



Standard Specification for Nonoriented Electrical Steel Fully Processed Types¹

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1. Scope

1.1 This specification covers the detailed requirements to which flat-rolled nonoriented fully processed electrical steel shall conform.

1.2 This steel is produced to specified maximum core-loss values and is intended primarily for commercial power frequency (50 and 60 Hz) applications in magnetic devices. Desirable core-loss and permeability characteristics are developed during mill processing, so additional heat treatment by the user is usually not necessary.

1.3 These nonoriented fully processed electrical steels are low-carbon, silicon-iron, or silicon-aluminum-iron alloys containing up to about 3.5 % silicon and a small amount of aluminum.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to customary (cgs-emu and inch-pound) units which are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards*:²

[A34/A34M Practice for Sampling and Procurement Testing of Magnetic Materials](#)

[A340 Terminology of Symbols and Definitions Relating to Magnetic Testing](#)

[A343/A343M Test Method for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Wattmeter-Ammeter-Voltmeter Method and 25-cm Epstein Test Frame](#)

[A664 Practice for Identification of Standard Electrical Steel Grades in ASTM Specifications](#)

[A700 Guide for Packaging, Marking, and Loading Methods](#)

¹ This specification is under the jurisdiction of ASTM Committee A06 on Magnetic Properties and is the direct responsibility of Subcommittee A06.02 on Material Specifications.

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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 Steel Products for Shipment

[A717/A717M Test Method for Surface Insulation Resistivity of Single-Strip Specimens](#)

[A719/A719M Test Method for Lamination Factor of Magnetic Materials](#)

[A720/A720M Test Method for Ductility of Nonoriented Electrical Steel](#)

[A937/A937M Test Method for Determining Interlaminar Resistance of Insulating Coatings Using Two Adjacent Test Surfaces](#)

[A971/A971M Test Method for Measuring Edge Taper and Crown of Flat-Rolled Electrical Steel Coils](#)

[A976 Classification of Insulating Coatings for Electrical Steels by Composition, Relative Insulating Ability and Application](#)

[E18 Test Methods for Rockwell Hardness of Metallic Materials](#)

[E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness](#)

[E384 Test Method for Microindentation Hardness of Materials](#)

3. Terminology

3.1 *Definitions*—The terms and symbols used in this specification are defined in Terminology [A340](#).

4. Classification

4.1 The nonoriented electrical steel types described by this specification are as shown in [Table 1](#).

5. Ordering Information

5.1 Orders for material under this specification shall include as much of the following information as necessary to describe the desired material adequately:

5.1.1 ASTM specification number.

5.1.2 Core-loss type number.

5.1.3 Surface coating type.

5.1.4 Thickness, width, and length (if in cut lengths instead of coils).

5.1.5 Total weight of ordered item.

5.1.6 Limitations in coil size or lift weights.