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

AMS 5812A

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STEEL WIRE, WELDING, CORROSION AND MODERATE HEAT RESISTANT
15Cr - 7.1Ni - 2.4Mo - 1Al
Vacuum Melted

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

2. APPLICATION: Primarily for use as filler metal for inert gas arc welding of critical weldments of precipitation hardening corrosion resistant steels of similar composition where the weld is required to have comparable strength and corrosion resistance to those of the base metal.

3. COMPOSITION:

Carbon	0.09 max
Manganese	1.00 max
Silicon	0.50 max
Phosphorus	0.010 max
Sulfur	0.010 max
Chromium	14.00 - 15.25
Nickel	6.50 - 7.75
Molybdenum	2.00 - 2.75
Aluminum	0.75 - 1.25
Oxygen	0.005 (50 ppm) max
Hydrogen	0.0025 (25 ppm) max

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2248.

4. CONDITION:

4.1 Unless otherwise specified wire shall be cold drawn, bright finish, as drawn temper. Wire shall be furnished on disposable spools for machine welding and in cut lengths for manual welding, as ordered.

4.2 Drawing compounds, oxides, and dirt shall be removed.

4.2.1 If pickling is necessary to remove surface contamination or scaling, only a light pickle shall be used and shall be followed by vacuum degassing.

5. TECHNICAL REQUIREMENTS:

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

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

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 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: Steel shall be produced by melting under vacuum using induction or consumable electrode practice. 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 and minus
Cut Lengths	0.030, 0.045, 0.062, 0.093, 0.125	0.003
Spools	0.030, 0.035, 0.045, 0.062, 0.093	0.001
Spools	0.005, 0.007, 0.010, 0.015, 0.020	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, material specification number, heat number, nominal size, and quantity from each heat.

8.2 Unless otherwise specified, when parts made of this wire or assemblies requiring the use of this welding wire are supplied, the part or assembly manufacturer shall inspect each lot of wire to determine conformance to this specification and shall furnish with each shipment three copies of a report stating that the wire conforms to the requirements of this specification. This report shall include the purchase order number, material specification number, part or assembly number, and quantity.

9. PACKAGING AND MARKING:

9.1 Cut Lengths: Shall be marked, cleaned, and packaged in accordance with the latest issue of AMS 2815, unless otherwise specified.

9.2 Spooled Wire:

9.2.1 Spools shall be of such materials and construction as to provide adequate strength and rigidity to prevent damage or distortion in normal handling and use and to insulate the wire from the spindle.

9.2.2 Unless otherwise specified, spool dimensions shall conform to the approximate dimensions shown in Figure 2. Barrel diameter B shall be such as to permit proper feeding of the wire.

9.2.3 Unless otherwise specified, wire shall be furnished on spools of approximately 2.5, 5, 10, or 25 lb net weight, as ordered; up to 20% of the net weight of any lot in the shipment may be on spools containing not less than 50% of the ordered spool net weight.

9.2.4 Unless otherwise specified, spooled wire shall be packaged in hermetically sealed containers with a desiccant or dry inert atmosphere.

9.2.5 Both sides of each spool and one end of each container shall be permanently and legibly marked with the following information; purchase order number will be required only on the container:

STEEL WIRE, WELDING
AMS 5812A
SIZE _____
QUANTITY _____
HEAT NUMBER _____
PURCHASE ORDER NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
AMS 2815 Code 2232

10. REJECTIONS: Wire not conforming to this specification or to authorized modifications will be subject to rejection.