



HY-TEK FASTENERS, INC.
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HY-TEK PNEUMATIC OR MANUALLY DRIVEN NAILS

CSI Section:
06 05 23 Nails

1.0 RECOGNITION

Hy-Tek Pneumatic or Manually Driven Nails recognized in this report were evaluated for use to fasten steel side plates to lumber, wood and engineered wood materials. The structural properties of the nails comply with the intent of the provisions of the following codes and regulations:

- 2018, 2015, 2012, 2009, and 2006 International Building Code® (IBC)
- 2018, 2015, 2012, 2009, and 2006 International Residential Code® (IRC)

2.0 LIMITATIONS

Use of the Hy-Tek Pneumatic or Manually Driven Nails described in this report is subject to the following limitations:

2.1 The nails shall be installed in accordance with the applicable code, the manufacturer's published installation instructions, and this report. Where there is a conflict, the most restrictive requirements shall govern.

2.2 Reference Lateral design values in Table 1 and reference withdrawal design loads in Table 2 shall be multiplied by all applicable adjustment factors in the 2018, 2015, 2012 and 2005 NDS and codes listed in Section 1.0 of this report.

2.3 When required by the code official, calculations demonstrating that the applied loads are less than the design values specified in this report shall be submitted for approval. Calculations shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

2.4 Use of the nails in preservative-treated and fire-retardant-treated wood is outside the scope of this report.

2.5 The Hy-Tek Nails recognized in this report are produced by Hy-Tek Fasteners, Inc. in Livermore, California.

3.0 PRODUCT USE

3.1 Design

3.1.1 Nail Bending Yield Strength (F_{yb}): The 0.148-inch (3.76 mm) diameter nail has a minimum average bending yield strength, F_{yb} of 220,000 psi (1517 MPa).

3.1.2 Lateral Design Values (Z): The reference design values (Z) are shown in Table 1 of this report.

3.1.3 Lateral Withdrawal Design Values (W): The reference withdrawal (W) design values are shown in Table 2 of this report.

3.1.4 Combined Lateral and Withdrawal Loads:

For combined lateral and withdrawal loading, the design values shall be determined in accordance with Section 12.4.2 of the 2018 and 2015 ANSI/AWC National Design Specification® (NDS®) for Wood Construction or Section 11.4.2 of the 2012 and 2005 NDS.

3.1.5 Fastener Head Pull-through: For fastener design under the 2018 IBC and 2018 IRC, reference pull-through values shall be determined in accordance with Section 12.2.5 of the 2018 NDS.

3.2 Installation

The nails shall be installed in accordance with this evaluation report, the codes listed in Section 1.0 of this report, and the manufacturer's installation instructions. Where conflicts occur, the more restrictive shall govern. Nail installation shall also comply with applicable requirements in Section 12.1.6 of the 2018 and 2015 NDS, or Sections 11.1.5 and 11.1.6 of the 2005 and 2012 NDS, respectively. The nails are driven either pneumatically or manually.

4.0 PRODUCT DESCRIPTION

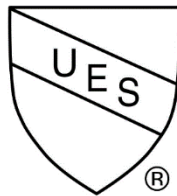
Hy-Tek Pneumatic or Manually Driven Nails are high strength nails used to fasten steel side plates to lumber, wood and engineered wood materials. Hy-Tek Nails are 0.148-inch (3.76 mm) in diameter, have a smooth shank with a diamond-shaped tapered point at one end and a 0.290-inch (7.37 mm) diameter full round head at the other. The length of the nail is 2 inches (50.8 mm). The nails are manufactured from grades C1020 through C1050 steel wire. The nails have either a polymer or vinyl coating and are packaged in collated plastic strips or in bulk.



Hy-Tek Pneumatic or Manually Driven Nails conform to the tolerances specified in ASTM F1667 (Standard Specification for Driven Fasteners: Nails, Spikes and Staples).

5.0 IDENTIFICATION

Hy-Tek Nails are identified by labels on their containers or cartons bearing the Hy-Tek Fasteners name & logo, the evaluation report number (ER-160), quantity or net weight, the production code, and the description (nail diameter, length and coating type, and minimum average bending yield strength, F_{yb}). IAPMO UES Marks of Conformity and the evaluation report number. Either Mark of Conformity may be used as shown below:



or

IAPMO UES ER-160

6.0 SUBSTANTIATING DATA

- 6.1 Data in accordance with the Acceptance Criteria for Nails and Spikes (AC116), approved March 2018
- 6.2 Calculations, testing and analysis
- 6.3 Quality control manual
- 6.4 Test results are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research carried out by IAPMO Uniform Evaluation Service on Hy-Tek Fasteners, Inc., Pneumatic or Manually Driven Nails to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.5 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

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For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org



**Table 1 - REFERENCE LATERAL DESIGN VALUES (Z) ^[1]
FOR STEEL SIDE PLATE CONNECTOR NAILS**

FOR METAL SIDE PLATE OF TENSILE STRENGTHS ASTM-A-653-00-HSLAS- GRADE 50-TYPE A STEEL, Fu = 65 ksi MIN (448 Mpa)		
Steel Side Plate (thickness)	Nail Diameter (inches) ^[2,4]	SPECIES OF MAIN MEMBER (Specific Gravity) ^[3]
		Douglas Fir-Larch (SG - 0.50) ^[5] Z (lbs.)
No. 3 gauge ts = 0.239"	0.148	197
No. 7 gauge ts = 0.179"	0.148	197
No. 10 gauge ts = 0.134"	0.148	197
No. 12 gauge ts = 0.105"	0.148	197
No. 14 gauge ts = 0.075"	0.148	197
No. 16 gauge ts = 0.060"	0.148	187
No. 18 gauge ts = 0.048"	0.148	187

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

¹ Tabulated reference lateral design values shall be multiplied by all applicable adjustment factors in Sections 2.3 and 12.5 of the 2018 and 2015 NDS or Sections 2.3 and 11.5 of the 2012 and 2005 NDS.

² Bending yield strength is based on minimum 220,000 psi (1517 MPa).

³ Reference Lateral Design values for one species of wood-based materials are also applicable to other species having the same or higher dowel bearing strength in accordance with the NDS.

⁴ Minimum penetration into receiving or main member shall equal to 10 times the nail shank diameter (10D), in accordance with 2018 and 2015 NDS Table 12P and 2012 and 2005 NDS Table 11P.

⁵ Table 12.3.3B of the 2018 and 2015 NDS, Table 11.3.3 of the 2012 NDS and Table 11.3.2 of the 2005 NDS lists the dowel bearing strengths.

**Table 2 - REFERENCE WITHDRAWAL DESIGN LOADS (W) ^{[1][3]}
FOR STEEL SIDE PLATE CONNECTOR NAILS⁴**

Nail Diameter (inches)	SPECIES OF MAIN MEMBER (Specific Gravity) ^[2]
	Douglas Fir-Larch (SG - 0.50) W (lbs/in)
0.148	84

FOR SI: 1 lb. = 4.45 N, 1 inch = 25.4 cm, 1 psi = 6.89kPa

¹ Tabulated reference withdrawal design values are in pounds per inch of penetration into side grain of member. Minimum penetration shall be one inch. The withdrawal value in pounds shall be calculated by multiplying the tabulated value in lbs./in. by the length of nail penetration into the main member.

² Reference Withdrawal Design values for one species of wood-based materials are also applicable to other species having the same or higher specific gravity.

³ Tabulated reference withdrawal design loads shall be multiplied by all applicable adjustment factors in Section 12.5 of the 2018 and 2015 NDS or Section 11.5 of the 2012 and 2005 NDS.

⁴ Nails shall not be loaded in withdrawal from the end grain of wood.