

# AERONAUTICAL MATERIAL SPECIFICATIONS

AMS 5777

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Revised

## WELDING ELECTRODES, COATED, STEEL, CORROSION RESISTANT 12.5Cr

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: Primarily for welding corrosion resistant alloys of composition similar to that of the deposited metal.
3. COMPOSITION: Electrodes shall be capable of depositing weld metal of the following composition:

Carbon	0.12 max
Manganese	1.0 max
Silicon	1.0 max
Phosphorus	0.03 max
Sulfur	0.03 max
Chromium	11.5 - 13.5
Nickel	0.75 max
Molybdenum	0.50 max
Aluminum	0.05 max
Copper	0.50 max
Tin	0.05 max

- 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 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 B 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.

Section 7C of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. The use by anyone engaged in industry or trade is entirely voluntary. There is no obligation 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."

- 5.2 Hardenability: Weld metal deposits approximately 1/4 in. in thickness deposited on AMS 5504 sheet shall be capable of attaining hardness of Rockwell C 35 - 45 or equivalent when heated to 1750 F  $\pm$  15, held at heat for 15 - 30 min., and cooled in still air.
- 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: The following diameters and lengths are standard:

Nominal Diameter of Core Wire, Inch	Length, Inches
3/64	6
1/16, 5/64, 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  $\pm$  1/8 in. from the length ordered.
- 8.2 Electrode core wire shall not vary in diameter more than  $\pm$  0.002 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.