



AEROSPACE MATERIAL SPECIFICATION

AMS5719™**REV. E**

Issued 1970-11
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Superseding AMS5719D

**Steel Bars, Wire, Forgings and Forging Stock, Mechanical Tubing, Rings, and Extrusions, Corrosion-Resistant
11.8Cr - 2.5Ni - 1.8Mo - 0.33V (0.08 - 0.15C)
Annealed, Vacuum Arc or Electroslag Remelted
(Composition similar to UNS S64152)**

RATIONALE

AMS5719E clarifies the Title, increases allowable grain size (3.5.2.5), provides an option of UT inspection for cleanliness (3.6.1.1, 4.2.1), updates bar condition (3.3.1), restricts bar from being cut from plate (3.3.1.5), updates chemical testing method (3.1), revises heat treatment temperature (3.4), controls strain rate of tensile tests (3.5.2.1.1.1), adds country of origin information (4.4), prohibits unauthorized exceptions (1.1, 3.5.2.4, 3.8, 4.4.2, 5.2.1.1), adds reporting requirements for stock (4.4.1), and results from a Five-Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers a premium aircraft-quality corrosion-resistant steel in the form of bars, wire, forgings, mechanical tubing, flash welded rings, and extrusions 7.00 inches (177.8 mm) and under in nominal diameter or least distance between parallel sides, and stock of any size for forging, flash welded rings, or extruding (see 8.8).

1.2 Application

These products are used typically for parts, such as compressor wheels and structural members, requiring high strength and oxidation resistance up to 800 °F (427 °C), but usage is not limited to such applications.

1.3 Classification

Steel covered by this specification is classified by melting practice as follows:

Type 1 - Multiple melted using consumable electrode vacuum arc (VAR) practice in the remelt cycle.

Type 2 - Multiple melted using electroslag (ESR) process in the final melting cycle.

1.3.1 Type 1 shall be supplied unless Type 2 is permitted or required by purchaser.

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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.

AMS2241	Tolerances, Corrosion and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Bars and Wire
AMS2243	Tolerances, Corrosion and Heat-Resistant Steel Tubing
AMS2248	Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
AMS2300	Steel Cleanliness, Premium Aircraft-Quality Magnetic Particle Inspection Procedure
AMS2371	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock
AMS2374	Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steel and Alloy Forgings
AMS2806	Identification Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat-Resistant Steels and Alloys
AMS2808	Identification, Forgings
AMS7493	Rings, Flash Welded, Ferritic and Martensitic Corrosion-Resistant Steels
AMS-STD-2154	Inspection, Ultrasonic, Wrought Metals, Process for
ARP1917	Clarification of Terms Used in Aerospace Metals Specifications
AS1182	Standard Machining Allowance, Aircraft-Quality and Premium Aircraft-Quality Steel Bars and Mechanical 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 A370	Mechanical Testing of Steel Products
ASTM A604	Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets
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 E292	Conducting Time-For-Rupture Notch Tensile Tests of Materials

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	0.08	0.15
Manganese	0.50	0.90
Silicon	--	0.35
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	11.00	12.50
Nickel	2.00	3.00
Molybdenum	1.50	2.00
Vanadium	0.25	0.40
Nitrogen	0.01	0.05
Copper	--	0.50

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Melting Practice

Steel shall be multiple melted using consumable electrode vacuum or electroslag process in the remelt cycle (see 1.3).

3.3 Condition

The product shall be supplied in the following condition; hardness and tensile strength shall be determined in accordance with ASTM A370:

3.3.1 Bars

Hardness shall be maximum 311 HBW, or equivalent (see 8.2).

3.3.1.1 Rounds

Annealed and hot or cold finished.

3.3.1.2 Hexagons

Annealed and cold finished.

3.3.1.3 Squares and Rectangles

Hot finished, annealed, and descaled, or annealed and cold finished.

3.3.1.4 Bar shall not be cut from plate (see 4.4.3).

3.3.2 Wire

Cold drawn, annealed, and cold finished. Shall have tensile strength not higher than 155.0 ksi (1069 MPa), or equivalent hardness (see 8.3).