

AWS A5.12M/A5.12:2009
(ISO 6848:2004 MOD)
An American National Standard

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



American Welding Society



**AWS A5.12M/A5.12:2009 (ISO 6848:2004 MOD)
An American National Standard**

**Approved by the
American National Standards Institute
April 17, 2009**

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

7th Edition

Supersedes ANSI/AWS A5.12/A5.12M-98

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 bare tungsten and *oxide dispersed tungsten* electrodes for gas tungsten arc welding and cutting 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 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.

This specification adopts the requirements of ISO 6848:2004 and incorporates the provisions of earlier versions of AWS A5.12, allowing for classifications under both specifications.



American Welding Society

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Foreword

This foreword is not part of AWS A5.12M/A5.12:2009 (ISO 6848:2004 MOD), *Specification for Tungsten and Oxide Dispersed Tungsten Electrodes for Arc Welding and Cutting*, but is included for informational purposes only.

This document is the first AWS adoption of ISO 6848:2004, *Arc welding and cutting — Nonconsumable tungsten electrodes — Classification*. With its insertion of references and additional informative annexes it replaces ANSI/AWS A5.12/A5.12M-98, *Specification for Tungsten and Tungsten-Alloy 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. All changes are listed in Annex D. The modifications to ISO 6848:2004 are shown in *Italic* font.

Color code for classification EWCe-2 has been changed from orange to grey. Color code for classification EWG used to be grey, but now the manufacturer may select any color for this classification not already in use.

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.

Document Development

The current document is the sixth 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>
ANSI/AWS A5.12-69 W3.12-73	<i>Specification for Tungsten Arc-Welding Electrodes</i>
ANSI/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>

Attention is drawn to the possibility that some of the elements of this part of ISO 6848 may be the subject of patent rights. AWS and ISO shall not be held responsible for identifying any or all such patent rights.

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 tungsten and *oxide dispersed tungsten* electrodes for arc welding and cutting

1 Scope

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

This specification makes use of both International System of Units (SI) and the 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 later 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.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.1 The following AWS standard¹ is referenced in the mandatory sections of this document:

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

2.2 The following ANSI standard² is referenced in the mandatory sections of this document:

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

2.3 The following ASTM standards³ are referenced in the mandatory sections of this document:

ASTM E 29, Standard Practice for using Significant Digits in Test Data to Determine Conformance with Specifications

ASTM F 288, Standard Specification for Tungsten Wire for Electron Devices and Lamps

2.4 The following ISO standard⁴ is referenced in the mandatory sections of this document:

ISO 31-0:1992, Quantities and units — Part 0: General principles; and Annex B, Rule A

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

² This ANSI standard 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.

⁴ ISO standards are published by the International Organization for Standardization, 1, rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland.