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

AMS 5827

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Revised

WELDING ELECTRODES, COATED STEEL, CORROSION RESISTANT
16.9Cr - 4.8Ni - 0.2(Cb + Ta) - 3.5Cu

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

2. APPLICATION: Primarily for shielded metal-arc welding of parts fabricated from material of similar composition and particularly when the weld zone is required to have strength and corrosion resistance comparable to those of the parent metal.

3. COMPOSITION: Electrodes shall be capable of depositing weld metal of the following chemical composition:

Carbon	0.06 max
Manganese	1.00 max
Silicon	0.75 max
Phosphorus	0.04 max
Sulfur	0.03 max
Chromium	16.25 - 17.50
Nickel	4.25 - 5.25
Columbium + Tantalum	0.10 - 0.35
Copper	3.00 - 4.00

3.1 Weld Pads for Chemical Analysis: The referee procedure for making pads of weld metal and removing samples for chemical analysis shall be ASTM A298-55T, except that sample shall not be removed within 1/2 in. of the base plate, unless the base plate is similar in composition to the core wire, in which case sample may be removed from as close as 1/4 in. to the base plate.

4. TYPE:

4.1 Coating shall be suitable for all position use with the following current:

Type	Current
A	DC
B	DC - AC

4.1.1 When DC is specified, reverse polarity (electrode positive) is required.

4.2 Unless otherwise specified, Type A shall be supplied.

5. TECHNICAL REQUIREMENTS:

5.1 Weldability: Electrodes shall demonstrate good weldability and shall flow smoothly and evenly under the conditions specified in 4.1.

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5.2 Hardenability: Weld metal deposits approximately 1/4 in. in thickness deposited on AMS 5643 steel shall be capable of attaining hardness not lower than Rockwell C 38 or equivalent when solution heat treated by heating to 1900 F ± 25, holding at heat for not less than 1/2 hr, and cooling to below 90 F, and then precipitation heat treated by heating to 900 F ± 10, holding at heat for 1 hr, and air cooling.

5.3 Burn-Off: The coating shall be consumed uniformly on all sides and shall not burn back from the core wire under proper welding conditions. Heating of the electrode during welding shall not cause injurious blistering of the coating within the ranges of current values recommended by the manufacturer.

5.4 Grip Portion and Arc Ends: A portion of the electrode 0.75 - 1.25 in. long on end grip rods and 1.5 - 2 in. long on center grip rods shall be bare to permit good electrical contact with the electrode holder. The arc end of the electrodes shall be sufficiently bare to permit easy striking of the arc but the length of this bare section as measured from the end of the electrode to the point where the full cross-section of the coating begins shall not exceed the diameter of the bare wire, and in no case shall it exceed 1/8 inch.

5.5 Cleaning: Slag produced during welding shall be readily removable with hand tools.

6. QUALITY:

6.1 The core wire shall be uniform in quality and condition, clean, sound, and free from foreign materials and from imperfections detrimental to weld quality.

6.2 The coating shall be uniform in quality, tightly adherent, and free from abnormal scabs, blisters, pockmarks, bruises, and other surface imperfections and shall withstand normal handling without damage. It shall not be harmfully hygroscopic and shall not adversely affect weld quality.

7. STANDARD SIZES AND LENGTHS:

Nominal Diameter of Core Wire, Inch	Length, Inches
1/16, 5/64	9 and 18
3/32	9, 12, and 18
1/8, 5/32, 3/16, 1/4	14

7.1 Unless otherwise specified, center grip electrodes shall be supplied for 18 in. lengths and end grip electrodes for all other lengths.

8. TOLERANCES:

8.1 Unless otherwise specified, electrodes shall not vary in length more than ± 1/8 in. from the length ordered.

8.2 Electrode core wire shall not vary in diameter more than ± 0.003 in. from the size ordered.

8.3 Over-all diameter of the coated electrodes shall not vary more than 4% from that of the approved sample.

8.4 Coating shall be concentric with the core wire to the extent that the maximum core-plus-one coating dimension shall not exceed the minimum core-plus-one-coating dimension by more than 5% of the minimum core-plus-one-coating dimension.