AWS D1.2/D1.2M:2026
An American National Standard

Structural Welding Code—Aluminum

American Welding Society®

AWS D1.2/D1.2M:2026
An American National Standard

Approved by the
American National Standards Institute
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Structural Welding Code—Aluminum

Seventh Edition

Revises AWS D1.2/D1.2M:2014

Prepared by the
American Welding Society (AWS) D1 Committee on Structural Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This code covers the welding requirements for any type structure made from aluminum structural alloys, except for aluminum pressure vessels and pressure piping. Clauses 1 through 10 constitute a body of rules for the regulation of welding in aluminum construction. A commentary on this code is also included with the document.

American Welding Society®

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Foreword

This foreword is not part of AWS D1.2/D1.2M:2026, *Structural Welding Code—Aluminum*, but is included for informational purposes only.

In the early 1970s, interest was expressed in developing a consolidated code for the structural welding of aluminum similar to the AWS D1.1, *Structural Welding Code—Steel*. Because of the interest of both The Aluminum Association and the American Welding Society, it was decided to begin in the mid-70s the task of developing a structural welding code for aluminum. Initially, the effort was undertaken by a task force of The Aluminum Association. In 1979, this task force became a subcommittee of the AWS Structural Welding Committee and the *Structural Welding Code—Aluminum* resulted from the continued activity of that subcommittee.

The first edition of the *Structural Welding Code—Aluminum* (hereafter referred to as this *code*) represented the continuing AWS policy to provide standards for structural welding. This code is provided for the fabrication, erection and manufacturing industries as a set of rules and regulations for the welding of structural aluminum. Some of the more important aspects of this code edition are outlined in the following paragraphs.

Recommended joint details have been prepared for numerous complete joint penetration groove welded joints. Herein lies one of the major differences between the *Structural Welding Code—Steel* and this code. While the steel code allows for prequalified welding procedures, this code does not. This is mainly because of the many and varied possible welding conditions that can be obtained with semiautomatic welding variables most often used with aluminum and the wide range of both heat-treatable and nonheat-treatable alloys that may be welded under this code. Therefore, all of the joint details and the welding procedures used with this code shall be individually qualified and included in the Welding Procedure Specification (WPS).

Procedures and standards are outlined for several methods of nondestructive testing. Methods included are visual, radiographic and dye-penetrant. Ultrasonic testing is permitted, but the procedure and acceptance criteria shall be specified in the contract documents.

This code does not concern itself with such design considerations as the arrangements of parts, loading, and the computation of stresses for proportioning the load-carrying members of a structure and their connection. Such considerations, it is assumed, are covered elsewhere in a general code or specification, such as the *Specification for Aluminum Structures* (The Aluminum Association).

Change in Code Requirements. Underlined text in the clauses, subclauses, tables, figures, or forms indicates a change from the 2014 edition. A vertical line in the margin of a table or figure also indicates a change from the 2014 edition.

This Code was reorganized to follow other AWS Codes. For user readability, see the summary of the clause relocation from the 2014 edition to the 2026 edition.

Summary of Clause Relocation

D1.2:2014 Clauses	D1.2:2026 Clauses
1. General Requirements	1. General Requirements
1.8 Normative References	2. Normative References
1.2 Definitions	3. Terms and Definitions
2. Design	4. Design
3. Qualification	5. Qualification
4. Fabrication	6. Fabrication
5. Inspection	7. Inspection
6. Stud Welding	8. Stud Welding
7. Friction Stir Welding	9. Friction Stir Welding
8. Strengthening and Repair of Existing Structures	10. Strengthening and Repair of Existing Structures

The following is a list of the most significant revisions in the 2026 edition:

Summary of Changes

Clause/Table/Figure/ Annex	Modification
Clause 3	Addition of new terms and definitions such as authority having jurisdiction, contract documents, Contractor drawings, and smut
4.3.1	4.3.1 A detailed list of items that must be in the contract document and Contractor drawings were added.
4.3.2	A detailed list of items that must be in the Contractor drawings were added.
4.4.2.2	The included angle in regard to the size of a PJP groove weld made with GMAW or GTAW regardless of the position of welding is the depth of preparation for V- and bevel-joints was revised.
4.4.5	Clause reworded for clarity
5.7.1.2(2)	Revised for clarity and to include Full Section Pipe
5.7.3.1	Additional language added to clarify the acceptance criteria when base metals of different tensile strengthens are used.
5.10.1	New language added in order to clarify who chooses which Soundness Test for Fillet Welds to use.
5.15.4(2)	Code requirements that used to be contained in the notes to Table 5.7 (previously 3.5) have been eliminated from the Table notes and placed in the Clause.
Table 5.1	The Base Metal Group Designations were converted into a table.
Table 5.2	The Group Numbers for AWS Filler Metal Classifications were converted into a table.
Table 5.3	The WPS Essential Variables for Items 2, 10, 17 were revised for clarity.
Table 5.4	The Table was completely revised for clarity
Table 5.7	The Table was completely revised and breaks down the number and type of tests needed depending on the size of the test groove depth
Figures 5.14 and 5.15	A new note was added to the Figure stating the preferred method of bend testing aluminum weldments is wraparound guided bend jigs.
Figures 5.17 and 5.32	The direction of force has been added to the Macroetch Test Specimen for clarity
6.21.2 and 6.21.3	Extension bars were replaced with weld tabs
6.22.4 and 6.22.4.1	Distortion correction and distortion removal were revised extensively for clarity.
6.26.1 and 6.26.2	New and revised language added regarding in-process cleaning and the cleaning of completed welds.
Table 6.4	The direction of welding can now be uphill or downhill for the GMAW and GTAW processes.
Table 6.5	Additional alloys were added to the Table 2319, 6005A-T61, 1188, 5554 and 5556
7.17	The clause was revised for clarity
10.1	The scope was revised
10.2	The clause was extensively revised for clarity
Annex B Forms	Some of the Recommended CJP Groove Welded Joint detail welding symbols were revised to be in compliance with AWS A2.4. Some of the Recommended CJP and PJP Groove Welded Joint detail angles were adjusted from 60° to 45°

Commentary. The Commentary is nonmandatory and is intended only to provide insightful information into provision rationale.

Normative Annexes. These annexes address specific subjects in this code and their requirements are mandatory requirements that supplement this code's provisions.

Informative Annexes. These annexes are not code requirements but are provided to clarify code provisions by showing examples, providing information, or suggesting alternative good practices.

Index. As in previous codes, the entries in the Index are referred to by subclause number rather than by page number. This should enable the user of the Index to locate a particular item of interest in minimum time.

Errata. It is the Structural Welding Committee's policy that all errata should be made available to users of this code. Therefore, any significant errata will be published in the Society News Section of the AWS *Welding Journal* and posted on the AWS web site at: http://www.aws.org/technical/d1/.

Suggestions. Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, D1 Structural Welding Committee. American Welding Society, 8669 NW 36th Street, #130, Miami, FL 33166.

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Structural Welding Code—Aluminum

1. General Requirements

1.1 Scope

This code contains requirements for fabricating and erecting welded aluminum structures. When this code is stipulated in contract documents, conformance with all requirements of this code is required except those that the Engineer (see 1.4.1) or contract documents modify or exempt.

1.2 Units of Measurement

This standard makes use of both U.S. Customary Units (US) and the International System of Units (SI). 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; some safety and health information is provided, but such issues 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 a safety program.

1.4 Responsibilities

1.4.1 Engineer's Responsibilities. The Engineer shall be responsible for the contract documents that govern structures produced under this code. For OEM applications, the Engineer shall specify the responsibilities of the parties involved.