AEROSPACE MATERIAL SPECIFICATION

AMS6345™	REV. E
Issued 1996-11 Revised 2020-04 Superseding AMS6345D	

Steel, Sheet, Strip, and Plate
0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130)
Normalized or Otherwise Heat Treated
(Composition similar to UNS G41300)

RATIONALE

AMS6345E is a Five-Year Review and update that revises analytical methods (3.1) and decarburization per general agreement (3.3.3), and prohibits unauthorized exceptions (3.3.1.1, 3.6, 4.4.2, 5.1, and 8.6).

1. SCOPE

1.1 Form

This specification covers an aircraft-quality, low-alloy steel in the form of sheet, strip, and plate.

1.2 Application

These products have been used typically where welding and moderate tensile properties are required, but usage is not limited to such applications. Sheet and strip are extensively used where a minimum tensile strength of 180 ksi (1241 MPa) is required in sections up to 0.125 inch (3.18 mm) in nominal thickness and proportionately lower strength is required in heavier thicknesses.

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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2252 Tolerances, Low-Alloy Steel Sheet, Strip, and Plate

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

AMS2301 Steel Cleanliness, Aircraft Quality, Magnetic Particle Inspection Procedure

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**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS6345E/

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

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

ARP1917 Clarification of Terms Used in Aerospace Metals Specifications

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 A370 Mechanical Testing of Steel Products

ASTM A751 Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

ASTM E112 Determining Average Grain Size

ASTM E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

ASTM E290 Bend Testing of Material for Ductility

ASTM E384 Microindentation Hardness of Materials

ASTM E1077 Estimating the Depth of Decarburization of Steel Specimens

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM A751, or by other analytical methods acceptable to purchaser.

Table 1 - Composition

Element	Min	Max
Carbon	0.28	0.33
Manganese	0.40	0.60
Silicon	0.15	0.35
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	0.80	1.10
Molybdenum	0.15	0.25
Nickel	--	0.25
Copper	--	0.35

3.1.1 Aluminum, vanadium, and columbium are optional grain refining elements and need not be determined or reported unless used to satisfy the average grain size requirements of 3.3.2.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2259.

3.2 Condition

The product shall be supplied in the following condition:

3.2.1 Sheet and Strip

Cold rolled, normalized or otherwise heat treated, and descaled if necessary, or hot rolled, normalized or otherwise heat treated, and descaled.

3.2.2 Plate

Hot rolled and normalized or otherwise heat treated.

3.2.2.1 If allowed by the purchaser, cold rolled and normalized or otherwise heat treated.

3.3 Properties

The product shall conform to the following requirements. Hardness and tensile testing shall be performed in accordance with ASTM A370:

3.3.1 Tensile Properties

The long-transverse tensile properties of the as-supplied product shall be as shown in Table 2 (see 8.2).

Table 2A - Minimum tensile properties, inch/pound units

Thickness Inches	Tensile Strength ksi	Yield Strength 0.2% Offset ksi	Elongation in 2 Inches or 4D Percent
Up to 0.062, excl	95	75	8
0.062 to 0.125, incl	95	75	10
Over 0.125 to 0.1874, incl	95	75	12
Over 0.1874 to 0.250, incl	90	70	15
Over 0.250 to 0.750, incl	90	70	16
Over 0.750 to 1.500, incl	90	70	18

Table 2B - Minimum tensile properties, SI units

Thickness Millimeters	Tensile Strength MPa	Yield Strength 0.2% Offset MPa	Elongation in 50.8 mm or 4D Percent
Up to 1.57, excl	655	517	8
1.57 to 3.18, incl	655	517	10
Over 3.18 to 4.760, incl	655	517	12
Over 4.760 to 6.35, incl	621	483	15
Over 6.35 to 19.05, incl	621	483	16
Over 19.05 to 38.10, incl	621	483	18

3.3.1.1 Mechanical property requirements for product outside the size range covered by Table 2 shall be agreed upon between purchaser and producer and reported per 4.4.2.

3.3.2 Average Austenitic Grain Size

Shall be determined by either 3.3.2.1 or 3.3.2.2.

3.3.2.1 Shall be ASTM No. 5 or finer, determined in accordance with ASTM E112.