

# AEROSPACE MATERIAL SPECIFICATION

**SAE AMS5762**

**REV. F**

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Revised 2010-04

Superseding AMS5762E

Steel, Corrosion Resistant, Bars, Wire, and Forgings  
5.8Mn - 17Cr - 5.8Ni - 2.0Cu - 0.26S  
Free Machining, Solution Heat Treated

(Composition similar to UNS S20300)

## RATIONALE

AMS5762F revises condition of bars (3.2.1.2), reports (4.4) and is a Five Year Review and update of this specification.

### 1. SCOPE

#### 1.1 Form

This specification covers a free-machining, corrosion-resistant steel in the form of bars, wire, forgings, and forging stock.

#### 1.2 Application

This product has been used typically for parts on which the amount of machining warrants use of a free-machining grade of steel, requiring corrosion resistance similar to the 18-8 type steels but not subjected to temperatures exceeding 700 °F (371 °C) during fabrication or in service, 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 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 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

AMS2241	Tolerances, Corrosion and Heat-Resistant Steel, Iron Alloy, Titanium, and Titanium Alloy Bars and Wire
AMS2248	Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys
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

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## 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](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	5.00	6.50
Silicon	0.20	0.70
Phosphorus	--	0.04
Sulfur	0.15	0.35
Chromium	16.00	18.00
Nickel	5.00	6.50
Copper	1.75	2.25
Molybdenum	--	0.50

#### 3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

### 3.2 Condition

The product shall be supplied in the following condition:

#### 3.2.1 Bars, Wire, and Forgings

Solution heat treated.

3.2.1.1 All hexagons, other bars 2.750 inches (69.85 mm) and under in nominal diameter or least distance between parallel sides, and wire shall be cold finished.

3.2.1.2 Bars, other than hexagons, over 2.750 inches (69.85 mm) in nominal diameter or least distance between parallel sides shall be hot finished or cold finished.

#### 3.2.2 Forging Stock

As ordered by the forging manufacturer.

### 3.3 Properties

The product shall conform to the following requirements; hardness and tensile testing shall be performed in accordance with ASTM A 370:

#### 3.3.1 Tensile Properties of Wire

Shall have tensile strength of 85 to 125 ksi (586 to 862 MPa).

#### 3.3.2 Hardness

##### 3.3.2.1 Bars

Shall be 140 to 255 HB, or equivalent (See 8.2), determined approximately midway between surface and center.

##### 3.3.2.2 Forgings

Shall be not higher than 187 HB, or equivalent (See 8.2).

#### 3.3.3 Forging Stock

As agreed upon by purchaser and vendor.

### 3.4 Quality

The product, as received by purchaser, shall be uniform in quality and condition, sound, and, consistent with the type of steel involved, free from foreign materials and from imperfections detrimental to usage of the product.

3.4.1 Grain flow of die forgings, except in areas which contain flash-line end grain, shall follow the general contour of the forgings showing no evidence of reentrant grain flow.

### 3.5 Tolerances

Bars and wire shall conform to all applicable requirements of AMS2241.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Responsibility for Inspection

The vendor of the product 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 product conforms to specified requirements.

### 4.2 Classification of Tests

#### 4.2.1 Acceptance Tests

Composition (3.1), tensile properties (3.3.1), hardness (3.3.2), quality (3.4), and tolerance (3.5) are acceptance tests and shall be performed on each heat or lot as applicable.

#### 4.2.2 Periodic Tests

Grain flow of die forgings (3.4.1) 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 as follows:

##### 4.3.1 Bars, Wire, and Forging Stock

In accordance with AMS2371.

##### 4.3.2 Forgings

In accordance with AMS2374.

#### 4.4 Reports

The vendor of the product shall furnish with each shipment a report showing the results of tests for composition of each heat and for tensile properties and hardness 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, AMS5762F, product form, size, and quantity. If forgings are supplied, the size and melt source of stock used to make the forgings shall also be included.

#### 4.5 Resampling and Retesting

Shall be as follows:

##### 4.5.1 Bars, Wire, and Forging Stock

In accordance with AMS2371.

##### 4.5.2 Forgings

In accordance with AMS2374.

#### 5. PREPARATION FOR DELIVERY

##### 5.1 Sizes

Except when exact lengths or multiples of exact lengths are ordered, straight bars and wire will be acceptable in mill lengths of 6 to 20 feet (1.8 to 6.1 m) but not more than 10% of any shipment shall be supplied in lengths shorter than 10 feet (3 m).

##### 5.2 Identification

Shall be as follows:

##### 5.2.1 Bars and Wire

In accordance with AMS2806.

##### 5.2.2 Forgings

In accordance with AMS2808.

##### 5.2.3 Forging Stock

As agreed upon by purchaser and vendor.