

# AERONAUTICAL MATERIAL SPECIFICATIONS

## AMS 6461

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

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Revised

STEEL WIRE  
0.95Cr - 0.2V (0.28 - 0.33C) (SAE 6130)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for use as bare wire filler metal for inert gas shielded arc welding.
3. COMPOSITION:

Check Analysis  
Under Min or Over Max

Carbon	0.28 - 0.33	0.02	0.02
Manganese	0.70 - 0.90	0.03	0.03
Silicon	0.20 - 0.35	0.02	0.02
Phosphorus	0.005 max	--	0.002
Sulfur	0.007 max	--	0.002
Chromium	0.80 - 1.10	0.05	0.05
Vanadium	0.15 - 0.25	0.02	0.02

4. CONDITION:

- 4.1 Unless otherwise specified, wire shall be cold drawn. Wire shall be furnished on disposable spools for automatic welding and in straight cut lengths for manual welding operations, as ordered.
- 4.2 If copper coating is specified by purchaser, wire shall be copper flash coated and shall exhibit a thin, continuous, adherent copper coating.

5. TECHNICAL REQUIREMENTS:

- 5.1 Weldability: Melted wire shall flow smoothly and evenly during welding and shall be capable of producing acceptable welds.
- 5.2 Tensile Properties: Deposited weld metal shall be capable of meeting the following requirement:
  - 5.2.1 A single butt joint vee groove weld shall be made between two pieces of AMS 6350 plate 0.250 in. thick, which are chamfered to a 60 deg included angle. The weld metal shall be machined flush with the parent metal on both faces. After heat treating the parent metal to 180,000 psi min tensile strength, a tensile test specimen in accordance with ASTM E8-54T cut with the weld in the approximate center of the gage length and perpendicular to the longitudinal axis of the specimen, shall meet the following requirements:

Tensile Strength	90% min of parent metal
Through Welded Area	5 min
Elongation, % in 2 in.	

Section 7C of the SAE Technical Board rules provides that: "All technical reports including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

5.3 Spooled wire shall have a minimum tensile strength of 100,000 psi, unless otherwise agreed upon by purchaser and vendor.

6. QUALITY: Unless otherwise specified, steel shall be produced by melting under vacuum using induction or consumable electrode practice. Material shall be uniform in quality and condition, clean, sound, smooth, and free from drawing compounds, foreign materials, and internal and external imperfections detrimental to welding operations.

7. TOLERANCES: Unless otherwise specified, the following tolerances apply:

7.1 Diameter:

Form	Nominal Diameter, in.	Tolerance, in.	
		Plus	Minus
Straight Lengths	0.045, 0.062, 0.093, 0.125	0.003	0.003
Spools	0.020, 0.030, 0.045, 0.062	0.001	0.001

7.2 Length: Straight cut lengths shall not vary more than  $\pm 1/4$  in. from length ordered.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the wire shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment. This report shall include the purchase order number, heat number, material specification number, 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:

9.1 Packaging shall be accomplished in such a manner as to ensure that the wire, during shipment and storage, will be protected against mechanical injury and corrosion, and from contaminating substances detrimental to the welding operation.

9.2 Unless otherwise specified, straight wire shall be supplied in 36 in. lengths. Each length shall be identified as agreed upon by purchaser and vendor.

9.3 Unless otherwise specified, spooled wire shall be supplied in approximately 25 lb coils, produced by level thread winding or equivalent. The wire shall feed uniformly through the feed nozzle.