



Designation: A 720/A 720M – 9702

Standard Test Method for Ductility of Nonoriented Electrical Steel¹

This standard is issued under the fixed designation A 720/A 720M; 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 This test method is under the jurisdiction of ASTM Committee A-6 A06 on Magnetic Properties and is the direct responsibility of Subcommittee A06.01 on Test Methods. Current edition approved April 10, 1997, 2002. Published December 1997, November 2002. Originally published as A 720 – 75. Last previous edition A 720 – 947.

1. Scope

1.1 This test method covers determination of ductility utilizing Epstein test strips and a bending device for bending the strip over a predetermined radius. It is intended for commercial silicon-bearing steel sheet or strip of nonoriented types in the thickness range from 0.010 in. [0.25 mm] to 0.031 in. [0.25 to 0.79 mm], inclusive.

~~1.2 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.~~

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~~1.2 The values and equations stated in either customary (cgs-emu and inch-pound) units or SI units are to be regarded separately as standard. Within this test method, the SI units are shown in brackets. The values stated in each system are may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with this test method.~~

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

2. Referenced Documents

2.1 ASTM Standards:

A 34/A 34M Practice for Sampling and Procurement Testing of Magnetic Materials²

A 677/A 677M Specification for Nonoriented Electrical Steel Fully Processed Types²

A 67783/A 683M Specification for Nonoriented Electrical Steel, Fully Processed Types (Metric)²

A 683 Specification for Nonoriented Electrical Steel, Semiprocessed Types

A 683M Specification for Nonoriented Electrical Steel, Semiprocessed Types (Metric)²

E 290 Test Methods for Bend Testing of Material for Ductility³

3. Summary of Test Method

3.1 A test strip is placed in the special test apparatus designed to clamp one end of the specimen securely while the other end is free to move, but held in tension by a spring. The specimen is repeatedly bent through 180° reversals until a crack appears at the bend or until sudden failure occurs by complete rupture. The number of reversals until failure is taken as a measure of the ductility.

4. Significance and Use

4.1 This is a specialized bend test for nonoriented electrical steel not covered under the provisions of Test Methods E 290.

4.2 This test is applicable to nonoriented silicon steel such as described in Specifications A 677, A 677M, A 683, A 677/A 677M and A 683/A 683M in commercial thicknesses.

4.3 It is not intended to be applied to steels considered inherently ductile.

² Annual Book of ASTM Standards, Vol 03.04.

³ Annual Book of ASTM Standards, Vol 03.01.