawal design value given in Table 2 adjusted by all applicable adjustment factors by NDS sec. 11.3.

The allowable lateral load for a single screw connection loaded in single shear parallel to the grain is the least of:

a) Allowable screw shear strength given in Table 1;
b) Reference lateral design value given in Table 3 adjusted by all applicable adjustment factors by NDS sec. 11.3;

Connections containing multiple screws must be designed in accordance with Sections 10.1.2, 10.2.2 and 11.6 of the NDS.

Where the screws are subjected to combined lateral and withdrawal loads, connections shall be designed in accordance with NDS Section 11.4.

OPTIONS:

For specific scenarios contact OZCO for custom solutions.

HEX HEAD Timber Screw:

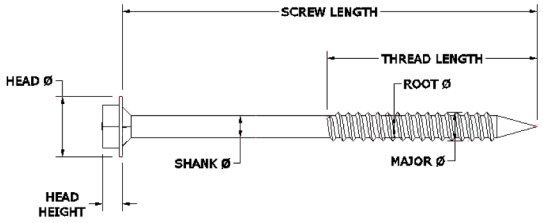


TABLE 1 - FASTENER SPECIFICATIONS

FASTENER DESIGNATION	FASTENER DIMENSIONS							ALLOWABLE STEEL STRENGTH			
HEX HEAD	NOMINAL DIAMETER (IN)	SHANK DIAMETER (IN)	ROOT DIAMETER (IN)	HEAD DIAMETER (IN)	OVERALL LENGTH (IN)	LENGTH OF THREAD[1] (IN)	THREADS PER INCH	BENDING YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	YIELD STRENGTH (PSI)	SHEAR STRENGTH (PSI)
56626-OWT275B	1/4	0.207	0.166	0.594	2.75	2.00	7	32,700	62,600	48,800	1,800
56627-OWT375B					3.75	2.00					
56628-OWT575B					5.75	2.00					
56629-OWT750B					7.50	2.00					
56647-OWT10B					10.00	2.00					
56648-OWT12B					12.00	2.00					

NOTES:

1- Tabulated length of threads includes tip of screw.
2- Tabulated diameters, head height and lengths have tolerances as specified in the manufacturer's quality documentation.
3- Bending yield strength determined in accordance with ASTM F 1575.

TABLE 2 - FASTENER REFERENCE WITHDRAWAL VALUES WOOD-TO-WOOD CONNECTIONS SPECIFIC GRAVITY, G=0.35 OR GREATER

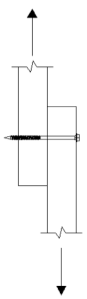
FASTENER DESIGNATION	LENGTH OF THREAD PENETRATION[1] (IN)	ALLOWABLE TENSION PERPENDICULAR TO GRAIN	
HEX HEAD		WITHDRAWAL, W[2] (LB)	PULL-OVER[5] (LB)
56625-OWT175B	1.75	161	275
56626-OWT275B	2.00	403	
56627-OWT375B	2.00		
56628-OWT575B	2.00		
56629-OWT750B	2.00		
56647-OWT10B	2.00		
56648-OWT12B	2.00		

NOTES:

1- Tabulated length of threads includes tip of screw.
2- Reference withdrawal values are for full thread penetration into main member. Interpolation may apply for thread penetration less than shown herein.
3- The tabulated reference withdrawal design values shown are based on Allowable Stress Design (ASD) and must be multiplied by all applicable adjustment factors in accordance with 2012 NDS Section 10.3.
4- Use of OWT wood screws in wood with moisture content exceeding 19%, either at time of fabrication or in service, where sustained temperatures are greater than 100°F (37.8°C) and for tension parallel to grain, is outside the scope of this report.
5- Pull-over capacity based on 2"x4" wood side member with tension perpendicular to grain with 1 inch minimum edge/end distance.
6- Screw withdrawal and pull through testing as per ASTM D 1037.

TABLE 3 - FASTENER REFERENCE LATERAL DESIGN VALUES - SINGLE SHEAR CONNECTIONS SPECIFIC GRAVITY, G=0.35 OR GREATER

HEX HEAD	MINIMUM FASTENER PENETRATION INTO MAIN MEMBER (IN)	SIDE MEMBER THICKNESS (IN)	MIN. END DISTANCE (IN)	MIN. EDGE DISTANCE (IN)	ALLOWABLE SHEAR CAPACITY PARALLEL TO GRAIN (LB)
56627-OWT375B	1.50	1.50	2.00	1.50	242
56628-OWT575B	1.50				
56629-OWT750B	1.50				
56647-OWT10B	1.50				
56648-OWT12B	1.50				



NOTES:

1- The tabulated reference lateral design values shown are based on Allowable Stress Design (ASD) and must be multiplied by all applicable adjustment factors in accordance with 2012 NDS Section 10.3.
2- Use of OWT wood screws in wood with moisture content exceeding 19%, either at time of fabrication or in service, where sustained temperatures are greater than 100°F (37.8°C) and for shear perpendicular to grain, is outside the scope of this report.
3- Minimum fastener penetration depth, p, into the main member includes the length of fastener tip.
4- Wood connections with excessive shims or gaps shall be designed for bending on anchor and it is not part of the scope of this report.