AWS A5.5/A5.5M:2006
An American National Standard

Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding

American Welding Society

Approved American National Standard
ANSI

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Approved by the
American National Standards Institute
March 22, 2006

Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding

Supersedes ANSI/AWS A5.5-96

Prepared by the
American Welding Society (AWS) A5 Committee on Filler Metals and Allied Materials

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This specification prescribes the requirements for classification of low-alloy steel covered electrodes used for shielded metal arc welding. The requirements include chemical composition and mechanical properties of weld metal, weld metal soundness, usability tests of electrodes, and moisture tests of the low-hydrogen electrode covering. Requirements for standard sizes and lengths, marking, manufacturing, and packaging are also included.

Optional supplemental requirements include tests for absorbed moisture in the electrode covering and for diffusible hydrogen in the weld metal.

This specification makes use of both U.S. Customary Units and the International System of Units (SI). Since these are not equivalent, each system must be used independently of the other.

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1. Scope

1.1 This specification prescribes requirements for the classification of low-alloy steel electrodes for shielded metal arc welding of carbon and low-alloy steels. These electrodes include steel alloys in which no single alloying element exceeds 10.5 percent.

1.2 Safety and health issues and concerns are beyond the scope of this standard and, therefore, are not fully addressed herein. Some safety and health information can be found in Informative Annex Clauses A5 and A10. Safety and health information is available from other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

1.3 This specification makes use of both U.S. Customary Units and the International System of Units (SI). The measurements are not exact equivalents; therefore, each system must be used independently of the other without combining in any way when referring to material properties. The specification designated A5.5 uses U.S. Customary Units; and the specification designated A5.5M uses SI Units. The latter units are shown within brackets [ ] or in appropriate columns in tables and figures. Standard dimensions based on either system may be used for sizing of filler metal or packaging or both under A5.5 or A5.5M specification.

2. Normative References

2.1 The following standards contain provisions that, through reference in this text, constitute provisions of this AWS standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreement based on this AWS standard are encouraged to investigate the possibility of applying the most recent edition of the documents shown below. For undated references, the latest edition of the standard referred to applies.

2.2 The following AWS standards[1] are referenced in the normative sections of this document:

1. AWS A5.01, *Filler Metal Procurement Guidelines*
2. AWS A4.3, *Standard Methods for Determination of the Diffusible Hydrogen Content of Martensitic, Bainitic, and Ferritic Steel Weld Metal Produced by Arc Welding*
3. AWS A4.4M, *Standard Procedures for Determination of Moisture Content of Welding Fluxes and Welding Electrode Flux Coverings*
4. AWS B4.0 [B4.0M], *Standard Methods for Mechanical Testing of Welds*

2.3 The following ANSI standard[2] is referenced in the normative sections of this document:

1. ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

2.4 The following ASTM standards[3] are referenced in the normative sections of this document:

1. ASTM A 29/A 29M, *Standard Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, General Requirements for*
2. ASTM A 36/A 36M, *Standard Specification for Carbon Structural Steel*
3. ASTM A 203/A 203M, *Standard Specification for Pressure Vessel Plates, Alloy Steel, Nickel*
4. ASTM A 204/A 204M, *Standard Specification for Pressure Vessel Plates, Alloy Steel, Molybdenum*
5. ASTM A 283/A 283M, *Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates*

[1] AWS standards are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.
[2] This ANSI standard is published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.
[3] ASTM standards are published by the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.