AEROSPACE
MATERIAL SPECIFICATIONS
SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 5828

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Revised

ALLOY WIRE, WELDING, CORROSION AND HEAT RESISTANT
Nickel Base - 19.5Cr - 13.5Co - 4.3Mo - 3.0Ti - 1.4Al
Vacuum Induction Melted

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily for inert gas arc welding of precipitation hardenable nickel base alloys of similar composition.

3. COMPOSITION:

Carbon	0.04 - 0.10
Manganese	0.10 max
Silicon	0.10 max
Phosphorus	0.010 max
Sulfur	0.010 max
Chromium	18.00 - 21.00
Cobalt	12.00 - 15.00
Molybdenum	3.50 - 5.00
Titanium	2.75 - 3.50
Aluminum	1.20 - 1.60
Boron	0.003 - 0.010
Iron	2.00 max
Copper	0.10 max
Zirconium	0.04 max
Nickel	remainder

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2269; check analysis limit for zirconium shall be 0.01 over maximum.

4. CONDITION: Cold drawn, solution heat treated, bright finish, unless otherwise specified. Wire shall be furnished on disposable spools for machine welding and in cut lengths for manual welding.

4.1 Solution heat treatment and in-process annealing between cold rolling or drawing operations shall be performed in a suitable protective atmosphere.

4.2 Oxides, dirt, and drawing compounds shall be removed by cleaning processes which will neither result in pitting nor cause gas absorption by the wire or deposition of substances harmful to welding operations.

5. TECHNICAL REQUIREMENTS:

5.1 Welding: Melted wire shall flow smoothly and evenly during welding and shall be capable of producing acceptable welds.

5.2 Spooled Wire: Shall conform to the following unless otherwise agreed upon by purchaser and vendor.

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5.2.1 Cast: Wire shall have imparted to it a curvature such that a specimen 10 - 12 ft in length, when cut from the spool and suspended freely from its approximate midlength, shall form a circle not less than 20 in. and not greater than 36 in. in diameter (See Fig. 1). If the curvature of the wire results in a coil of more than 1-1/2 turns, the excess shall be clipped off and the wire resuspended from its new approximate midlength.

5.2.2 Helix: A specimen cut and suspended as in 5.2.1 and measured between adjacent turns shall show a separation not greater than 4 in. (See Fig. 1).

5.2.3 Layer Winding: Wire shall be closely wound in layers but adjacent turns within a layer need not necessarily be touching; shall be wound so as to avoid producing kinks, waves, and sharp bends; and shall be free to unwind without restriction caused by overlapping or wedging. The outside end of the spooled wire shall be so treated that it may be readily located.

5.3 Heat: Wire on each spool shall be of one continuous length from the same heat of material. Cut lengths in any one package shall be from the same heat of material.

6. QUALITY: Material shall be produced by vacuum induction melting; it may be remelted using consumable electrode vacuum process but remelting is not required. Wire shall be uniform in quality and condition, clean, sound smooth, and free from foreign materials and from internal and external imperfections detrimental to welding operations, operation of welding equipment, or properties of the deposited weld metal.

7. SIZES AND TOLERANCES: Unless otherwise specified, wire shall be supplied in the following sizes and to the tolerances shown:

7.1 Diameter:

Form	Nominal Diameter Inch	Tolerance, Inch plus	minus
Cut Lengths	0.030, 0.045, 0.062, 0.093, 0.125	0.003	0.003
Spools	0.062, 0.093	0.002	0.002
Spools	0.030, 0.035, 0.045	0.001	0.002
Spools	0.007, 0.010, 0.015, 0.020	0.0005	0.0005

7.2 Length: Cut lengths shall be furnished in 18, 27, or 36 in. lengths, as ordered, and shall not vary more than ± 1/4 in. from the length ordered.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment and a statement that the product conforms to the technical requirements of this specification. This report shall include the purchase order number, heat number, material specification number, nominal size, and quantity from each heat.