



Designation: A876 – 17^{ε1}

Standard Specification for Flat-Rolled, Grain-Oriented, Silicon-Iron, Electrical Steel, Fully Processed Types¹

This standard is issued under the fixed designation A876; 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.

^{ε1} NOTE—Editorially corrected units in Note B of Table X1.1 in July 2017.

1. Scope

1.1 This specification covers the detailed requirements to which the specified grades of flat-rolled, grain-oriented, fully processed electrical steels shall conform. These steels are used primarily in transformer cores operating at moderate to high magnetic flux densities at commercial power frequencies (50 and 60 Hz).

1.2 These grain-oriented electrical steels are low-carbon, silicon-iron alloys with a silicon content of approximately 3.2 % in which low core loss and high permeability in the direction of rolling have been achieved by appropriate metallurgical processing.

1.3 The electrical-steel grades described in this specification include (1) conventional grain-oriented electrical steel tested at 1.5 T (15 kG) in accordance with Test Method A343/A343M, (2) conventional grain-oriented electrical steel tested at 1.7 T (17 kG) in accordance with Test Method A343/A343M, (3) high-permeability grain-oriented electrical steel tested at 1.7 T (17 kG) in accordance with Test Method A343/A343M, and (4) laser-scribed high-permeability grain-oriented electrical steel tested at 1.7 T (17 kG) in accordance with Test Methods A804/A804M.

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.

1.5 *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.*

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.

This specification replaces A665, A725, and A843.

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1.6 *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

- 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
- A345 Specification for Flat-Rolled Electrical Steels for Magnetic Applications
- A664 Practice for Identification of Standard Electrical Steel Grades in ASTM Specifications
- A700 Guide for Packaging, Marking, and Loading Methods 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
- A721/A721M Test Method for Ductility of Oriented Electrical Steel
- A804/A804M Test Methods for Alternating-Current Magnetic Properties of Materials at Power Frequencies Using Sheet-Type Test Specimens
- A937/A937M Test Method for Determining Interlaminar Resistance of Insulating Coatings Using Two Adjacent Test Surfaces
- A976 Classification of Insulating Coatings for Electrical

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.