SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 7707C

Issued SEP 1957
Revised MAY 2003
Reaffirmed SEP 2007

Superseding AMS 7707B

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

(Composition similar to K00095)

RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

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.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2231	Tolerances, Carbon Steel Bars
AMS 2232	Tolerances, Carbon Steel Sheet, Strip, and Plate
AMS 2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock

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

2.1 (Continued):

AMS 2806 Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat Resistant Steels and Alloys

AMS 2807 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, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or 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	max
Carbon + Manganese + Silicon + Phosphorus + Sulfur	0.10
Phosphorus	0.010
Sulfur	0.030
Copper	0.15
Iron	remainder

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

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 of Iron

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 AMS 2231.

3.5.2 Sheet, Strip, and Plate: In accordance with AMS 2232.

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 AMS 2370.

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, AMS 7707C, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2370.

5. PREPARATION FOR DELIVERY:

5.1 Identification:

Shall be as follows:

5.1.1 Bars: In accordance with AMS 2806.

5.1.2 Sheet, Strip, and Plate: In accordance with AMS 2807.

5.2 Protective Treatment:

Product shall be protected from corrosion prior to shipment.