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Standard Specification for Nails for the Application of Gypsum Board¹

This standard is issued under the fixed designation C514; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers requirements for steel wire nails suitable for use in the application of gypsum board.

1.2 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 The following precautionary caveat pertains only to the test method portion, Sections 7 and 8, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards*:²

E4 Practices for Force Verification of Testing Machines

3. Materials

3.1 *Steel Wire*, used in the manufacture of nails, shall be of hard-drawn low or medium-low-carbon steel, entirely suitable

¹ This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.02 on Specifications and Test Methods for Accessories and Related Products.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

for the purpose intended. Before fabrication it shall be sufficiently ductile to withstand cold-bending, without fracture, through 180° over a radius not greater than the diameter of the wire (see Section 8).

4. Physical Properties

4.1 *Ductility*—The nail shall be sufficiently ductile to withstand cold bending without fracture when tested according to Section 8.

4.2 *Withdrawal Resistance*—The average withdrawal resistance, both immediate and delayed, shall be at least equal to that provided by 12.5 gauge, 0.099 ± 0.003 in. (2.515 ± 0.08 mm), bright, smooth shank nails with a medium diamond point, when tested according to 8.2.

5. Dimensions and Permissible Variations

5.1 *Heads*—Shall be not less than 0.2375 in. (6.0 mm) and not more than 0.3875 in. (9.8 mm) in diameter, shall be not more than $\frac{1}{64}$ in. (0.4 mm) thick at the peripheral edge, shall be uniformly tapered to a small fillet around the shank, shall be either flat or concave, and shall be free from protrusions and sharp, irregular edges.

5.2 *Shanks*—Diameter shall not vary more than ± 0.003 in. (0.08 mm) for shank diameters 0.076 in. (1.93 mm) or larger.

5.3 *Points*—The nails shall have medium to long diamond or needle points.

5.4 *Clearance*—Where a deformation process produces other than a smooth shank nail, a clearance area (round and smooth), measured from the top of the head to the deformed section, shall be provided equal to the nominal thickness of the gypsum board for which the nails are specified.

6. Workmanship, Finish, and Appearance

6.1 The nails shall be bright, or chemically treated, or coated with rust inhibiting material provided that such chemical treatment or rust inhibitor does not adversely affect the performance of the nail as specified in Section 4. The nails shall also be compatible with the joint compound and decoration. Nails shall be neatly formed and free from injurious defects or deformations.