AWS A5.39/A5.39M:2020
An American National Standard

Specification for Flux and Electrode Combinations for Submerged Arc and Electroslag Joining and Surfacing of Stainless Steel and Nickel Alloys

American Welding Society®

Approved American National Standard
ANSI

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Approved by the
American National Standards Institute
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Specification for Flux and Electrode Combinations for Submerged Arc and Electroslag Joining and Surfacing of Stainless Steel and Nickel Alloys

1st Edition

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 the classification of flux-electrode combinations used with submerged arc or electroslag joining or surfacing using stainless steel and nickel alloys. Electrode classification is per AWS A5.9/A5.9M for solid and stranded stainless steel electrodes, A5.14/A5.14M for solid and stranded nickel-alloy electrodes, A5.22/A5.22M for cored stainless steel electrodes and A5.34/A5.34M for cored nickel-alloy electrodes. Flux-electrode joining classification is based on the mechanical properties and the composition of weld metal produced with the flux and a specific electrode. Flux-electrode surfacing classification is based on the composition of the weld metal produced with the flux and a specific electrode. The form and usability of the flux are also included. A guide is appended to the specification as a source of information concerning the classification system employed and the intended use of submerged arc and electroslag fluxes and electrodes.

This specification makes use of both US 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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Foreword

This foreword is not part of this standard, but is included for informational purposes only.

This document is the first edition of the A5.39/A5.39M specification. It makes use of both US 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, AWS A1.1, *Metric Practice Guide for the Welding Industry*, and ISO 544, *Welding Consumables—Technical Delivery Condition for Filler Materials and Fluxes—Type of Products, Dimensions, Tolerances and Markings*, are used where suitable.

NOTE: The user's attention is called to the possibility that compliance with this standard may require use of an invention covered by patent rights.

By publication of this standard, no position is taken with respect to the validity of any such claim(s) or of any patent rights in connection therewith. If a patent holder has filed a statement of willingness to grant a license under these rights on reasonable and nondiscriminatory terms and conditions to applicants desiring to obtain such a license, then details may be obtained from the standards developer.

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, 8669 NW 36 St # 130, Miami, FL 33166.

The welding terms used in this specification shall be interpreted in accordance with the definitions given in the latest edition of AWS A3.0M/A3.0, *Standard Welding Terms and Definitions including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying*, unless specifically defined in this standard.

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1. Scope

1.1 This specification prescribes requirements for the classification of flux-electrode combinations using submerged arc or electroslag welding. Flux-electrode joining classifications include requirements for soundness, mechanical properties and weld metal composition. Flux-electrode cladding classifications include requirements for soundness and weld metal composition. Electrode classification is per AWS A5.9/A5.9M for solid and stranded stainless steel electrodes, A5.14/A5.14M for solid and stranded nickel-alloy electrodes, A5.22/A5.22M for cored stainless steel electrodes and A5.34/A5.34M for cored nickel-alloy electrodes.

1.2 This specification makes use of both US 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 weld metal properties. The specification with the designation A5.39 uses US Customary Units. The specification with the designation A5.39M uses 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 the sizing of electrodes or packaging or both under specification A5.39 or A5.39M.

1.3 Safety and health issues and concerns are beyond the scope of this standard; some safety and health information is provided, but such issues are not fully addressed herein. Some safety and health information can be found in the nonmandatory annex, Clauses B5 and B10.

Safety and Health information is available from the following sources:

American Welding Society:

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

(2) AWS Safety and Health Fact Sheets

(3) Other safety and health information on AWS website

Material or Equipment Manufacturers:

(1) Safety Data Sheets supplied by material manufacturers

(2) Operating Manuals supplied by equipment manufacturers

Applicable federal and state regulations:

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.