SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS7707 | REV. D

Issued 1957-09
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Superseding AMS7707C

Iron, Commercially Pure, Bar, Sheet, Strip, and Plate
Hot Rolled, Unannealed

(Composition similar to UNS K00095)

RATIONALE

AMS7707D results from a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers electrical iron in the form of bar, sheet, strip, and plate.

1.2 Application

These products have been used typically for direct current devices, such as controls, relay and regulator parts, magnetic cores, and motor and generator parts requiring a combination of high electrical conductivity, high magnetic saturation and permeability, and low magnetic retentivity, and where fair formability is required, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS7707D

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2231 Tolerances, Carbon Steel Bars

AMS2232 Tolerances, Carbon Steel, Sheet, Strip, and Plate

AMS2259 Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels

AMS2370 Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

AMS2806 Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat-Resistant Steels and Alloys

AMS2807 Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A 370 Mechanical Testing of Steel Products

ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	Percent
Carbon + Manganese + Silicon + Phosphorus + Sulfur	0.10 max
Phosphorus	0.010 max
Sulfur	0.030 max
Copper	0.15 max
Iron	remainder

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.2 Condition

Hot rolled.

3.3 Properties

The product shall conform to the following requirements; hardness and tensile testing shall be determined in accordance with ASTM A 370:

3.3.1 Tensile Properties

Shall be as shown in Table 2.

TABLE 2 - TENSILE PROPERTIES

Property	Value
Tensile Strength, max	65 ksi (450 MPa)
Yield Strength at 0.2% Offset, max	55 ksi (380 MPa)
Elongation in 2 inches (50.8 mm) or 4D, min	25%

3.3.2 Hardness

Shall be not higher than shown in 3.3.2.1 or Table 3, or equivalent (See 8.2). Product shall not be rejected on the basis of hardness if the tensile property requirements are acceptable, determined on specimens taken from the same sample as that with nonconforming hardness or from a sample with similar nonconforming hardness.

3.3.2.1 Bars

80 HRB, maximum.

3.3.2.2 Sheet

TABLE 3 - MAXIMUM HARDNESS

Nominal Thickness Inches	Nominal Thickness Millimeters	Hardness HRB
Up to 0.0625, excl	Up to 1.55, excl	80
0.0625 and over	1.55 and over	75

3.3.2.3 Strip and Plate

As agreed upon by purchaser and vendor.

3.3.3 Magnetic Properties

If required, shall be as agreed upon by purchaser and vendor, determined on product suitably annealed (See 8.5).

3.3.4 Bending and Forming Properties

If required, shall be as agreed upon by purchaser and vendor (See 8.5).

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 be as follows:

3.5.1 Bars

In accordance with AMS2231.

3.5.2 Sheet, Strip, and Plate

In accordance with AMS2232.

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 the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to specified requirements.

4.2 Classification of Tests

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

4.3 Sampling

Shall be in accordance with AMS2370.

4.4 Reports

The vendor of the product shall furnish with each shipment a report showing the results of tests for the composition of each heat and for tensile properties, hardness, magnetic properties including the annealing cycle used (if specified), and bending and forming properties (if specified) of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS7707D, product form and size (and/or part number if applicable), and quantity.

4.5 Resampling and Retesting

Shall be in accordance with AMS2370.

5. PREPARATION FOR DELIVERY

5.1 Identification

Shall be as follows:

5.1.1 Bars

In accordance with AMS2806.

5.1.2 Sheet, Strip, and Plate

In accordance with AMS2807.