SAE The Engineering Resource For Advancing Mobility®
400 COMMONWEALTH DRIVE WARRENDALE PA 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 5726A
Superseding AMS 5726

Issued 1-15-77
Revised 7-1-84

STEEL BARS, CORROSION AND HEAT RESISTANT
15Cr - 25.5Ni - 1.2Mo - 2.1Ti - 0.006B - 0.30V
1800°F (980°C) Solution Treated and Work-Strengthened
Consumable Electrode Melted

UNS K66286

1. SCOPE:

1.1 Form: This specification covers a corrosion and heat resistant steel in the form of work-strengthened bars and wire 1-1/4 in. (35 mm) and under in nominal diameter or least distance between parallel sides.

1.2 Application: Primarily for parts, such as fasteners, requiring room-temperature minimum tensile strength of 200,000 psi (1380 MPa) after precipitation heat treatment for use up to 1000°F (540°C) and having oxidation resistance up to 1200°F (650°C).

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2241 - Tolerances, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Bars and Wire
MAM 2241 - Tolerances, Metric, Corrosion and Heat Resistant Steel, Iron Alloy, Titanium and Titanium Alloy Bars and Wire
AMS 2248 - Chemical Check Analysis Limits, Wrought Corrosion and Heat Resistant Steels, and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys
AMS 2350 - Standards and Test Methods
AMS 2371 - Quality Assurance Sampling of Corrosion and Heat Resistant Steels and Alloys, Wrought Products Except Forgings and Forging Stock
AMS 2806 - Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Heat and Corrosion Resistant Steels and Alloys

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM A370 - Mechanical Testing of Steel Products
ASTM E112 - Determining Average Grain Size
ASTM E353 - Chemical Analysis of Stainless, Heat-Resisting, Maraging, and other Similar Chromium-Nickel-Iron Alloys

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals: Test Methods

2.3.2 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E353, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min	max
Carbon	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorus	--	0.025
Sulfur	--	0.025
Chromium	13.50	16.00
Nickel	24.00	27.00
Molybdenum	1.00	1.50
Titanium	1.90	2.35
Boron	0.003	0.010
Vanadium	0.10	0.50
Aluminum	--	0.35

3.1.1 Check Analysis: Composition variations shall meet the requirements of AMS 2248.

3.2 Condition: Solution heat treated and suitably work-strengthened.

3.2.1 Bars shall be cold finished; straight, round bars shall be ground or turned.

3.2.2 Coiled bars and wire shall be cold-drawn.

3.3 Heat Treatment: The product shall be solution heat treated by heating to 1800°F ± 25 (980°C ± 15), holding at heat for 1 - 2 hr, and quenching in oil or water and work-strengthened as required to meet the requirements of 3.4.

3.4 Properties: The product shall conform to the following requirements; hardness and tensile testing shall be performed in accordance with ASTM A370:

3.4.1 As Solution Heat Treated and Work-Strengthened:

3.4.1.1 Tensile Strength: Shall be not lower than 140,000 psi (965 MPa).

3.4.1.2 Grain Size: Shall be predominantly 5 or finer with occasional grains as large as 3 permissible, determined by comparison of a polished and etched specimen with the chart in ASTM E112.

3.4.2 After Precipitation Heat Treatment: The product shall have the following properties after being precipitation heat treated by heating to a temperature within the range 1200° - 1300°F (650° - 705°C), holding at the selected temperature within ±25°F (±15°C) for not less than 8 hr, and cooling in air:

3.4.2.1 Tensile Properties: Shall be as follows:

Tensile Strength, min	200,000 psi (1380 MPa)
Yield Strength at 0.2% Offset, min	180,000 psi (1240 MPa)
Elongation in 4D, min	8%
Reduction of Area, min	15%

3.4.2.2 Hardness: Should be not lower than 40 HRC or equivalent but the product shall not be rejected on the basis of hardness if the tensile property requirements of 3.4.2.1 are met.

3.5 Quality:

3.5.1 Steel shall be produced by multiple melting using consumable electrode practice in the remelt cycle, unless otherwise permitted.

3.5.2 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.

3.6 Sizes: Except when exact lengths or multiples of exact lengths are ordered, straight bars and wire will be acceptable in mill lengths of 6 - 20 ft (2 - 6 m) but not more than 10% of any shipment shall be supplied in lengths shorter than 10 ft (3 m).

3.7 Tolerances: Unless otherwise specified, tolerances shall conform to all applicable requirements of AMS 2241 or MAM 2241.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all Ø samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. 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: Tests to determine conformance to all technical Ø requirements of this specification are classified as acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling: Shall be in accordance with AMS 2371.