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ICC-ES Evaluation Report

ESR-4706

Reissued May 2022

This report is subject to renewal May 2024.

DIVISION: 05 00 00—METALS
Section: 05 05 23—Metal Fastenings

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

PRIMESOURCE BUILDING PRODUCTS

EVALUATION SUBJECT:

PRO-TWIST CONSTRUCTION FASTENERS

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 the Los Angeles Department of Building and Safety (LADBS), see ESR-4706 LABC and LARC Supplement.

Property evaluated:

Structural

2.0 USES

The Pro-Twist Construction Fasteners described in this report are used to attach wood structural panels to cold-formed steel, as prescribed in the code, and as specified in engineered designs.

3.0 DESCRIPTION

3.1 General:

The Pro-Twist Construction Fasteners are self-drilling tapping screws manufactured from carbon steel wire complying with ASTM A510, minimum grade 1018. The screws comply with ASTM C1513 and are coated with PrimeGuard Plus, a proprietary coating. Refer to Table 1 for part numbers, screw descriptions (size, tpi, length), nominal diameter, head style, head diameter, drill point, drilling capacities and minimum required protrusion lengths. See Figures 1 through 4 for depictions of the screws.

3.2 Material:

Cold-formed framing steel must comply with one of the ASTM specifications noted in Section A3.1 of the AISI North American Specification for Design of Cold-Formed Steel Structural Members (AISI S100) (Section A2.1 of AISI S100 for the 2015 IBC).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Screw length selection must be based on the thickness of the fastened building materials plus the minimum required protrusion past the back of the supporting cold-formed steel. See Table 1 for the required protrusion lengths.

The screw point style must be selected on the basis of the drilling capacity, which is shown in Table 1. The tabulated drilling capacity refers to the thickness of the supporting cold-formed steel member. Evaluation of the ability of the screw to self-drill through the attached building material is outside the scope of this report.

When tested for corrosion resistance in accordance with ASTM B117, screws with coatings described in Table 1 met the minimum requirement listed in ASTM F1941, as required by ASTM C1513, with no white corrosion after three hours and no red rust after 12 hours.

4.1.2 Prescriptive Attachment of Sheathing to Steel: The Pro-Twist screws may be used where minimum #8 screws complying with ASTM C1513 are prescribed in the IRC Sections R505.2.5, R603.2.5 and R804.2.5 for attachment of wood sheathing panels to cold-formed steel.

4.1.3 Prescriptive Use in Shear Walls and Diaphragms: The Pro-Twist screws may be used in shear walls and diaphragms consisting of wood structural panels fastened to cold-formed steel framing, where ASTM C1513 screws of the same size are prescribed in the code. Under the 2021 IBC, refer to Sections B5.2.2.3.3 and B5.4.2 of AISI S240 and Sections E1 and F2 of AISI S400 (Sections B5.2.2.3.3 and B5.4 of AISI S240 and Sections E1 and F2 of AISI S400 for the 2018 IBC), which are referenced in 2021 and 2018 IBC Section 2211. Under the 2015 IBC, refer to Sections

C2.2.2 and D2.2 of AISI S213, which are referenced in Section 2211 of the 2015 IBC.

4.1.4 Engineered Design: Available pull-out strengths must be determined in accordance with Section J4.4.1 of AISI S100 (Section E4.4.1 of AISI S100 for the 2015 IBC).

Determination of the suitability of a particular screw addressed in this report for the specific application is the responsibility of the registered design professional and is outside the scope of this report.

The registered design professional is responsible for determining the available strengths for the connection, considering all applicable limit states such as pull-over or pull-through, tilting and bearing, etc., and for considering serviceability issues, such as fastener slip.

The registered design professional is responsible for determining the required spacing, edge distance and end distance for the fasteners. For the supporting cold-formed steel base material, screws must be spaced a minimum of 3 times the nominal diameter of the screw and must be located not less than 1.5 times the diameter of the screw from any end or edge of the cold-formed steel base material. The required edge distance, end distance and spacing for the attached building material is outside the scope of this report.

4.2 Installation:

Installation of the Pro-Twist screws must be in accordance with the requirements of the code, the manufacturer's published installation instructions, the approved engineered designs, when applicable, and this report. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

The screws must be installed using a screw gun with a depth-sensitive nosepiece having a maximum speed of 2,500 rpm for No. 10 screws and a maximum speed of 1,800 rpm for Nos. 12 and 14 screws. The screw must penetrate a minimum of three thread pitches beyond the steel substrate.

5.0 CONDITIONS OF USE

The Pro-Twist Construction Fasteners 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 Screws must be installed in accordance with the manufacturer's published installation instructions and this report. In the event of a conflict between this report and the manufacturer's published installation instructions, the more restrictive requirements govern.

5.2 The screws have only been evaluated for fastener strength, compliance with ASTM C1513, quality control, and pull-out strength. Evaluation of other applicable limit states for connections of building materials to the cold-formed steel base material is outside the scope of this report.

5.3 Design of the connection of attached building material to the cold-formed steel base material, taking into account the properties of the attached building material, must comply with the applicable requirements of the IBC, and be justified to the satisfaction of the code official.

5.4 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the Acceptance Criteria for Self-drilling Tapping Screws Used to Attach Miscellaneous Building Materials to Steel Base Material (AC500), dated October 2017 (editorially revised January 2021).

7.0 IDENTIFICATION

7.1 The Pro-Twist™ Construction Fasteners are identified by a "PT" marking on the fastener heads. Each box of fasteners has a label showing the PrimeSource Building Products, Inc. name and address, fastener type and size, lot number, and the evaluation report number (ESR-4706).

7.2 The report holder's contact information is the following:

PRIMESOURCE BUILDING PRODUCTS
1321 GREENWAY DRIVE
IRVING, TEXAS 75038
(972) 999-8500
www.primesourcebp.com

TABLE 1—PRO-TWIST™ CONSTRUCTION FASTENERS

PART NUMBER	DESCRIPTION[1] (Nominal size-tpi × length)	BASIC (NOMINAL) SCREW DIAMETER (inch)	HEAD DIAMETER (inch)	HEAD STYLE/ DRIVING RECESS	DRILL POINT	DRILLING CAPACITY (inch)	MINIMUM REQUIRED PROTRUSION (inch)
PWD1034P	10-24 X $^3/_4$	0.190	0.472	Wafer / Phillips	TEK PT/3	0.110-0.175	0.412
PWD10100P	10-24 X 1	0.190	0.472		TEK PT/3	0.110-0.175	0.662
PWD10114P	10-24 X $1^1/_4$	0.190	0.472		TEK PT/3	0.110-0.175	0.912
PWD10112P	10-24 X $1^1/_2$	0.190	0.472		TEK PT/3	0.110-0.175	1.162
PWD101716P	10-24 X $1^7/_{16}$	0.190	0.472		TEK PT/3	0.110-0.175	0.998
PF10158P	10-24 X $1^5/_8$	0.190	0.362	Flat / Phillips	TEK PT/2	0.110-0.175	1.219
PF12200P	12-24 X 2	0.216	0.413		TEK PT/3	0.110-0.210	1.479
PF12212P	12-24 X $2^1/_2$	0.216	0.413		TEK PT/3	0.110-0.210	1.979
PF14234P	14-20 X $2^3/_4$	0.250	0.480		TEK PT/4	0.175-0.250	2.009
PF14314P	14-20 X $3^1/_4$	0.250	0.480		TEK PT/4	0.175-0.250	2.509
SFW10158P	10-24 X $1^5/_8$	0.190	0.362	Flat / Star	TEK PT/2	0.110-0.175	1.219
SFW12200P	12-24 X 2	0.216	0.413		TEK PT/3	0.110-0.210	1.479
SFW12212P	12-24 X $2^1/_2$	0.216	0.413		TEK PT/3	0.110-0.210	1.979
SFW14234P	14-20 X $2^3/_4$	0.250	0.480		TEK PT/4	0.175-0.250	2.009
SFW14314P	14-20 X $3^1/_4$	0.250	0.480		TEK PT/4	0.175-0.250	2.509

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

[1]tpi = threads per inch

TABLE 2—SHEAR AND TENSILE STRENGTHS OF PRO-TWIST™ CONSTRUCTION FASTENERS

DESIGNATION	DESCRIPTION	Basic (Nominal) Screw Diameter (in.)	NOMINAL SCREW STRENGTH (lbf)		ALLOWABLE STRENGTH (ASD) (lbf)		DESIGN STRENGTH (LRFD) (lbf)	
			Shear: P_{ss}	Tension: P_{ts}	Shear: P_{ss}/Ω	Tension: P_{ts}/Ω	Shear: ΦP_{ss}	Tension: ΦP_{ts}
PWD1034P PWD10100P PWD10114P PWD10112P	Wafer Head 10-24	0.190	2,240	3,260	745	1,085	1,120	1,630
PWD101716P	Wafer Head 10-24 w/wings	0.190	2,090	2,760	695	920	1,045	1,380
PF10158P SFW10158P	Flat Head 10-24 w/wings	0.190	2,075	3,300	690	1,100	1,040	1,650
PF12200P PF12212P SFW12200P SFW12212P	Flat Head 12-24 w/wings	0.216	2,420	4,225	805	1,410	1,210	2,115
PF14234P PF14314P SFW14234P SFW14314P	Flat Head 14-20 w/wings	0.250	3,310	5,970	1,105	1,990	1,655	2,985

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

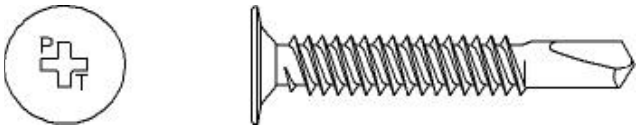

FIGURE 1—TYPICAL PWD WAFER HEAD SCREW

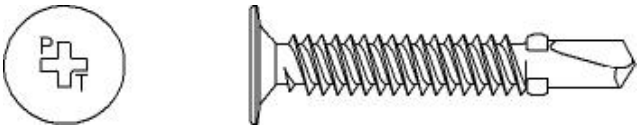

FIGURE 2—PWD101716P WAFER HEAD SCREW WITH WINGS

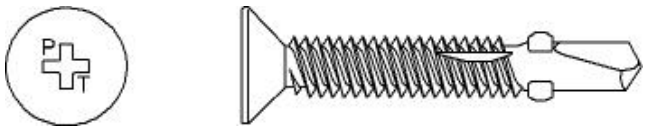

FIGURE 3—PF FLAT HEAD SCREW

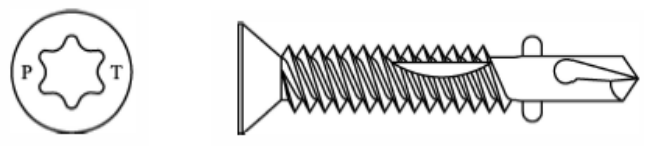

FIGURE 4—SFW FLAT HEAD SCREW

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PRIMESOURCE BUILDING PRODUCTS

EVALUATION SUBJECT:

PRO-TWIST CONSTRUCTION FASTENERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Pro-Twist Construction Fasteners, described in ICC-ES evaluation report ESR-4706, 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:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The Pro-Twist Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4706, comply with LABC Chapter 22, and LARC Sections R505, R603, R804 and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Pro-Twist Construction Fasteners described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-4706.
- The design, installation, conditions of use and identification of the are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report ESR-4706.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued May 2022.

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Pro-Twist Construction Fasteners, described in ICC-ES evaluation report ESR-4706, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *California Building Code* (CBC)

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

- 2019 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Pro-Twist Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4706, comply with CBC Chapter 22 and 23, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16 and 17, 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 Pro-Twist Construction Fasteners, described in Sections 2.0 through 7.0 of the evaluation report ESR-4706, comply with CRC Chapters 3 and 5, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of the CRC, as applicable.

This supplement expires concurrently with the evaluation report, reissued May 2022.