

**AWS A5.12M/A5.12:2024
(ISO 6848:2015 MOD)
An American National Standard**

Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting



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An American National Standard**

**Approved by the
American National Standards Institute
October 26, 2023**

Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting

8th Edition

Revises AWS A5.12M/A5.12:2009 (ISO 6848:2004 MOD)

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 *pure* tungsten and oxide dispersed tungsten electrodes for gas tungsten arc welding and plasma arc welding and cutting. Classification is based upon the chemical composition of the electrode. Standard sizes, finish, lengths, quantities, product identification, color coding, and chemical composition limits are specified. This specification adopts the requirements of ISO 6848:2015 and incorporates the provisions of earlier versions of AWS A5.12.



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This standard is subject to revision at any time by the AWS A5 Committee on Filler Metals and Allied Materials. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn. Comments (recommendations, additions, or deletions) and any pertinent data that may be of use in improving this standard are requested and should be addressed to AWS Headquarters. Such comments will receive careful consideration by the AWS A5 Committee on Filler Metals and Allied Materials and the author of the comments will be informed of the Committee's response to the comments. Guests are invited to attend all meetings of the AWS A5 Committee on Filler Metals and Allied Materials to express their comments verbally. Procedures for appeal of an adverse decision concerning all such comments are provided in the Rules of Operation of the Technical Activities Committee. A copy of these Rules can be obtained from the American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

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Foreword

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

This document is the second AWS adoption of ISO 6848, *Arc welding and cutting – Nonconsumable tungsten electrodes – Classification*. With its insertion of references and additional informative annexes it replaces AWS A5.12M/A5.12:2009 (ISO 6848:2004 MOD), *Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting*. The “MOD” in the designation of this document shows that this is a modified adoption of the ISO document. Significant changes are listed in Annex D.

Please note that ISO uses commas (,) and AWS uses periods (.) for decimals. The ISO decimal commas have been replaced by periods in this document for consistency.

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.

Document Development

The current document is the seventh revision of the initial AWS/ASTM document issued in 1955. The evolution took place as follows:

ASTM B297-55T AWS A5.12-55T	<i>Tentative Specifications for Tungsten Arc-Welding Electrodes</i>
ASTM B297-65T AWS A5.12-65T	<i>Tentative Specifications for Tungsten Arc-Welding Electrodes</i>
AWS A5.12-69	<i>Specification for Tungsten Arc-Welding Electrodes</i>
AWS A5.12-80	<i>Specification for Tungsten Arc Welding Electrodes</i>
ANSI/AWS A5.12-92	<i>Specification for Tungsten and Tungsten Alloy Electrodes for Arc Welding and Cutting</i>
ANSI/AWS A5.12/A5.12M-98	<i>Specification for Tungsten and Tungsten Alloy Electrodes for Arc Welding and Cutting</i>
ANSI/AWS A5.12/A5.12M-98 (R2007)	<i>Specification for Tungsten and Tungsten Alloy Electrodes for Arc Welding and Cutting</i>
AWS A5.12M/A5.12:2009 (ISO 6848:2004 MOD)	<i>Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting</i>
AWS A5.12M/A5.12:2024 (ISO 6848:2015 MOD)	<i>Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting</i>

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.

All errata to a standard shall be published in the *Welding Journal* and posted on the AWS website.

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Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting

1. Scope

1.1 This standard prescribes requirements for the classification of nonconsumable tungsten electrodes for inert gas shielded arc welding, and for plasma welding, cutting, and thermal spraying.

1.2 This specification makes use of both the International System of Units (SI) and U.S. Customary Units. 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 A5.12M uses SI Units; and the specification designated A5.12 uses U.S. Customary 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 tungsten electrodes or packaging or both under A5.12M or A5.12 specification.

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 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 the AWS website

Material or Equipment Manufacturers:

- (1) Safety Data Sheets supplied by materials manufacturers
- (2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies.

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.

2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, the publications may not apply since the relevant requirements may have changed.