


AWS A5.02/A5.02M:2007
An American National Standard



Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes



American Welding Society



second printing, April 2008



**AWS A5.02/A5.02M:2007
An American National Standard**

**Approved by the
American National Standards Institute
November 6, 2006**

Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes

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 standard sizes and packages of all types of welding filler metals, allowing these physical attributes to be incorporated by reference into the individual specification. The annex lists the manner by which the filler metal specification may refer to appropriate requirements in this specification.

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.



American Welding Society

550 N.W. LeJeune Road, Miami, FL 33126

Foreword

This foreword is not part of AWS A5.02/A5.02M:2007, *Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes*, but is included for informational purposes only.

This specification incorporates the provisions which historically have appeared in previous filler metal specifications. It takes into account the requirements of ISO 544, *Welding consumables — Technical delivery conditions for welding filler materials — Type of product, dimensions, tolerances and markings*.

This document 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, 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 markings*, are used where suitable. Tables and figures make use of both 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.

This document is the first edition of A5.02/A5.02M:2007.

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.

Erratum

The following Erratum has been identified and incorporated into the current reprint of this document.

Page 3, left hand column: Change subclause numbers 4.2.1 and 4.2.2 to 4.1.1 and 4.1.2, respectively. Corrected subclause numbers are shown in italic font on page 3.

Table of Contents

	Page No.
<i>Personnel</i>	v
<i>Foreword</i>	vii
<i>List of Tables</i>	x
<i>List of Figures</i>	x
1. Scope	1
2. Normative References	1
3. Covered Electrodes	1
3.1 Standard Sizes and Lengths.....	1
3.2 Core Wire and Covering.....	1
3.3 Exposed Core.....	2
3.4 Electrode Identification.....	2
3.5 Packaging.....	2
3.6 Marking of Packages.....	3
4. Bare Solid and Tubular Electrodes and Rods	3
4.1 Standard Sizes and Shapes.....	3
4.2 Finish and Uniformity.....	3
4.3 Packaging.....	3
4.4 Winding Requirements.....	6
4.5 Filler Metal Identification.....	6
4.6 Marking of Packages.....	8
Annex A (Informative)—Guide to AWS Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes.....	11
Annex B (Informative)—Guidelines for the Preparation of Technical Inquiries.....	13
AWS Filler Metal Specifications by Material and Welding Process.....	15
AWS Filler Metal Specifications and Related Documents.....	17

List of Tables

Table		Page No.
1	Standard Sizes and Lengths of Covered Electrodes.....	2
2	Standard Sizes and Tolerances of Solid and Tubular Bare Wires	4
3	Standard Sizes of Strip Electrodes	5
4	Standard Packages.....	5

List of Figures

Figure		Page No.
1A	Dimensions of 4 in, 8 in, 12 in, and 14 in [100 mm, 200 mm, 300 mm, and 350 mm] Standard Spools.....	6
1B	Dimensions of 22 in, 24 in, and 30 in [560 mm, 610 mm, and 760 mm] Standards Spools (Reels).....	7
1C	Dimensions of 13-1/2 in [340 mm] Standard Spools (for Al and Mg Alloys Only)	8
1D	Dimensions of Basket Rims and Basket Spools	9

Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes

1. Scope

1.1 This specification prescribes requirements for standard sizes and packages of welding filler metals and their physical attributes, such as product appearance and identification.

1.2 This specification applies to covered electrodes with both solid and tubular core wires; bare solid and tubular wires on spools, coils, and drums, or in straight lengths; and solid and sintered strip electrodes. It applies to all fusion welding processes, except brazing, braze welding, and thermal spraying, or granular metallic or mineral products, such as submerged arc fluxes, or other such products used in fusion welding processes.

1.3 Safety and health issues and concerns are beyond the scope of this standard and are, therefore, not fully addressed herein. 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.

1.4 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. The specification with the designation A5.02 uses U.S. Customary Units. The specification A5.02M 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 sizing of filler metal or packaging.

2. Normative References

The following ANSI¹ standard is referenced in the normative sections of this document.

¹ ANSI Z49.1 is published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

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

The following ISO² standard is referenced in the mandatory sections of this document.

1. ISO 544 *Welding consumables — Technical delivery conditions for welding filler materials — Type of product, dimensions, tolerances and markings*.

3. Covered Electrodes

3.1 Standard Sizes and Lengths. Standard sizes (diameter of the core wire) and lengths of electrodes are shown in Table 1.

3.1.1 The diameter of the core wire shall not vary more than ± 0.002 in [± 0.05 mm] from the diameter specified. The length shall not vary more than $\pm 1/4$ [± 10 mm] from that specified.

3.2 Core Wire and Covering. The core wire and covering shall be free of defects that would interfere with the uniform deposition of the electrode. The core and covering shall be concentric to the extent that the maximum core-plus-one-covering dimension shall not exceed the minimum core-plus-one-covering dimension by more than:

1. 7% of the mean dimension in sizes of 3/32 in [2.5 mm] and smaller,

2. 5% of the mean dimension in sizes larger than 3/32 in [2.5 mm] and smaller than 3/16 in [5 mm], and

3. 4% of the mean dimension in sizes 3/16 in [5 mm] and larger.

Concentricity may be measured by any suitable means.

² ISO standards are published by the International Organization for Standardization, 1, rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland.