



AEROSPACE MATERIAL SPECIFICATION

AMS5031™**REV. G**

Issued	1959-06
Revised	1989-10
Noncurrent	1999-09
Reaf. Nonc.	2013-09
Stabilized	2017-10

Superseding AMS5031F

Welding Electrodes, Covered, Steel

0.07 - 0.15C

(Composition Similar to UNS W06013)

RATIONALE

AMS5031G has been stabilized as mature technology that has a similar specification.

STABILIZED NOTICE

AMS5031G has been declared "STABILIZED" by SAE AMS Committee E Carbon and Low Alloy Steels. This document will no longer be updated and may no longer represent standard industry practice. This document was stabilized because This document is mature state of the art and other documents contain similar but not necessarily equivalent requirements. Previously this document was reaffirmed non-current. The last technical update of this document occurred in October 1989. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification.

NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

AMS Committee E recommends that the following similar but not identical specifications may be considered for future procurement. This listing does not constitute authority to substitute these specifications for the "STABILIZED" specification.

AWS A5.1, Class E6013

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1. SCOPE:

1.1 Form:

This specification covers a low-carbon steel in the form of covered welding electrodes.

1.2 Application:

Primarily for use as filler metal for metal arc welding of low-carbon steels.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 Standards and Test Methods

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103.

ASTM E 8 Tension Testing of Metallic Materials

ASTM E 8M Tension Testing of Metallic Materials (Metric)

ASTM E 350 Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

2.3 U.S. Government Publications:

Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Specifications:

MIL-W-10430 Welding Rods and Electrodes, Preparation for Delivery of

2.4 AWS Publications:

Available from American Welding Society, P.O. Box 351040, Miami, FL 33135.

AWS A5.1 Mild Steel Covered Arc Welding Electrodes

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Weld metal deposited from electrodes shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E 350, by spectrochemical methods, or by other analytical methods acceptable to purchaser:

	min	max
Carbon	0.07	0.15
Manganese	0.25	0.60
Silicon	0.10	0.50
Phosphorus	--	0.04
Sulfur	--	0.04
Copper	--	0.15

3.1.1 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 AWS A5.1.

3.2 Type:

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

3.3 Properties:

Electrodes shall conform to the following requirements:

3.3.1 Tensile Properties: All-weld-metal tensile specimens, prepared in accordance with AWS A5.1 and tested in accordance with ASTM E 8 or ASTM E 8M in the as-welded condition, shall have the following properties:

Tensile Strength, minimum	67,000 psi	(462 MPa)
Yield Strength at 0.2% Offset, minimum	55,000 psi	(379 MPa)
Elongation in 2 Inches (50.8 mm) or 4D, minimum	17%	