



AEROSPACE MATERIAL SPECIFICATION

AMS5890**REV. F**

Issued	1976-07
Reaffirmed	2006-04
Revised	2009-07
Cancelled	2015-08

Superseding AMS5890E

Nickel, Corrosion and Heat-Resistant, Bars, Forgings, and Extrusions
Thoria Dispersion Strengthened
2.2ThO₂
Stress-Relieved
(Composition similar to UNS N03260)

RATIONALE

AMS5890F cancels this document. Because of the radioactive nature of this commodity, it is no longer in use in aerospace applications. The sheet version of this commodity, AMS5865, was cancelled in 2010.

CANCELLATION NOTICE

This Technical Report has been declared "CANCELLED" as of August 2015. By this action, this document will remain listed in the respective index, if applicable. Cancelled Technical Reports are available from SAE.

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1. SCOPE

1.1 Form

This specification covers thoria-dispersion-strengthened nickel powder metallurgy product in the form of bars, forgings, extrusions, and stock for forging or extruding.

1.2 Application

These products have been used typically for parts required to operate in the range 1800 to 2400 °F (982 to 1316 °C), but usage is not limited to such applications. A protective coating is required for operation at such temperatures. Fusion welding of structural members is not recommended but the product can be brazed and resistance welded satisfactorily.

1.3 Products covered by this specification are radioactive. Applicable rules and regulations pertaining to handling of radioactive material should be observed.

1.4 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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.

AMS2261	Tolerances, Nickel, Nickel Alloy, and Cobalt Alloy Bars, Rods, and Wire
AMS2269	Chemical Check Analysis Limits, Nickel, Nickel Alloys and Cobalt 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

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.

ASTM E 8/E 8M	Tension Testing of Metallic Materials
ASTM E 21	Elevated Temperature Tension Tests of Metallic Materials
ASTM E 139	Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials
ASTM E 292	Conducting Time-for-Rupture Notch Tension Tests of Materials
ASTM E 354	Chemical Analysis of High-Temperature, Electrical, Magnetic, and Other Similar Iron, Nickel, and Cobalt 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 354, by spectrochemical methods, or by other analytical methods acceptable to purchaser; the method of determining thorium (ThO_2) shall be acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Thorium	1.80	2.60
Carbon	--	0.02
Sulfur	--	0.00 25
Chromium	--	0.05
Cobalt	--	0.20
Titanium	--	0.05
Iron	--	0.05
Copper	--	0.15
Nickel	remainder	

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS2269 except that chromium, titanium, and iron shall each vary not more than 0.001 over maximum; permissible variation for thorium shall be 0.01 under minimum or over maximum.