



# AEROSPACE MATERIAL SPECIFICATION

**AMS5886™****REV. E**

|            |         |
|------------|---------|
| Issued     | 1986-07 |
| Reaffirmed | 2008-05 |
| Revised    | 2026-03 |

Superseding AMS5886D

Alloy, Corrosion- and Heat-Resistant, Bars, Forgings, Rings and  
Stock for Forgings and Rings,  
50Ni - 20Cr - 20Co - 5.8Mo - 2.2Ti - 0.45Al (Nimonic® Alloy 263),  
Consumable Electrode or Vacuum Induction Melted,  
2100 °F (1149 °C) Solution Heat Treated  
(Composition similar to UNS N07263)

## RATIONALE

AMS5886E is the result of a Five-Year Review and update of the specification. The revision updates the title to match the Scope and include the trade name (see 8.6), revises composition testing and reporting (see 3.1 and 3.1.1), updates bar from plate prohibition (see 4.4.3), adds forging stock ordering options (see 4.4.4 and 8.7), and clarifies the marking and exceptions requirements (see 3.6, 4.4.2, and 8.5).

## 1. SCOPE

### 1.1 Form

This specification covers a corrosion- and heat-resistant nickel alloy in the form of bars, forgings, flash-welded rings, and stock for forging or flash-welded rings.

1.1.1 This specification covers product 3.25 inches (82.6 mm) and under in nominal diameter or least distance between parallel sides and forging stock of any size.

### 1.2 Application

These products have been used typically for parts requiring high strength up to 1500 °F (816 °C) and oxidation resistance up to 2000 °F (1093 °C), particularly those parts which are formed or welded and then heat treated to develop required properties, 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.

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## 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), [www.sae.org](http://www.sae.org).

|         |                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMS2261 | Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Bars, Rods, and Wire                                                                                |
| AMS2269 | Chemical Check Analysis Limits, Nickel, Nickel Alloys, and Cobalt Alloys                                                                               |
| AMS2283 | Composition Testing Methods for Nickel- and Cobalt-Based 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                                                         |
| AMS2750 | Pyrometry                                                                                                                                              |
| AMS2806 | Identification, Bars, Wire, Mechanical Tubing, and Extrusions, Carbon and Alloy Steels and Corrosion and Heat-Resistant Steels and Alloys              |
| AMS2808 | Identification, Forgings                                                                                                                               |
| AMS7490 | Rings, Flash Welded, Corrosion and Heat-Resistant Austenitic Steels, Austenitic-Type Iron, Nickel or Cobalt Alloys, or Precipitation-Hardenable Alloys |
| AS7766  | Terms Used in Aerospace Metals Specifications                                                                                                          |

## 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 E10  | Brinell Hardness of Metallic Materials                                                                                                                                                        |
| ASTM E21  | Elevated Temperature Tests of Metallic Materials                                                                                                                                              |
| ASTM E139 | Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials                                                                                                               |
| ASTM E140 | Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness |

## 2.3 Definitions

Terms used in AMS are defined in AS7766.

### 3. TECHNICAL REQUIREMENTS

#### 3.1 Composition

Composition shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS2283 or by other analytical methods acceptable to the purchaser.

**Table 1 - Composition**

| Element             | Min       | Max   |
|---------------------|-----------|-------|
| Carbon              | 0.04      | 0.08  |
| Manganese           | --        | 0.60  |
| Silicon             | --        | 0.40  |
| Phosphorus          | --        | 0.015 |
| Sulfur              | --        | 0.007 |
| Chromium            | 19.00     | 21.00 |
| Cobalt              | 19.00     | 21.00 |
| Molybdenum          | 5.60      | 6.10  |
| Titanium            | 1.90      | 2.40  |
| Aluminum            | 0.30      | 0.60  |
| Titanium + Aluminum | 2.40      | 2.80  |
| Boron               | --        | 0.005 |
| Iron                | --        | 0.70  |
| Copper              | --        | 0.20  |
| Nickel              | remainder |       |

3.1.1 The producer may test for any element not listed in Table 1 and include this analysis in the report of 4.4. Reporting of any element not listed in the composition table is not a basis for rejection unless limits of acceptability are specified by the purchaser.

#### 3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2269.

#### 3.2 Melting Practice

The alloy shall be produced by multiple melting using consumable electrode practice in the remelt cycle or shall be induction melted under vacuum.

#### 3.3 Condition

The product shall be supplied in the following condition:

##### 3.3.1 Bars

Bars shall be solution heat treated and descaled.

3.3.1.1 Bars shall be hot rolled, cold rolled, or extruded and may be cold finished; round bars shall be ground or turned.

3.3.1.2 Bars shall not be cut from plate (see 4.4.3).

##### 3.3.2 Forgings and Flash-Welded Rings

Forgings and flash-welded rings shall be solution heat treated.

3.3.2.1 Flash-welded rings shall not be supplied unless specified or permitted on the purchaser's part drawing. When supplied, rings shall be manufactured in accordance with AMS7490.