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.

Designation: F3359/F3359M – 21

Standard Test Method for Determining Bending Yield Moment of Staples[1]

This standard is issued under the fixed designation F3359/F3359M; 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.

1. Scope

1.1 This test method covers procedures for determining the bending yield moment of staples when subjected to static loading. Although intended for flat crown staples identified in Specification F1667/F1667M, this procedure is also applicable for staples with round wire. These staples are used in engineered wood building connection applications for which required connection capacities are specified by the designer.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

NOTE 1—This test method is applicable in either inch-pounds F3359 or SI Units [F3359M]. Values stated in SI are a mathematical conversion and are shown in brackets [ ].

1.3 *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.*

1.4 *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 Calibration and Verification of Testing Machines

F1667/F1667M Specification for Driven Fasteners: Nails, Spikes, and Staples

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *bending yield moment (M_y)*—the critical strength characteristic used in yield theory calculations and determined in accordance with 9.2.

3.1.2 *flat crown staple*—a two-pronged fasteners in which round or flattened wire is bent into an approximate U-shape with approximately equivalent leg lengths.

3.1.3 *flat crown staple dimensions*—All dimensions taken before application of or after removal of any coating, as shown in Fig. 1.

3.1.3.1 *crown width (C)*—Distance measured along the top of the staple from the outside of the staple legs.

3.1.3.2 *leg length (L)*—Distance from top of staple crown to bottom of leg.

3.1.3.3 *thickness (T)*—Distance perpendicular to the width of the leg for a flattened wire staple.

3.1.3.4 *test span (S_{bp})*—Cylindrical bearing point spacing (test span length) as shown in Fig. 2.

3.1.3.5 *width (W)*—Distance across the flatten portion of wire.

3.1.4 *proportional limit load*—is the load at which the load-deflection curve deviates from a straight line fitted to the initial portion of the load- deflection curve as shown in Fig. 3.

3.1.5 *yield load (P)*—the load determined from the load-deflection curve in accordance with 9.1.

3.1.6 *yield theory*—the model for lateral load design values for dowel-type fasteners that specifically accounts for the different way connections behave under load.

4. Summary of Test Method

4.1 Test specimens are evaluated to determine capacity to resist lateral bending loads applied at a constant rate of deflection with a suitable testing machine. The load on the test specimen at various intervals of deflection is measured. Supplementary physical properties of the test specimen are also determined.

[1] This test method is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.05 on Driven and Other Fasteners.

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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.

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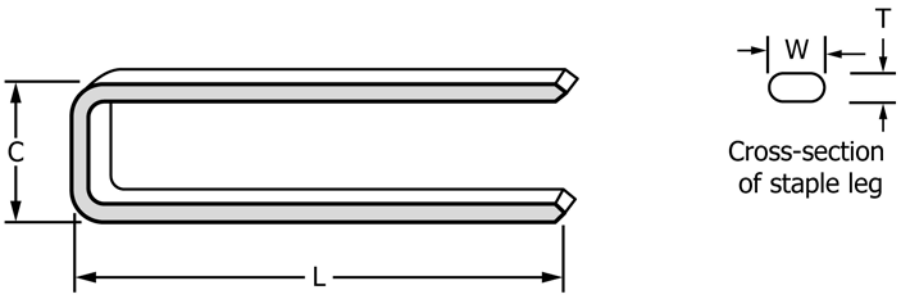

FIG. 1 Flat Crown Staple Dimensions

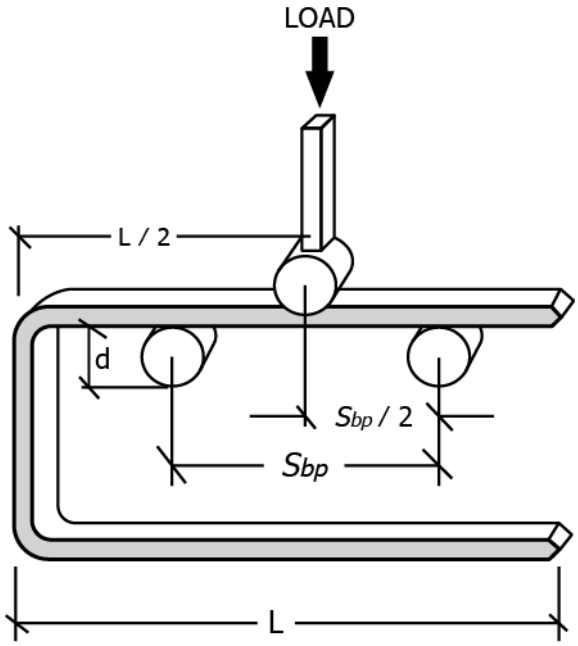

FIG. 2 Cylindrical bearing point spacing

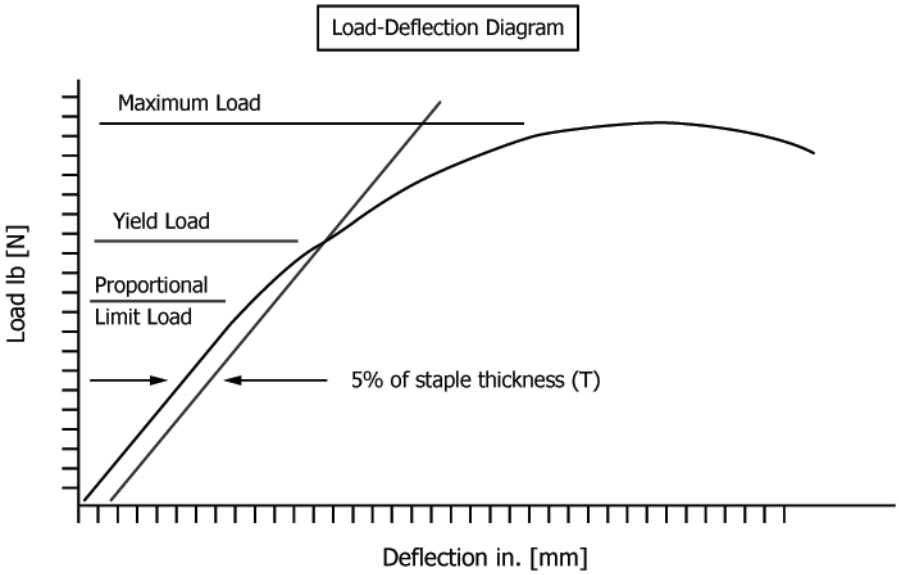

FIG. 3 Load- Deflection Curve

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