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An American National Standard

Specification for Aluminum and Aluminum-Alloy Electrodes for Shielded Metal Arc Welding

American Welding Society

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Specification for Aluminum and Aluminum-Alloy Electrodes for Shielded Metal Arc Welding

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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 requirements for the classification of covered (flux coated) E1100, E3003, and E4043 aluminum-alloy electrodes for shielded metal arc welding. Tests conducted for classification are chemical analysis of the core wire as well as tensile and bend tests from groove weld test assemblies fabricated with each of two sizes of electrode for each classification. Standard electrode sizes, electrode identification, and chemical composition limits are specified.

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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Specification for Aluminum and Aluminum-Alloy Electrodes for Shielded Metal Arc Welding

1. Scope

This specification prescribes requirements for the classification of aluminum and aluminum-alloy electrodes for shielded metal arc welding.

Part A
General Requirements

2. Normative References

2.1 The following ANSI/AWS standards[1] are referenced in the mandatory sections of this document:

(1) ANSI/AWS A5.01, *Filler Metal Procurement Guidelines*.

(2) ANSI/AWS B4.0, *Standard Methods for Mechanical Testing of Welds*.

2.2 The following ASTM standards[2] are referenced in the mandatory sections of this document:

(1) ASTM E 29, *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*.

(2) ASTM E 34, *Standard Methods for Chemical Analysis of Aluminum and Aluminum Alloys*.

(3) ASTM B 209, *Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate*.

2.3 The following ISO standard[3] is referenced in the mandatory sections of this document:

(1) ISO 544, *Filler Materials for Manual Welding—Size Requirements*.

3. Classification

3.1 The electrodes covered by the A5.3/A5.3M specification are classified using a system that is independent of U.S. Customary Units and the International System of Units (SI). Classification is according to the chemical composition of the core wire, as specified in Table 1, and mechanical properties of a groove weld.

3.2 An electrode classified under one classification shall not be classified under any other classification in this specification.

4. Acceptance

Acceptance[4] of the electrode shall be in accordance with the provisions of ANSI/AWS A5.01, *Filler Metal Procurement Guidelines*.

5. Certification

By affixing the AWS specification and classification designations to the packaging, or the classification to the

[1] AWS Standards are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

[2] ASTM Standards are published by the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

[3] ISO Standards are published by the American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036.

[4] See Section A3, Acceptance (in Annex A) for further information concerning acceptance, testing of the material shipped, and ANSI/AWS A5.01, *Filler Metal Procurement Guidelines*.