

# AEROSPACE MATERIAL SPECIFICATION



AMS 5697E

Issued NOV 1954  
Revised NOV 2001

Superseding AMS 5697D

## Steel, Corrosion Resistant, Wire 19Cr - 9.5Ni (SAE 30304) Solution Heat Treated

(Composition similar to UNS S30400)

### 1. SCOPE:

#### 1.1 Form:

This specification covers a corrosion resistant steel in the form of wire.

#### 1.2 Application:

This product has been used typically for braiding wire, 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 canceled 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 or [www.sae.org](http://www.sae.org).

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

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## 2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or [www.astm.org](http://www.astm.org).

ASTM A 262 Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels  
 ASTM A 370 Mechanical Testing of Steel Products  
 ASTM E 353 Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys

## 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 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
Phosphorus	--	0.040
Sulfur	--	0.030
Chromium	18.00	20.00
Nickel	8.00	11.00
Molybdenum	--	0.75
Copper	--	0.75

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

## 3.2 Condition:

Solution heat treated and bright finished.

## 3.3 Properties:

Wire shall conform to the following requirements:

3.3.1 Tensile Properties: Shall be as follows shown in Table 2, determined in accordance with ASTM A 370:

TABLE 2 - Tensile Properties

Property	Value
Tensile Strength	90 to 125 ksi
Elongation in 2 Inches (50.8 mm), minimum	(621 to 862 MPa) 35%

3.3.2 Wrapping: Wire shall withstand, without cracking, wrapping at room temperature five full, closely-spaced turns around a diameter equal to the nominal diameter of the wire.

3.3.3 Susceptibility to Intergranular Attack: Specimens from the product, after sensitizing treatment, shall pass the intergranular corrosion test performed in accordance with ASTM A 262, Practice E.

3.4 Quality:

Wire, as received by purchaser, shall be uniform in quality and condition, cylindrical, smooth, and free from kinks, twists, scrapes, splits, cold shuts, and other imperfections detrimental to usage of the wire.

3.5 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 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 specified requirements.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Composition (3.1), tensile properties (3.3.1), wrapping (3.3.2) and tolerances (3.5) are acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Susceptibility to intergranular attack (3.3.3) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2371.

**4.4 Reports:**

The vendor of wire shall furnish with each shipment a report showing the results of tests for chemical composition of each heat and for tensile and wrapping properties 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 5697E, size, and quantity.

**4.5 Resampling and Retesting:**

Shall be in accordance with AMS 2371.

**5. PREPARATION FOR DELIVERY:****5.1 Identification:**

Shall be in accordance with AMS 2806.

**5.2 Packaging:**

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

**6. ACKNOWLEDGMENT:**

A vendor shall mention this specification number and its revision 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 A change bar ( I ) 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 specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revisions. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

8.2 Terms used in AMS are clarified in ARP1917.

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