



Most Widely Accepted and Trusted

ICC-ES Report

ESR-2122

ICC-ES | (800) 423-6587 | (562) 699-0543 | www.icc-es.org

Valid: 03/15 to 03/16

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

SECTION: 06 05 23.13—NAILS

REPORT HOLDER:

BOSTITCH FASTENING SYSTEMS

**701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286**

EVALUATION SUBJECT:

METAL PLATE CONNECTOR (MCN) NAILS



Look for the trusted marks of Conformity!

“2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”



A Subsidiary of

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



ICC-ES Evaluation Report**ESR-2122**

Reissued March 2015

This report is subject to renewal March 2016.

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 05 23.13—Nails****REPORT HOLDER:****BOSTITCH FASTENING SYSTEMS****701 EAST JOPPA ROAD****TOWSON, MARYLAND 21286****(800) 556-6696**www.bostitch.com**EVALUATION SUBJECT:****METAL PLATE CONNECTOR (MCN) NAILS****ADDITIONAL LISTEE:****DEWALT INDUSTRIAL TOOL COMPANY****701 EAST JOPPA ROAD****TOWSON, MARYLAND 21286****(800) 433-9258**www.dewalt.com**1.0 EVALUATION SCOPE****Compliance with the following codes:**

- 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Bending yield strength
- Lateral Connection Strength
- Withdrawal Strength

2.0 USES

Metal Plate Connector (MCN) nails are generally used to fasten metal connectors to lumber and engineered wood materials in engineered connections, or as prescribed in an ICC-ES evaluation report for the metal connector. They can also be used in wood-to-wood structural and nonstructural connections and to fasten other engineered materials to wood and engineered wood products.

3.0 DESCRIPTION**3.1 Nails:**

The MCN nails are formed from plain steel wire and

have diamond-shaped points, smooth shanks and 0.283-inch-diameter (7.2 mm) full-round flat heads. Five nail sizes (shank diameter by length) are recognized in this report: 0.131 by 1½ inches (3.3 by 38 mm); 0.148 by 1½ inches (3.8 by 38 mm); 0.131 by 2½ inches (3.3 mm by 64 mm); 0.148 by 2½ inches (3.8 by 64 mm); and 0.162 by 2½ inches (4.1 mm by 64 mm). The MCN nails may be heat-treated and may be either bright (nongalvanized) or coated with a proprietary coating designated as ThickCoat™ which is recognized in ESR-1482. Nails having a 0.131-inch-diameter (3.3 mm) smooth shank have a minimum average bending yield strength of 100,000 psi (689 MPa); and nails having a 0.148-inch-diameter (3.8 mm) or a 0.162-inch-diameter (4.1 mm) shank have a minimum average bending yield strength of 90,000 psi (620 MPa). The nails recognized in this report conform to the dimensional tolerances specified in ASTM F1667. The nails are collated into paper or plastic strips.

3.2 Connected Materials:

Wood framing members may be sawn lumber with a minimum assigned specific gravity, or engineered wood with a minimum equivalent specific gravity (recognized in an ICC-ES evaluation report), as shown in Tables 2 and 3.

Metal connectors (side plates) must be formed from steel complying with Section A2.1 of AISI S100 (AISI-NAS for 2006 IBC and IRC), and must be of the type and thickness described in Table 2.

4.0 DESIGN AND INSTALLATION**4.1 Design:**

4.1.1 Engineered Connections: The MCN nails comply with the strength requirements of IBC Section 2303.6. Reference lateral and withdrawal design values may be determined in accordance with the ANSI/AWC *National Design Specification for Wood Construction*® (NDS). For common connections using the MCN nails, reference lateral and withdrawal design values are given in Tables 1 and 2, respectively. These design values are for normal duration of load and dry conditions of use [less than 19 percent moisture (16 percent moisture for engineered wood)]. The tabulated reference design values must be multiplied by all applicable adjustment factors referenced in the NDS to obtain the adjusted nail design values. Tabulated reference design values are also applicable to other species or engineered wood products having the same or higher specific gravity. Metal side plates or connectors must be designed in accordance with the applicable section of the code, or must be recognized in an ICC-ES evaluation report.

4.1.2 Prescriptive Use with Metal Connectors: The MCN nails may be used where nails of the same dimension and minimum bending yield strength are prescribed in an ICC-ES evaluation report on the metal connector.

4.2 Installation:

The nails must be installed in accordance with this report, the report holder’s published installation instructions, and the approved plans. The nails are packaged for use in power tools recommended by the report holder. Individual nails may be manually driven.

Edge distances, end distances, and spacings must be sufficient to prevent splitting of the wood. Installation into sawn lumber must be in accordance with the applicable requirements of Section 11.1.6 of the NDS. When use is in engineered wood, the minimum end and edge distances and spacings must be in accordance with the applicable requirements of Section 11.1.6 of the NDS or in accordance with the ICC-ES evaluation report on the engineered wood product, whichever is more restrictive.

5.0 CONDITIONS OF USE

The Metal Plate Connector (MCN) Nails 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 nails must be identified and installed in accordance with this report and the manufacturer’s published installation instructions. If there is a conflict between this report and the manufacturer’s published installation instructions, this report governs.

5.2 Drawings and design details verifying compliance with this report must be submitted to the code official for approval. The drawings and calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

5.3 Use of the MCN nails in preservative-treated and fire-retardant-treated wood is outside the scope of this report. See ESR-1482 regarding use of the coated nails in preservative-treated and fire-retardant-treated wood.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Nails and Spikes (AC116), dated June 2014.

7.0 IDENTIFICATION

The nails are packaged in cartons bearing labels with the applicable company name (BOSTITCH or DeWALT); nail type (Metal Connector Nail); nail size (length and shank diameter); minimum average bending yield strength, F_{yb} ; the coating designation (ThickCoat™), if applicable, and the evaluation report number (ESR-2122).

The head of each nail is identified by one of the marks noted in Table 3, depending on nail size.

TABLE 1—REFERENCE LATERAL DESIGN VALUES, Z (lbf), FOR METAL PLATE CONNECTOR (MCN) NAILS USED WITH METAL SIDE-PLATES^{1,2}

NAIL SIZE (inches)	SPECIES GROUP OF MAIN MEMBER (Specific Gravity)		
	Southern Pine (0.55)	Douglas Fir–Larch (0.50)	Spruce-Pine-Fir (0.42)
ASTM A 653, SS designation, Grade 33, No. 10 Gage (0.135 inch thick) Side Plate			
0.131 × 1½ (or 2½)	126	117	102
0.148 × 1½ (or 2½)	149	138	120
0.162 × 2½	172	160	139
ASTM A 653, SS Designation, Grade 33, No. 20 Gage (0.0358 inch thick) Side Plate			
0.131 × 1½ (or 2½)	102	94	81
0.148 × 1½ (or 2½)	123	114	98
0.162 × 2½	148	136	117
ASTM A 1011, SS Designation, Grade 33, No. 3 Gage (0.239 inch thick) and No. 7 Gage (0.179 inch thick) Side Plates			
0.131 × 1½ (or 2½)	144	133	114
0.148 × 1½ (or 2½)	175	161	138
0.162 × 2½	204	188	165
ASTM A 36, No. 3 Gage (0.239 inch thick) Side Plate			
0.131 × 1½ (or 2½)	146	134	114
0.148 × 1½ (or 2½)	176	162	138
0.162 × 2½	211	194	170

For **SI**: 1 lbf = 4.45 N, 1 inch = 25.4 mm, 1 psi = 6.89 kPa.

¹Lateral design values are for normal loads and must be multiplied by all applicable adjustment factors in the NDS.

²The tabulated values are calculated from the yield mode equations in the Section 11.3 of the NDS. Dowel bearing capacity (F_{es}) used to calculate design values are as follows: For ASTM A 653, Grade 33, F_{es} is 61,850 psi (426 MPa); for ASTM A1011, SS designation, Grade 33, F_{es} is 71,500 psi (493 MPa); for ASTM A36, F_{es} is 87,000 psi (599 MPa).

TABLE 2—REFERENCE WITHDRAWAL DESIGN LOADS, *W* (lbf per inch of penetration), FOR METAL PLATE CONNECTOR (MCN) NAILS^{1,2}

WOOD SPECIES GROUP	SPECIFIC GRAVITY	MCN NAIL SHANK DIAMETER (inch)		
		0.131	0.148	0.162
Southern pine	0.55	41	46	50
Douglas fir–larch	0.50	32	36	40
Spruce-pine-fir	0.42	21	23	26

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

¹Tabulated withdrawal design loads are per inch of penetration into side grain of the main member.

²Lateral design values are for normal loads and must be multiplied by all applicable adjustment factors in the NDS.

TABLE 3—NAIL HEAD MARKINGS FOR METAL PLATE CONNECTOR (MCN) NAILS

HEAD IDENTIFICATION	NAIL SIZE (inches)
B1	0.131 × 1 ¹ / ₂
B2	0.131 × 2 ¹ / ₂
B3	0.148 × 1 ¹ / ₂
B4	0.148 × 2 ¹ / ₂
B5	0.162 × 2 ¹ / ₂

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

ICC-ES Evaluation Report**ESR-2122 FBC Supplement**

Reissued March 2015

This report is subject to renewal March 2016.

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 05 23.13—Nails**REPORT HOLDER:****BOSTITCH FASTENING SYSTEMS**
701 EAST JOPPA ROAD
TOWSON, MARYLAND 21286
(800) 556-6696
www.bostitch.com**EVALUATION SUBJECT:****METAL PLATE CONNECTOR (MCN) NAILS****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that the Metal Plate Connector (MCN) Nails recognized in ICC-ES master report ESR-2122, have also been evaluated for compliance with the codes noted below.

Applicable Code Editions:

- 2010 *Florida Building Code—Building*
- 2010 *Florida Building Code—Residential*

Properties evaluated:

Structural

2.0 CONCLUSIONS

The Metal Plate Connector (MCN) nails, described in Sections 2.0 through 7.0 of the master report ESR-2122, comply with the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code*® (IBC) provisions noted in the master report.

Use of the Metal Plate Connector (MCN) Nails for compliance with the High-Velocity Hurricane Zone provisions of the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this evaluation report.

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report reissued March 2015.