

**AWS A5.32M/A5.32:2021
(ISO 14175:2008 MOD)
An American National Standard**

Welding Consumables— Gases and Gas Mixtures for Fusion Welding and Allied Processes



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(ISO 14175:2008 MOD)
An American National Standard**

**Approved by the
American National Standards Institute
March 22, 2021**

**Welding Consumables—Gases
and Gas Mixtures for Fusion
Welding and Allied Processes**

3rd Edition

Revises AWS A5.32M/A5.32:2011 (ISO 14175:2008 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 standard prescribes the requirements for the classification of gases and gas mixtures used in fusion welding and allied processes to chemically shield filler material, base metal, or weld metal. Classification is based on chemical composition of the more popular single and multi-component gases. Additional requirements are included for purity and moisture of individual gas components, testing, re-testing, packaging, and cylinder or container labeling. An annex is appended to the standard as a source of information concerning the classification system and the intended use of the gases and gas mixtures.

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.



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Foreword

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

This is the second edition of this specification with modified adoption of ISO 14175:2008, *Welding Consumables — Gases and Gas Mixtures for Fusion Welding and Allied Processes*.

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*, is used where suitable. Tables and figures make use of both U.S. Customary and SI Units, which with the application of the specified tolerances provide for interchangeability of products in both the U.S. Customary and SI Units.

With this revision, additional explanation has been provided on inert, oxidizing, reducing, and reactive gases. A low-moisture optional supplemental designator has been added, and the pure gas designation has been simplified.

ISO uses comma (,) for decimal, but AWS uses period (.) for decimal. Decimal commas have been changed to decimal periods.

This specification developed as below:

ANSI/AWS A5.32/A5.32M-97 *Specification for Welding Shielding Gases*

ANSI/AWS A5.32/A5.32M-97R *Specification for Welding Shielding Gases*

AWS A5.32M/A5.32:2011 *Welding Consumables—Gases and Gas Mixtures for Fusion Welding and Allied Processes*
(ISO 14175:2008 MOD)

Table of Contents

	Page No.
<i>Personnel</i>	v
<i>Foreword</i>	vii
<i>List of Tables</i>	x
1. Scope	1
2. Normative References	2
3. Terms and Definitions	2
4. Properties of Gases	3
5. Classification and Designation	3
5.1 Classification	3
5.2 Designation	4
6. Optional Supplemental Designator for Low Moisture Content	5
7. Tolerances of Mixtures	5
8. Purities and Dew Point	5
9. Testing	6
10. Retesting	6
11. Marking	6
12. Rounding Procedure	7
13. Certification	7
14. Cylinder Residual Gases	7
15. Packaging	7
Annex A (Informative)—Guide to <i>Welding Consumables—Gases and Gas Mixture for Fusion Welding and Allied Processes</i>	13
Annex B (Informative)—Requesting an Official Interpretation on an AWS Standard	21
Annex C (Informative)—List of Deviations from ISO 14175:2008	23
AWS Filler Metal Specifications by Material and Welding Process	25
AWS Filler Metal Specifications and Related Documents	27

List of Tables

Table		Page No.
1	Properties of Gases.....	8
2	Classification of Gases for Fusion Welding and Allied Processes.....	9
3	<i>Maximum Moisture Contents for Optional Supplemental Designator (P) for Low Moisture Content</i>	10
4	Mixture Tolerances.....	10
5	Minimum Requirements on Purities and Moisture Contents of Gases and Gas Mixtures	10
6	Dew Point Conversion Chart.....	11

Welding Consumables—Gases and Gas Mixtures for Fusion Welding and Allied Processes

1. Scope

1.1 This standard specifies requirements for the classification of gases and gas mixtures that chemically shield or chemically react with the filler material, base metal, and weld metal, and are used in fusion welding and allied processes including, but not limited to:

- (1) gas tungsten arc welding—GTAW
- (2) gas metal arc welding—GMAW
- (3) flux cored arc welding—FCAW
- (4) plasma arc welding—PAW
- (5) plasma arc cutting—PAC
- (6) *plasma arc gouging—PAG*
- (7) laser beam welding—LBW
- (8) laser beam cutting—LBC
- (9) arc braze welding—ABW
- (10) electrogas welding—EGW

The purpose of this standard is to classify and designate these gases and gas mixtures in accordance with their chemical properties and metallurgical behavior as the basis for correct selection by the user and to simplify the possible qualification procedures. The modes of application for gas shielded welding processes include, but are not limited to: manual, semi-automatic, mechanized, and automatic weld methods.

Gas purities and mixing tolerances are specified as delivered by the supplier (manufacturer) and not at the point of use.

Gases or gas mixtures may be supplied in either liquid or gaseous form, but when used for welding and allied processes, the gases are always used in the gaseous form.

Fuel gases, such as acetylene, natural gas, propane, etc., and resonator gases, as used in gas lasers, are not covered by this standard.

Transportation and handling of gases and containers shall be in accordance with local, national, and regional standards and regulations as required.

1.2 The gases covered by this specification are classified using a system that is independent of U.S. Customary Units and the International System of Units (SI). Classification is according to the composition of the gas or gas mixture.

1.3 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 Annex Clauses A5 and A8.

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