SAE Aerospace
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AEROSPACE STANDARD

AS5685

Issued 2006-08

Supersedes AMS 5685K

Steel, Corrosion Resistant, Safety Wire, 18Cr - 11.5Ni (UNS S30500) Solution Heat Treated, Cold Finished

FSC 5306

RATIONALE

This document has been converted directly from AMS 5685K and supersedes that specification.

1. SCOPE

1.1 Form

This specification covers a corrosion resistant steel in the form of wire type identified under the Unified Numbering System as UNS S30500.

1.2 Application

This product has typically been used for safety wire, but usage is not limited to that application.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other documents shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this specification and references cited herein, the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 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.

2.1.1.1 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

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**

AMS 2248 Chemical Check Analysis Limits, Corrosion and Heat Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys.

AMS 2371 Quality Assurance Sampling and Testing, Corrosion and Heat Resistant Steels and Alloys, Wrought Products and Forging Stock.

2.1.2 ASTM Publications

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

ASTM B 117 Operating Salt Spray Fog Apparatus

ASTM E 8 Tension Testing of Metallic Materials

ASTM E 8M Tension Testing of Metallic Materials (Metric)

ASTM E 353 Chemical Analysis of Stainless, Heat Resisting, Maraging and Other Similar Chromium-Nickel-Iron Alloys.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Wire shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in acordance with ASTM E 353, by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Carbon	--	0.08
Manganese	--	2.00
Silicon	--	1.00
Phosphorous	--	0.040
Sulfur	--	0.030
Chromium	17.00	19.00
Nickel	10.00	13.00
Molybdenum	--	0.75
Copper	--	0.75

3.1.1 Chemical analysis of initial ingot, bar, or rod stock before drawing is acceptable provided the processes used in the drawing or rolling, annealing, and cleaning, are controlled to ensure continued conformance to the chemical composition requirements.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS 2248

3.2 Condition

Solution heat treated and cold finished.

3.3 Properties

Wire shall conform to the following requirements:

3.3.1 Tensile Properties

Shall be as shown in Table 2, determined in accordance with ASTM E 8 or ASTM E 8M.

TABLE 2 - MAXIMUM TENSILE STRENGTH

Property	Value
Coiled Wire	110 ksi (758 MPa)
Straight Lengths	120 ksi (827 MPa)

3.3.2 Bending

Wire shall withstand, without cracking, bending at room temperature flat on itself.

3.3.3 Wire shall exhibit no evidence of corrosion when exposed for not less than two hours to the conditions of ASTM B 117.

3.4 Quality

Wire, as received by purchaser, shall be uniform in quality and condition, cylindrical, and free from knicks, twists, scrapes, splits, cold shuts, and other imperfections detrimental to usage of the wire. The surface shall have a bright, smooth finish free from pits, abrasions, and other defects.

3.5 Tolerances

Shall conform to AMS 2241 or MAM 2241.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of wire 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 wire conforms to the requirements of this specification.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Composition (3.1), tensile properties (3.3.1), and bending (3.3.2) are acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests

Resistance to corrosion (3.3.3) is a periodic test and shall be performed at a frequency selected by the vendor unless a frequency of testing is specified by purchaser.

4.3 Sampling and Testing

Shall be in accordance AMS 2371.

4.4 Reports

The vendor of parts shall furnish with each shipment a report showing the results of tests for chemical composition of each heat, and for tensile and bending properties of each lot, and stating that the wire comforms to the other technical requirements. This report shall include the purchase order number, heat ant lot numbers, AS5685, nominal size and quantity.

4.5 Resampling and Restesting

Shall be in accordance with AMS 2371.

5. PREPARATION FOR DELIVERY

5.1 Identification

Coils and reels of wire shall each be identified by a durable tag marked with not less than the purchase order number, AS5685, heat and lot numbers, nominal size, quantity, and manufacturer's identification. Straight lengths shall be bundled or boxed and shall have atached to each container a tag marked with the above information.

5.2 Packaging

Wire shall be prepared for shipment in accordance with commercial practice and in compliance with appliable rules and regulations pertaining to the handling, packaging, and transportation of the wire to ensure carrier acceptance and safe delivery.

5.2.1 Wire shall be supplied in coils, or straights lengths, as ordered.

5.2.2 Wire furnished in coils shall be in one continuous length, properly coiled, and firmly tied.

6. ACKNOWLEDGMENT

A vendor shall mention this specification number and its revison letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Wire not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES

8.1 The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document.

8.2 Terms used in an AS are clarified in ARP1917.

8.3 Properties in inch/pound units are primary, properties in SI units are shown as the approximate equivalents of the primary units and are presented only for information.