Technical Bulletin

How to Read ICC Evaluation Service® ESR-1539P©
Part I: Basic ESR Information

Preface:

This is the first in a series of technical bulletins designed to provide a greater understanding of the ICC Evaluation Service evaluation report ESR-1539P©. The driven fasteners (nails and staples) described in the evaluation report are used in engineered and non-engineered (prescriptive) structural connections and are primarily installed using power tools. This technical bulletin references **ESR-1539P© issue Date 10/2024.**
https://icc-es.org/report-listing/esr-1539p/

Background:

International Staple, Nail and Tool Association (ISANTA®) is the holder of ICC Evaluation Service Evaluation Report ESR-1539P©. The basis for this report started in the early 1970's with a series of HUD-FHA publications. These publications were developed into the International Conference of Building Officials (ICBO) ER-2403© in 1973 and the National Evaluation Service (NES) publication NER-272© in 1985. NER-272© was converted to ESR-1539© in September 2004. In 2024 ESR-1539 was renumbered ESR-1539P (P-Plan Report), which provides a supplement for metric (SI) values for the tables in the report. The report is renewed every two years

What is ESR-1539P©?

ESR-1539P© is an evaluation report involving nail and staple products that are produced and distributed by members of ISANTA® and used in the construction of wood frame buildings and one- and two- story homes.

The International Building Code (IBC)® and the International Residential Code (IRC)® provide the minimum construction requirements to safeguard the public health, welfare and safety of the occupants of new and existing buildings. These minimums are defined in text, tables and engineering calculations.

Evaluation reports are a resource used by code officials and designers to verify how new, innovative and alternative building products may comply with code requirements.

The evaluation report provides information about what code requirements or acceptance criteria are used to evaluate products, how the products should be installed to meet these requirements and how the products are to be identified in the field.

ESR-1539P© provides this information for driven nails and staples. Through tables, commentary and calculations, a variety of prescriptive and alternative fastener schedules for many building connections and assemblies are provided to aid in the design of specific connections used in building construction.

Standard Format:

ICC-ES provides a standard format for all evaluation reports issued.

1. CSI Division Number
2. Report Holder
3. Evaluation Subject
4. QR Code
5. Section 1.0 Evaluation Scope
6. Section 1.0 Properties Evaluated
7. Section 2.0 Uses
8. Section 3.0 Description
9. Section 4.0 Design and Installation
10. Section 5.0 Conditions of Use
11. Section 6.0 Evidence Submitted
12. Section 7.0 Identification

These 12 areas are contained from the Cover Page through Page 6 of the report.

The Cover Pages 1 & 2 include:

Date of issue and date of renewal:
(Note: ISANTA typically renews ESR-1539P© every two years)

CSI Division Number

The CSI Division Number is taken from the Construction Specifications Institute's MasterFormat®.

Report holder: ISANTA

Evaluation Subject:
Power-Driven Staples and Nails

Contact and Product Information
ISANTA and Member Companies

ISANTA is the report holder of ESR-1539P©. The member companies of ISANTA that have fasteners recognized in ESR-1539P© are classified as Additional Listees in the report. The product names for each listee along with the appropriate mailing address are provided in the listed information.

Section 1.0 Evaluation Scope and Properties Evaluated

Development of ESR-1539P© is based on compliance with 2015, 2018, 2021 and 2024 International Building Code® and International Residential Code®.

Note that the use of a single code or date of issue for a code is not universal throughout the country. Localities may adopt model codes with or without modifications, write their own codes, or delay/skip adopting a model code until a later date.

The properties evaluated in ESR-1539P© include:

- Bending Yield Strength
- Compliance with prescriptive requirements of the IBC® an IRC®
- Compliance with the material requirements, dimensions, and tolerances of ASTM F1667
- Performance when used in diaphragms, shear wall and braced walls
- Fastening schedules which are alternates to those included in the codes

Section 2.0 Uses

Fasteners referenced in ESR-1539P© are used in non-engineered (prescriptive) and engineered structural connections. References in this report provide designers and code officials with the information that can be used to show compliance with the requirements of the codes.

Section 3.0 Description

This is the point where ESR-1539P© begins to differentiate itself from ESRs held by other nail manufacturers. In addition to the detailed information called out on the various nails, ESR-1539P© is the only report that provides information on the design and use of construction staples. This provides information to code officials, designers, and builders using alternate designs when considering driven fasteners.

Sub Section 3.2 Staples, Section 3.3 Nails

Overall characteristics for staples and nails including materials, coatings, configurations, dimensions, diameters (gage: staple wire diameter), and collation referenced are addressed in sub sections 3.2 and 3.3.

Sub Section 3.4 addresses properties of wood members described in the table are addressed in subsection 3.4.

Sub section 3.5 addresses the ASTM standards and thicknesss of steel plates addressed in Table 5

Section 4.0 Design and Installation

Section 4.1 Design For Staples:

- Engineered Connections
- Engineered Diaphragms and Shear Walls
- Prescriptive Sheathing Attachments

Section 4.2 Design For Nails

- Engineered Connections
- Reference Lateral Design Values
- Reference Withdrawal Design Values
- Reference Head Pull-through Design Values
- Prescriptive Framing Connections
- Prescriptive Metal Hardware Connections
- Engineered Diaphragms and Shear Walls
- Prescriptive Sheathing Attachments

Sections 4.1 and 4.2 contain multiple references to engineering data compiled for use in the report. Of the prescribed sheathing materials addressed in the I-Codes®, ESR-1539P© addresses Wood Structural Products (plywood & OSB), fiberboard and gypsum sheathing and gypsum wallboard. Discussion on these tables is addressed in other bulletins in this series.

- Part III Fastener Withdrawal & Diaphragm Allowable Shear Tables
- Part IV Shear Wall Allowable Shear Tables

Section 4.3 Installation

Information regarding the installation of the nails and staples recognized in the evaluation report is outlined in section 4.3. There are a number of factors to be considered during installation of the fasteners listed in the report:

- Installation must be done per instructions in the report
- Installation must be done per listee's published instructions
- Installation must be done per instructions from the National Design Specifications (NDS)©, IBC®, and IRC® regarding edge, end and spacing in nailing patterns
- Limitations on installation with regards to preservative-treated and fire-retardant-treated wood must be followed

Section 4.4: References periodic special inspections required by the IBC® when construction is intended for wind-resisting and seismic-resisting systems.

Section 4.5 Uses in Treated Lumber require specific corrosion protection either by use of Hot Dip Galvanization meeting the requirements of ASTM A153 Class D or ASTM 641 Class 3S or by use of stainless steel.

Section 5.0 Conditions of Use

The conditions of use for the nails and staples defined in the report take into consideration:

- Installation
- Fastener dimensions
- Restrictions on the use of bright nails and electrogalvanized nails in preservative-treated or fire-retardant-treated wood

Section 6.0 Evidence Submitted

Evidence submitted by ISANTA to ICC-ES® to develop ESR-1539P© meets the performance requirements specified in AC116 Acceptance Criteria For Nails© and AC201 Acceptance Criteria For Staples©.

Section 7.0 Identification

In order to display the evaluation report number on product packaging, specific requirements on product labeling and identification are required. These requirements include the: listee's name, fastener size (nail diameter and length or staple gage, width, and length), finish/coating, and the evaluation report number (ESR-1539P©).

Referenced Documents:

ANSI/AWC NDS-2024 National Design Specification for Wood® American Wood Council 2024

ANSI/AWC 2021 Special Design Provisions for Wind and Seismic (SDPWS)©
ASTM F1667/F1667M-21a Standard Specifications for Driven Fasteners: Nails, Spikes and Staples
© ASTM International December 2021

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2024, 2021, 2018, & 2015 International Residential Code (IRC) © International Code Council Inc. ®

AC116 ICC-ES Acceptance Criteria for Nails
© ICC Evaluation Service (ICC-ES) ® September 2024

AC201 ICC-ES Acceptance Criteria for Staples
© ICC Evaluation Service (ICC-ES) ® March 2024

ICC-ES Evaluation Report ESR-1539P©
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