

**AWS A5.01M/A5.01:2008
(ISO 14344:2002 MOD)
An American National Standard**



Procurement Guidelines for Consumables— Welding and Allied Processes—Flux and Gas Shielded Electrical Welding Processes



American Welding Society



**AWS A5.01M/A5.01:2008 (ISO 14344:2002 MOD)
An American National Standard**

**Approved by the
American National Standards Institute
April 4, 2008**

**Procurement Guidelines for
Consumables—Welding and Allied
Processes—Flux and Gas Shielded
Electrical Welding Processes**

4th Edition

Supersedes ANSI/AWS A5.01-93

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 document provides a means by which the information needed for the procurement of welding consumables to an AWS filler metal specification can be stated clearly, concisely, and completely. It includes a method by which the heat, lot, testing, and certification requirements that are essential to so many of today's welding applications can be specified in the procurement document. 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

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Foreword

This foreword is not part of AWS A5.01M/A5.01:2008 (ISO 14344:2002 MOD), *Procurement Guidelines for Consumables—Welding and Allied Processes—Flux and Gas Shielded Electrical Welding Processes*, but is included for informational purposes only.

This AWS A5.01M/A5.01 standard is a modified adoption of International Standard ISO 14344:2002, *Procurement guidelines for consumables — Welding and allied processes — Flux and gas shielded electrical welding processes*. This standard contains certain modifications due to national requirements and the particular needs of the existing AWS filler metal specifications. These technical deviations and additional information have been added directly to the clauses to which they refer. A complete list of modifications, together with their justification, is given in Annex E.

This document is the first of the AWS A5.01 specifications which allows the use of both U.S. Customary Units and the International System of Units (SI). The choice of units shall be based on the referenced classification standard.

This document provides a method for specifying in the purchase order the information necessary for the procurement of welding filler metals to an AWS specification. The current document is the third revision of the initial AWS document issued in 1978.

The initial version of this document, published in 1978, was the result of work by a task group appointed by the Committee on Filler Metals. The 1993 revision was prepared by a permanent subcommittee (Subcommittee on Filler Metal Procurement Guidelines) which has continued to review specifications in accordance with guidelines of the American National Standards Institute. The evolution took place as follows:

AWS A5.01-78 *Filler Metal Procurement Guidelines*
ANSI/AWS A5.01-87 *Filler Metal Procurement Guidelines*
ANSI/AWS A5.01-93 *Filler Metal Procurement Guidelines*

Use of the method described in this document can aid in procuring the required welding materials. With it, the applicable details are completely described in the purchase order using standard terms, thereby avoiding delays caused by incomplete or incorrect filler metal descriptions and testing requirements.

Attention is drawn to the possibility that some of the elements of this standard 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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Procurement guidelines for consumables — Welding and allied processes — Flux and gas shielded electrical welding processes

1 Scope

This standard is a tool for communication between a purchaser and a supplier of welding consumables within quality systems as might, for example, be based upon ISO 9001. This standard, together with an AWS, ISO, or other recognized welding consumable standard, provides a method for preparing those specific details needed for welding consumable procurement which consist of the following:

- a) the welding consumable classification (selected from the pertinent AWS, ISO, or other welding consumable standard);
- b) the lot classification (selected from Clause 5 of this standard);
- c) the testing schedule (selected from Clause 6 of this standard).

Selection of the specific welding consumable classification, lot classification and testing schedule will depend upon the requirements of the application for which the welding consumable is being procured.

2 Normative references

The following normative documents contain provisions which, through references in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest editions of the normative documents referred to apply. Members of ISO and IEC maintain registers of currently valid International Standards.

2.1 The following AWS standard is referenced in the mandatory section of this document:

AWS A5.02/A5.02M¹, *Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes*

2.2 The following ASTM standard² is referenced in the mandatory section of this document:

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

2.3 The following ISO standard is referenced in the mandatory section of this document:

ISO 544³, *Welding consumables — Technical delivery conditions for welding filler materials — Type of product, dimensions, tolerances and markings*

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

² ASTM standards are published by the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

³ ISO standards are published by the International Organization for Standardization, 1 rue de Varembé, Case postale 56, CH-1211 Geneva 20, Switzerland.

3 Terms and definitions

In production, the components of welding consumables are divided into discrete, predetermined quantities so that satisfactory tests with a sample from that quantity will establish that the entire quantity meets specification requirements. These quantities, known by such terms as heats, lots, blends, batches and mixes, vary in size according to the manufacturer. For identification purposes, each manufacturer assigns a unique designation to each quantity. This designation usually consists of a series of numbers or letters, or combinations thereof, which will enable the manufacturer to determine the date and time (or shift) of manufacture, the type and source of the raw materials used, and the details of the procedures used in producing the welding consumable. This designation stays with the welding consumable and can be used to identify the material later, in those cases in which identification is necessary.

For the purposes of this standard, the following terms and definitions apply.

3.1 dry batch

quantity of dry ingredients mixed at one time in one mixing vessel

NOTE Liquid binder, when added to a dry batch, produces a wet mix. A dry batch may be divided into smaller quantities, in which case addition of the liquid binder produces as many wet mixes as there were smaller quantities.

3.2 dry blend

two or more dry batches from which quantities of each are combined proportionately, then mixed in a mixing vessel to produce a larger quantity in which the ingredients are as uniformly dispersed as they would have been had the entire quantity been mixed together at one time in one large mixer

NOTE A dry blend, as in the case of a dry batch, may be used singly or divided into smaller quantities which, when the liquid binder is added, produce one or more wet mixes.

3.3 wet mix

combination of liquid binder and a dry batch or dry blend, or a portion thereof, mixed at one time in one mixing vessel

3.4 heat

for consumable inserts, brazing and braze welding filler metals, solid electrodes and rods, core wire for covered electrodes, and the sheath (strip or tubing) of tubular cored electrode wire and rod, is one of the following, depending on the method of melting and refining of the metal:

- the material obtained from one furnace melt, where slag-metal or gas-metal reactions occur in producing the metal (e.g., open hearth, electric arc, basic oxygen, argon-oxygen processes);
- an uninterrupted series of melts from one controlled batch of metals and alloying ingredients in one melting furnace under the same melting conditions, each melt conforming to the chemical composition range approved by the purchaser of the material (i.e., the producer of the welding consumable) where significant chemical reactions do not occur in producing the metal (e.g., induction melting in a controlled atmosphere or in a vacuum);
- an uninterrupted series of remelts in one furnace under the same remelting conditions using one or more consumable electrodes produced from a heat, as defined, each remelt conforming to the chemical composition range approved by the purchaser of the material (i.e., the producer of the welding consumable) in processes involving continuous melting and casting (e.g., consumable electrode remelt).