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

AMS 5821 A

Issued 7-15-61
Revised 1-15-63

STEEL WIRE, WELDING, CORROSION RESISTANT
12.5Cr (SAE 51410 Modified)
Special Grade

Section 8.3 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 agreement to adhere to any SAE standard or recommended practice, and 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."

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 material for welding corrosion resistant alloys of similar composition which have requirements for control of ferrite.

3. COMPOSITION:

Carbon	0.11 - 0.15
Manganese	0.60 max
Silicon	0.50 max
Phosphorus	0.025 max
Sulfur	0.025 max
Chromium	11.50 - 12.50
Nickel	0.75 max
Molybdenum	0.20 max
Aluminum	0.05 max
Copper	0.50 max
Tin	0.05 max
Nitrogen	0.08 max

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

4. CONDITION: Unless otherwise specified, cold drawn, annealed, descaled, and bright drawn. Wire shall be furnished on disposable spools for machine welding and in cut lengths for manual welding, as ordered.

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

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

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 Hardenability: Weld metal deposits approximately 1/4 in. in thickness deposited on AMS 5505 sheet shall be capable of attaining hardness of Rockwell C 39 - 44 or equivalent, when heated to 1700 F ± 10, held at heat for 1 hr, and cooled in still air, and then tempered twice at 600 F ± 10 for 2 hours. Cooling after each tempering operation shall be accomplished in still air.

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

SAENORM.COM : Click to view the full PDF of ams5821a

Copyright 1963 by Society of Automotive Engineers, Inc.
Printed in U. S. A.

5.3.1 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.

5.3.2 Helix: A specimen cut and suspended as in 5.3.1 and measured between adjacent turns shall show a separation not greater than 4 in. (See Fig. 1).

5.3.3 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.

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

6. QUALITY: Wire shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to its use for welding operations, operation of welding equipment, or properties of 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	0.045, 0.062, 0.093, 0.125, 0.156	0.003
Spools	0.030, 0.035, 0.045, 0.062, 0.093	0.001
Spools	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: 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, nominal size, and quantity from each heat.

8.1 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.

SAENORM.COM : Click to view the full PDF of ams5821a