AWS A3.0M/A3.0:2025
An American National Standard

Standard Welding Terms and Definitions

Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination

American Welding Society®

Approved American National Standard
ANSI

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Approved by the
American National Standards Institute
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14th Edition

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Prepared by the
American Welding Society (AWS) A2 Committee on Definitions and Symbols

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard is a glossary of the technical terms used in the welding industry. Its purpose is to establish standard terms to aid in the communication of information related to welding and allied processes. Since it is intended to be a comprehensive compilation of welding terminology, nonstandard terms used in the welding industry are also included. All terms are designated as either standard or nonstandard and are arranged in word-by-word alphabetical sequence.

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This standard is subject to revision at any time by the AWS A2 Committee on Definitions and Symbols. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn.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 A2 Committee on Definitions and Symbols 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 A2 Committee on Definitions and Symbols 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 foreword is not part of this standard but is included for informational purposes only.

The A2 Committee on Definitions and Symbols was formed by the American Welding Society to establish standard terms and definitions to aid in the communication of welding information. This publication is the major product of work done by the Subcommittee on Definitions in support of that purpose.

The evolution of AWS A3.0M/A3.0, *Standard Welding Terms and Definitions Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination*, is shown below:

January 18, 1940	*Tentative Definitions of Welding Terms and Master Chart of Welding Processes*;
May 7, 1942	*Definitions of Welding Terms and Master Chart of Welding Processes*;
A3.0-49	*Standard Welding Terms and Their Definitions*;
A3.0-61	*AWS Definitions, Welding and Cutting*;
A3.0-69	*Terms and Definitions*;
A3.0-76	*Welding Terms and Definitions Including Terms for Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
A3.0-80	*Welding Terms and Definitions Including Terms for Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
ANSI/AWS A3.0-85	*Standard Welding Terms and Definitions Including Terms for Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
ANSI/AWS A3.0-89	*Standard Welding Terms and Definitions Including Terms for Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
ANSI/AWS A3.0-94	*Standard Welding Terms and Definitions Including Terms for Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
AWS A3.0:2001	*Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
AWS A3.0M/A3.0:2010	*Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Spraying, and Thermal Cutting*;
AWS A3.0M/A3.0:2020	*Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Spraying, and Thermal Cutting*; and
AWS A3.0M/A3.0:2025	*Standard Welding Terms and Definitions Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination*

The present publication, AWS A3.0M/A3.0:2025, *Standard Welding Terms and Definitions Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination*, defines over 1500 terms, with numerous illustrations to support and clarify the definitions, as well as classification charts and corollary information related to welding and allied processes. This latest revision includes significant enhancements to:

- Additive manufacturing
- GMAW process variations
- Hybrid welding
- Nondestructive examination
- Plastic welding
- Qualification – procedure and performance
- SAW process variations
- Temper bead welding
- Waveform-controlled welding
- Welding test positions

New terms and definitions have been introduced, and existing terms and definitions have been modified in these and other areas. Of significance are new/modified terms and definitions for surfacing weld test positions, procedure and performance qualification for brazing, soldering, and welding, gas metal arc welding transfer modes and process electrical variations, submerged arc welding process variations with multiple electrodes, nondestructive examination methods and their application, and measurement of arc energy for waveform-controlled welding. The term design effective throat has been added, as has the term contact tip-to-work distance. Table A1 has been modified to include ISO 4063 numeric process designations. Figure A7—Plastic Welding Classification Chart has been added. Users are encouraged to refer to summaries of the various changes in this edition found in Tables D1, D2, D3, D4, and D5.

Revisions to the 2025 edition are identified by underlines as well as vertical lines in the margin next to the text (see Clause 1, General Requirements).

Figures in this edition are identified in Annex B and are not intended to represent all possible conceptual variations; they are examples only and are not intended to illustrate acceptable or rejectable conditions.

As was the case for previous editions, numerous terms and definitions related to brazing are included in this edition. The intent is to include in AWS A3.0 those brazing terms and definitions corresponding with those for soldering and welding. It must be understood other important terms and definitions related to the description and application of brazing exist but are beyond the scope of AWS A3.0. For additional information and details, users are encouraged to refer to the AWS *Brazing Handbook*.

It must be understood that the Definitions Subcommittee cannot be the ultimate judge in terms of the preferability, acceptability, or correctness of any term for a specific situation. Such determinations are left to the discretion and opinion of the welding terminology user. There is one exception: when the use of a nonstandard term may endanger personal safety, that term is defined as both nonstandard and incorrect. The Definitions Subcommittee has neither the authority nor the desire to dictate welding terminology but considers it within its province to establish standard terms and nonstandard terms.

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Standard Welding Terms and Definitions

Including Terms for Additive Manufacturing, Adhesive Bonding, Brazing, Soldering, Thermal Cutting, Thermal Spraying, and Nondestructive Examination

1. General Requirements

1.1 Scope

The purpose of this document is to establish standard terms and definitions to aid in the communication of information related to welding, additive manufacturing, adhesive bonding, brazing, soldering, thermal cutting, thermal spraying, and nondestructive examination. The standard terms and definitions published in this document should be used in the oral and written language associated with these related processes.

Whenever AWS A3.0 is mentioned in this document, it refers to the latest edition, AWS A3.0M/A3.0:2025.

When terms from AWS A3.0 are used in other AWS standards, it is intended that the AWS A3.0 definitions apply, unless a more specific meaning is intended or necessary. AWS standards may provide alternative definitions where a process-specific definition improves understanding, or when specific limits of acceptance, applicability, or performance are incorporated.

It is one of the goals of the Definitions Subcommittee that AWS A3.0 encompass all terms, not adequately defined in the dictionary, directly related to welding or allied fields. Both standard and nonstandard jargon, as well as dialect and vernacular terms, are accepted for inclusion in AWS A3.0. Nonstandard terms are primarily included to direct the user to preferred standard terms.

As this document is a comprehensive compilation of terminology, nonstandard terms are included with cross-references to the corresponding standard terms. **Boldface** type indicates standard terms, lightface type indicates nonstandard terms. Terms for standard welding processes and for standard welding process variations are followed by their standard letter designations.

For the user's convenience, all new text is underlined. Additionally, a single vertical line in the margin next to a term denotes a minor change to an existing definition. A double line denotes a new term or a major change. Terms for standard processes and standard process variations are followed by their standard letter designation. All terms are arranged in word-by-word alphabetical sequence.

The principles applied by the Definitions Subcommittee for the creation of terms and definitions in AWS A3.0 are described in Annex C.

1.2 Units of Measurement

This standard makes use of both the International System of Units (SI) and U.S. Customary Units. The latter are shown within brackets ([ ]) or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system must be used independently.

1.3 Safety

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

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 or revisions of the publications may not apply since the relevant requirements may have changed.

American Welding Society (AWS) standard:

AWS A1.1, *Metric Practice Guide for the Welding Industry*

Other Document:

Webster's Third New International Dictionary of the English Language, Unabridged.

3. Terms and Definitions

For the purposes of this document, the following definitions apply:

definition. A statement of the meaning of a word or word group. The statement may also describe the interrelationship with other terms and association with other relevant information such as tables, figures, and commentary.

nonstandard term. A word or expression used colloquially that is provided as a link to the standard term in AWS A3.0. When used in AWS A3.0, nonstandard terms are shown in lightface type.

standard term. A word or expression recognized in AWS A3.0 as the preferred terminology for use in oral and written language. When used in AWS A3.0, standard terms are shown in **boldface** type.

term. A word or expression directly related to welding or allied areas that has a meaning more specialized or restricted than that given in the dictionary (see Clause 2).