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FSC 9535

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AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

Issued JAN 1961
Revised DEC 1995

Superseding AMS 7719B

NICKEL-IRON ALLOY, MAGNETIC, SHEET AND STRIP
50Ni - 50Fe
Stamping Quality

UNS K95000

1. SCOPE:

1.1 Form:

This specification covers a magnetic nickel-iron alloy in the form of sheet and strip.

1.2 Application:

These products have been used typically for magnetic circuit parts that require high magnetic permeability at low flux densities with the fabricated parts to be annealed in dry hydrogen, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2242 Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate

MAM 2242 Tolerances, Metric, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Sheet, Strip, and Plate

AMS 2371 Quality Assurance Sampling and Testing, Corrosion and Heat Resistant Steels and Alloys, Wrought Products and Forging Stock

AMS 2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

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2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM A 596 Direct-Current Magnetic Properties of Materials Using Ring Test Procedures
and the Ballistic Methods

ASTM E 18 Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

2.3 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue,
Philadelphia, PA 19111-5094.

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall be an alloy containing approximately 50% nickel and 50% iron with other alloying
elements in such proportions as required to provide a product meeting the requirements of
3.3.

3.2 Condition:

Cold rolled to half-hard temper having a surface appearance comparable to the following
commercial corrosion-resistant steel finishes as applicable (See 8.2).

3.2.1 Sheet: No. 2D finish.

3.2.2 Strip: No. 1 strip finish.

3.3 Properties:

The product shall conform to the following requirements:

3.3.1 Hardness: Shall be not lower than 90 HRB, or equivalent (See 8.3), determined in
accordance with ASTM E 18.

3.3.2 Magnetic Properties: Shall be as follows, determined in accordance with ASTM A 596 on
(R) specimens as in 4.3.1, annealed by heating to 2150 °F ± 25 (1177 °C ± 14) in a dry
hydrogen atmosphere having a dew point of -60 °F (-51 °C) or lower, holding at heat for
4 hours ± 0.25, and cooling in a non-oxidizing atmosphere at a rate not greater than 100 F
(56 C) degrees per hour to 1100 °F (593 °C) or lower unless another cooling rate is
recommended by the alloy producer (See 8.4).

3.3.2.1 Maximum Permeability: Shall be as shown in Table 1.

TABLE 1 - Minimum Maximum Permeability

Nominal Thickness Inch	Nominal Thickness Millimeter	Value
Up to 0.020, excl 0.020 and over	Up to 0.51, excl 0.51 and over	60,000 40,000

3.3.2.2 Permeability at 100 Gauss (0.01T): Shall be as shown in Table 2.

TABLE 2 - Minimum Permeability at 100 Gauss

Nominal Thickness Inch	Nominal Thickness Millimeter	Value
Up to 0.020, excl 0.020 and over	Up to 0.51, excl 0.51 and over	8,000 6,000

3.3.2.3 Induction at 100 Oersteds (7958 A/m): Shall be not less than 15,000 gauss (1.5T).

3.4 Quality:

The product, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the product.

3.5 Tolerances:

Shall conform to all applicable requirements of AMS 2242 or MAM 2242.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

All technical requirements are acceptance tests and shall be performed on each heat or lot as applicable.