AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N. Y. 10017

AMS 5031A
Superseding AMS 5031
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WELDING ELECTRODES, COVERED, STEEL
0.07 - 0.15C

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 metal arc welding of low carbon steels.

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

	min	max
Carbon	0.07	0.15
Manganese	0.25	0.60
Silicon	0.15	0.50
Phosphorus	--	0.04
Sulfur	--	0.04
Copper	--	0.15

3.1 Ø Weld Pads for Chemical Analysis: The referee procedure for making pads of weld metal and removing samples for chemical analysis shall be in accordance with the issue of ASTM A233 listed in the latest issue of AMS 2350.

4. TYPE: Electrodes shall be suitable for welding in all positions using AC or using DC straight polarity (electrode negative).

5. TECHNICAL REQUIREMENTS:

5.1 Ø Tensile Properties: All-weld-metal tensile specimens, prepared in accordance with the issue of ASTM A233 listed in the latest issue of AMS 2350 and tested in the as-welded condition, shall conform to the following requirements.

Tensile Strength, psi	67,000 min
Yield Strength, 0.2% offset, psi	55,000 min
Elongation, % in 2 in.	17 min

5.2 Weldability: Electrodes shall demonstrate good weldability and shall flow smoothly and evenly under the conditions specified in Section 4.

5.3 Burn-Off: The covering 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 covering within the range of current values recommended by the manufacturer.

5.4 Grip Portion and Arc End: A portion of the electrode 0.75 - 1.25 in. long at one end shall be bare to permit good electrical contact with the electrode holder. The opposite, or arc, end of the electrode 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 covering 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 covering 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	9
5/64	9 or 12
3/32	12
1/8, 5/32, 3/16	14
7/32	14 or 18
1/4, 5/16	18

7.1 Unless otherwise specified, end grip electrodes shall be supplied.

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 ± 0.002 in. from the size ordered.

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

8.4 Covering shall be concentric with the core wire to the extent that the maximum core-plus-one-covering dimension shall not exceed the minimum core-plus-one-covering dimension by more than 3% of the minimum core-plus-one-covering dimension.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the requirements of this specification. This report shall include the purchase order number, material specification number, control number, size, and quantity. Control number shall be a designation indicating batch processing and core wire heat number. When requested by purchaser, the vendor shall also include in the report the composition of the deposited weld metal for each heat in the shipment.

9.2 Unless otherwise specified, when assemblies requiring use of these electrodes are supplied, the assembly manufacturer shall inspect each lot of electrodes to determine conformance to the requirements of this specification and shall furnish with each shipment three copies of a report stating that the electrodes conform to this specification. This report shall include the purchase order number, material specification number, part number, and quantity.

10. PACKAGING:

10.1 Packaging shall be accomplished in such a manner as to ensure that the electrodes, during shipment and storage, will be protected against mechanical injury, contamination, and exposure to moisture. Such packaging shall protect the covering from changes in moisture content of such magnitude as to impair use of the electrodes.