AEROSPACE MATERIAL SPECIFICATION

AMS5830™	REV. D

Issued 1990-10
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Revised 2025-02

Superseding AMS5830C

Nickel-Iron Alloy, Corrosion- and Heat-Resistant, Welding Wire, Consumable Electrode Remelted or Vacuum Induction Melted, 12.5Cr - 42.5Ni - 6.0Mo - 2.7Ti - 0.015B - 35Fe (Alloy 901) (Composition similar to UNS N09901)

RATIONALE

AMS5830D is the result of a Five-Year Review and update of the specification. The revision updates the Title to include the common name and melt route, updates composition and reporting (see 3.1 and 3.1.2), removes the requirement for wire accessibility, allows the use of prior revisions (see 8.3), addresses trademarks (see 8.5), and prohibits unauthorized exceptions (see 3.8, 4.4.1, 5.3, and 8.4).

1. SCOPE

1.1 Form

This specification covers a corrosion- and heat-resistant nickel-iron alloy in the form of welding wire.

1.2 Application

This wire has been used typically as filler metal for electron beam, gas-tungsten-arc, or gas-metal-arc weld buildup of alloys of similar composition, 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 +1 724-776-4970 (outside USA), www.sae.org.

AMS2248 Chemical Check Analysis Limits, Corrosion- and Heat-Resistant Steels and Alloys, Maraging and Other Highly Alloyed Steels, and Iron Alloys

AMS2283 Composition Testing Methods for Nickel- and Cobalt-Based Alloys

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Full document details: SAE AMS5830D

AMS2371 Quality Assurance Sampling and Testing, Corrosion and Heat-Resistant Steels and Alloys, Wrought Products and Forging Stock

AMS2813 Packaging and Marking of Packages of Welding Wire, Standard Method

AMS2814 Packaging and Marking of Packages of Welding Wire, Premium Quality

AMS2816 Identification, Welding Wire, Tab Marking Method

AMS2819 Identification, Welding Wire, Direct Color Code System

ARP1876 Weldability Test for Weld Filler Metal Wire

ARP4926 Alloy Verification and Chemical Composition, Inspection of Welding Wire

AS7766 Terms Used in Aerospace Metals Specifications

2.2 Definitions:

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Composition

Wire 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	--	0.10
Manganese	--	1.00
Silicon	--	0.60
Phosphorus	--	0.015
Sulfur	--	0.010
Chromium	11.00	14.00
Nickel	40.00	45.00
Molybdenum	5.00	7.00
Titanium	2.35	3.10
Boron	0.010	0.020
Cobalt	--	1.00
Aluminum	--	0.35
Copper	--	0.50
Lead	--	0.0005 (5 ppm)
Bismuth	--	0.00003 (0.3 ppm)
Selenium	--	0.0003 (3 ppm)
Calcium	--	0.0010 (10 ppm)
Oxygen	--	0.0025 (25 ppm)
Nitrogen	--	0.0050 (50 ppm)
Hydrogen	--	0.0010 (10 ppm)
Iron	remainder	

3.1.1 Except for hydrogen, nitrogen, and oxygen, chemical analysis of initial ingot, bar, or rod stock before drawing is acceptable provided the processes used for drawing or rolling, annealing, and cleaning are controlled to ensure continued conformance to composition requirements. Hydrogen, nitrogen, and oxygen shall be determined at finished diameter.

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Full document details: SAE AMS5830D