



Designation: A848 – 17

Standard Specification for Low-Carbon Magnetic Iron¹

This standard is issued under the fixed designation A848; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This specification covers the requirements for wrought low-carbon iron typically having a carbon content of 0.015 % or less with the remainder of the chemical composition being substantially iron.

1.1.1 Two alloy types are covered: Type 1 is a low-phosphorous grade and Type 2 contains a phosphorous addition to improve machinability.

1.2 This specification also covers alloys supplied by a producer or converter in the form and condition suitable for fabrication into parts which will be subsequently heat treated to create the desired magnetic characteristics. It covers alloys supplied in the form of forging billets, hot-rolled products, and cold-finished bar, wire, and strip.

1.3 This specification does not cover iron powders capable of being processed into magnetic components. Please refer to the following ASTM Standards for information regarding powdered metal materials and magnetic components: Specifications A811, A839, and A904.

1.4 This specification does not cover flat-rolled, low-carbon electrical steels. Please refer to Specification A726 for information regarding these materials.

1.5 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.

1.6 *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.*

1.7 *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 Recom-*

mendations 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

A341/A341M Test Method for Direct Current Magnetic Properties of Soft Magnetic Materials Using D-C Permeameters and the Point by Point (Ballistic) Test Methods

A596/A596M Test Method for Direct-Current Magnetic Properties of Materials Using the Ballistic Method and Ring Specimens

A726 Specification for Cold-Rolled Magnetic Lamination Quality Steel, Semiprocessed Types

A773/A773M Test Method for Direct Current Magnetic Properties of Low Coercivity Magnetic Materials Using Hysteresisgraphs

A811 Specification for Soft Magnetic Iron Parts Fabricated by Powder Metallurgy Techniques

A839 Specification for Iron-Phosphorus Powder Metallurgy Parts for Soft Magnetic Applications

A904 Specification for 50 Nickel-50 Iron Powder Metallurgy Soft Magnetic Parts

2.2 Other:

IEC Publication 60404-7 Magnetic Materials – Part 7: Method of Measurement of the Coercivity of Magnetic Materials in an Open Magnetic Circuit³

3. Terminology

3.1 The terms and symbols used in this specification, unless otherwise noted, are defined in Terminology A340.

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.

³ Available from International Electrotechnical Commission (IEC), 3, rue de Varembe, 1st Floor, P.O. Box 131, CH-1211, Geneva 20, Switzerland, <http://www.iec.ch>.