Designation: C 514 – 96

Standard Specification for Nails for the Application of Gypsum Board[1]

This standard is issued under the fixed designation C 514; 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 Department of Defense.

1. Scope *

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

NOTE 1—This specification does not necessarily cover nails for use where fire ratings are required. Consult manufacturers for independent data on assembly particulars, materials, and ratings.

1.2 The values stated in inch-pound units are to be regarded as the standard.

1.3 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

E 4 Practices for Force Verification of Testing Machines[2]

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 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 gage (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 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.

7. Number of Tests

7.1 At least five nails from each lot of 100 individual containers shall be examined to determine conformance to the requirements of this specification.

8. Test Methods

8.1 *Bend Test*:

8.1.1 *Significance and Use*—This test method is performed to determine the ductility of a nail, and used to determine compliance with this specification.

8.1.2 *Procedure*—Hold the test nail in a vise and bend by means of a clamp or similar device attached to the free end of the nail through 90° over a radius not greater than the diameter of the nail.

8.1.3 *Precision and Bias*—Neither the precision nor the bias of the nail bend test have been determined.

8.2 *Withdrawal Resistance*

8.2.1 *Significance and Use*—This test method determines

[1] This specification is under the jurisdiction of ASTM Committee C-11 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] *Annual Book of ASTM Standards*, Vol 03.01.

***A Summary of Changes section appears at the end of this standard.**