

# ICC-ES Evaluation Report

**ESR-1408**

Issued August 1, 2009

*This report is subject to re-examination in one year.*[www.icc-es.org](http://www.icc-es.org) | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

**DIVISION: 05—METALS**  
**Section: 05090—Metal Fastenings****REPORT HOLDER:****PRIMESOURCE BUILDING PRODUCTS, INC.**  
2115 EAST BELTLINE ROAD  
CARROLLTON, TEXAS 75006  
(914) 366-6700  
[www.primesourcecbp.com](http://www.primesourcecbp.com)**EVALUATION SUBJECT****PRO-TWIST™ MARKER® & DARTS® PAN FRAMER  
SELF-DRILLING SCREW;  
PRO-TWIST™ MARKER® & DARTS® PANCAKE FRAMER  
SELF-DRILLING SCREW;  
PRO-TWIST™ MARKER® & DARTS® BUGLE HEAD  
SELF-DRILLING SCREW; AND  
PRO-TWIST™ MARKER® & DARTS® HEX WASHER  
HEAD SELF-DRILLING SCREW****1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- Other Codes (see Section 8.0)

**Property evaluated**

Structural

**2.0 USES**

The Pro-Twist™ Marker® & Darts® self-drilling tapping screws described in this report are used to resist shear and tension loads.

**3.0 DESCRIPTION****3.1 General:**

Pro-Twist™ Marker® & Darts® self-drilling tapping screws comply with the material, process, and performance requirements of ASME B18.6.4. Screws have thread-cutting spaced threads; and either a bugle head, hex washer head, pan framer head with serrations or pancake framer head. The screw's threads comply with ASME B18.6.4, but the screw's drill point and flutes are proprietary. The screw's drill points are designated as TEK PT/2, TEK PT/3, TEK PT/4, and TEK PT/5. The screws have a major diameter of No. 6 [0.138 inch (3.50 mm)] to No. 14 [0.246 inch (6.25 mm)] and lengths from <sup>7</sup>/<sub>16</sub> inch to 6 inches (11.1 to 154 mm). Refer to Table 1 for fasteners recognized in this report.

**3.2 Material:**

Pro-Twist™ Marker® & Darts® self-drilling tapping screws are manufactured from SAE C1018 and C1022 carbon steel wire.

**4.0 DESIGN AND INSTALLATION****4.1 Design:**

The average peak tension strength ( $P_{ts}$ ), and average peak shear strength ( $P_{ss}$ ), of the Pro-Twist™ Marker® & Darts® self-drilling tapping screws are shown in Table 2. The allowable tension strength and allowable shear strength values are also shown in Table 2.

**4.2 Installation:**

Pro-Twist™ Marker® & Darts® self-drilling tapping screws are installed, without predrilling holes, using a screw gun with a depth-sensitive nosepiece having a maximum speed of 2,500 rpm for No. 6, 7, 8 and 10, and a maximum speed of 1,800 rpm for No. 12 and 14. The fastener must penetrate a minimum of three thread pitches beyond the steel substrate.

**5.0 CONDITIONS OF USE**

The Pro-Twist™ Marker® & Darts® self-drilling tapping screws described in this report comply with, or are suitable alternatives to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1** Fasteners 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, this report governs.
- 5.2** Corrosion resistance of the screws is outside the scope of this report.
- 5.3** The user of this report must justify any proposed end-use to the code official, and such justification must include documentation that the PrimeSource screws comply with code requirements that are applicable to the proposed end-use.

**6.0 EVIDENCE SUBMITTED**

- 6.1** Reports of tests for shear and tension in accordance with AISI TS-4-02.
- 6.2** Reports of tests in accordance with ASME B 18.6.4.
- 6.3** Quality control documentation dated January 2009.

## 7.0 IDENTIFICATION

The Pro-Twist™ Marker® & Darts® screws 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, the Pro-Twist™ Marker® & Darts® logo (see Figure 2), fastener type and size, lot number, and the evaluation report number (ESR-1408).

## 8.0 OTHER CODES

### 8.1 Evaluation Scope:

In addition to the code referenced in Section 1.0, the products in this report were evaluated for compliance with the requirements of the 1997 *Uniform Building Code*™ (UBC). The Pro-Twist™ Marker® & Darts® screws described in this report comply with, or are suitable alternatives to what is specified in, the UBC, subject to the provisions of Section 8.2 through 8.7.

### 8.2 Uses:

See Section 2.0.

### 8.3 Description:

See Section 3.0.

### 8.4 Installation:

See Section 4.0.

### 8.5 Conditions of Use:

See Section 5.0.

### 8.6 Evidence Submitted:

See Section 6.0.

### 8.7 Identification:

See Section 7.0.

TABLE 1—PRO-TWIST™ MARKER® &amp; DARTS® SELF-DRILLING SCREWS

PART NUMBER	DESCRIPTION <sup>1</sup> (dia—tpi x length)	HEAD STYLE	DRILL POINT
PFD716 or PFZD716	7—18 X $7/16$	Pan Framer	TEK PT/2
PPH1058	10—16 X $5/8$	Pancake Framer	TEK PT/3
SD100 or SDZ100	6—20 X 1	Bugle Head	TEK PT/2
SD118 or SDZ118	6—20 X $1 1/8$	Bugle Head	TEK PT/2
SD114 or SDZ114	6—20 X $1 1/4$	Bugle Head	TEK PT/2
SD158 or SDZ158	6—20 X $1 5/8$	Bugle Head	TEK PT/2
SD178 or SDZ178	6—20 X $1 7/8$	Bugle Head	TEK PT/2
SD238 or SDZ238	8—18 X $2 3/8$	Bugle Head	TEK PT/2
SD258 or SDZ258	8—18 X $2 5/8$	Bugle Head	TEK PT/2
SD300 or SDZ300	8—18 X 3	Bugle Head	TEK PT/2
HWD1012	10—16 X $1/2$	HWD	TEK PT/3
HWD1058	10—16 X $5/8$	HWD	TEK PT/3
HWD1034	10—16 X $3/4$	HWD	TEK PT/3
HWD10100	10—16 X 1	HWD	TEK PT/3
HWD10114	10—16 X $1 1/4$	HWD	TEK PT/3
HWD10112	10—16 X $1 1/2$	HWD	TEK PT/3
HWD10200	10—16 X 2	HWD	TEK PT/3
HWD12034	12—14 X $3/4$	HWD	TEK PT/3
HWD12078	12—14 X $7/8$	HWD	TEK PT/4
HWD12100	12—14 X 1	HWD	TEK PT/3
HWD12114	12—14 X $1 1/4$	HWD	TEK PT/3, PT5
HWD12112	12—14 X $1 1/2$	HWD	TEK PT/3, PT5
HWD12200	12—14 X 2	HWD	TEK PT/3, PT5
HWD12212	12—14 X $2 1/2$	HWD	TEK PT/3
HWD12300	12—14 X 3	HWD	TEK PT/3
HWD14034	14—14 X $3/4$	HWD	TEK PT/3
HWD14100	14—14 X 1	HWD	TEK PT/3
HWD14114	14—14 X $1 1/4$	HWD	TEK PT/3
HWD14112	14—14 X $1 1/2$	HWD	TEK PT/3
HWD14200	14—14 X 2	HWD	TEK PT/3
HWD14212	14—14 X $2 1/2$	HWD	TEK PT/3
HWD14300	14—14 X 3	HWD	TEK PT/3
HWD14400	14—14 X 4	HWD	TEK PT/3
HWD14500	14—14 X 5	HWD	TEK PT/3
HWD14600	14—14 X 6	HWD	TEK PT/3

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

<sup>1</sup>Screw dimensions comply with ASME B 18.6.4 (dia = diameter, tpi = threads per inch, length = inches).

TABLE 2—SHEAR AND TENSILE STRENGTHS OF PRO-TWIST™ MARKER® & DARTS® SELF-DRILLING TAPPING SCREWS

FASTENER DESCRIPTION <sup>1</sup>			AVERAGE PEAK TEST STRENGTH (lbf)		ALLOWABLE SHEAR LOAD PER FASTENER (lbs)	ALLOWABLE TENSION LOAD PER FASTENER (lbs)
Head Style	Nominal Size (dia—tpi)	Major Diameter (in.)	Shear, P <sub>ss</sub>	Tension, P <sub>ts</sub>		
Pan Framer	7—18	0.151	1,040	1,497	347	499
Pancake Framer	10—16	0.190	1,755	2,313	585	771
Bugle Head	6—20	0.138	904	1576	301	526
Bugle Head	8—18	0.164	1392	2179	464	726
HWD	10—16	0.190	1484	1158	495	386
HWD	12—14	0.216	2,077	2,603	692	868
HWD	14—14	0.237	2,772	3,201	924	1067

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

<sup>1</sup>Screw dimensions comply with ASME B18.6.4 (dia = diameter, tpi = threads per inch).

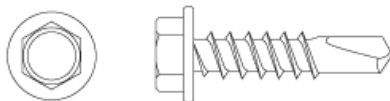
PANCAKE FRAMER HEAD



BUGLE HEAD



HEX WASHER HEAD



PAN FRAMER



FIGURE 1—FASTENER TYPES



FIGURE 2—PRO-TWIST™ MARKER® & DARTS® LOGO