AWS A5.13/A5.13M:2010
An American National Standard

Specification for Surfacing Electrodes for Shielded Metal Arc Welding

American Welding Society

Approved American National Standard
ANSI

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Specification for Surfacing 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 the requirements for classification of surfacing electrodes for shielded metal arc welding. Classification is based upon the chemical composition of the deposited weld metal except for tungsten carbide electrodes where classification is based on the mesh range, quantity, and composition of the tungsten carbide granules. A guide is appended to the specification as a source of information as to the characteristics and applications of the classified electrodes.

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Foreword

This foreword is not part of AWS A5.13/A5.13M:2010, *Specification for Surfacing Electrodes for Shielded Metal Arc Welding*, but is included for informational purposes only.

The first AWS specification for surfacing filler metals was published in 1956 as a joint ASTM/AWS specification. It was the first of what would later become a two-set series, A5.13 and A5.21.

The composite electrodes and rods classifications were removed from the 1970 revision of A5.13 and placed into a new specification, A5.21. A5.13–70 specification contained requirements for both covered and bare electrodes or rods employing solid core only. This distinction was maintained for the 1980 revision of A5.13.

The revisions of both A5.13:2000 and A5.21:2001 incorporated a totally different scope. The method of manufacture of the core of the electrode or rod was no longer a factor in determining placement of a classification. Instead, the covered electrode products were classified under AWS A5.13:2000 and the bare electrode products under AWS A5.21:2001.

This document is the first of the A5.13 specifications which 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 values in any way. In selecting rational metric units, ANSI/AWS A1.1, *Metric Practice Guide for the Welding Industry*, and ISO 544 *Welding consumables – Technical delivery conditions for welding filler materials – Type of product, dimensions, tolerances and marking*, are used where suitable. Tables and figures make use of both the U.S. Customary and SI Units, which, with the application of the specified tolerances, provides for interchangeability of products in both the U.S. Customary and SI Units.

Rounding-off Procedure has been revised in this edition. Detailed general safety information in Clause A9 has been replaced by Safety and Health Fact Sheets. Such substantive changes are shown in Italic font in this specification.

The historical evolution of the specification is:

ASTM A 399-56T AWS A5.13-56T	*Tentative Specification for Surfacing Welding Rods and Electrodes*
AWS A5.13-70 ANSI W3.13-73	*Specification for Surfacing Welding Rods and Electrodes*
ANSI/AWS A5.13-80	*Specification for Solid Surfacing Welding Rods and Electrodes*
AWS A5.13:2000	*Specification for Surfacing Electrodes for Shielded Metal Arc Welding*

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS A5 Committee on Filler Metals and Allied Materials, American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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Specification for Surfacing Electrodes for Shielded Metal Arc Welding

1. Scope

1.1 This specification prescribes requirements for the classification of surfacing electrodes for shielded metal arc welding. Solid bare electrodes and rods for surfacing are classified in AWS A5.21:2001, *Specification for Bare Electrodes and Rods for Surfacing* (see Clause A8 in Annex A).

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 Clauses A5 and A9 in Annex A. 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 with the designation A5.13 uses the U.S. Customary Units. The specification A5.13M uses the SI Units. The latter 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 A5.13 or A5.13M specifications.

2. Referenced Documents

The following documents are referenced within this publication. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.

2.1 AWS standards[1]

(1) AWS A5.01M/A5.01(ISO 14344), *Procurement Guidelines for Consumables – Welding and Allied Processes – Flux and Gas Shielded Electrical Welding Processes*

(2) AWS A3.0, *Standard Welding Terms and Definitions*

(3) AWS F3.2, *Ventilation Guide for Weld Fume*

2.2 ANSI standard[2]

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

2.3 ASTM standards[3]

(1) ASTM A 36/A 36M, *Standard Specification for Carbon Structural Steels*

(2) ASTM A 285/A 285M, Standard *Specification for Pressure Vessel Plates, Carbon Steel, Low-and Intermediate-Tensile Strength*

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[1] AWS Standards are published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.
[2] ANSI Z49.1 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.