

**AWS D9.1/D9.1M:2018**  
**An American National Standard**



# **Sheet Metal Welding Code**



**AWS D9.1/D9.1M:2018**  
**An American National Standard**

**Approved by the**  
**American National Standards Institute**  
**September 29, 2017**

# **Sheet Metal**

# **Welding Code**

**7th Edition**

**Supersedes AWS D9.1M/D9.1:2012**

Prepared by the  
American Welding Society (AWS) D9 Committee on Welding of Sheet Metal

Under the Direction of the  
AWS Technical Activities Committee

Approved by the  
AWS Board of Directors

## **Abstract**

This code covers the arc and braze welding requirements for nonstructural sheet metal fabrications using the commonly welded metals available in sheet form. Requirements and limitations governing procedure and performance qualification are presented, and workmanship and inspection standards are supplied. The informative annexes provide useful information on materials and processes.



International Standard Book Number: 978-0-87171-929-4  
American Welding Society  
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## Personnel

### **AWS D9 Committee on the Welding of Sheet Metal**

T. J. White, Chair	<i>First Energy</i>
M. J. Brooks, Vice Chair	<i>Excel Bridge</i>
J. A. Molin, Secretary	<i>American Welding Society</i>
E. W. Beckman	<i>Consultant</i>
M. C. Cook	<i>Southern Illinois CJAP</i>
J. L. Cooley	<i>J C &amp; Associates, Incorporated</i>
R. J. Denaker	<i>Rango Inspections</i>
G. E. Donovan	<i>International Training Institute</i>
J. J. Sekely	<i>Welding Services, Incorporated</i>
C. R. Whatley	<i>Harris Companies</i>

### **Advisors to the AWS D9 Committee on the Welding of Sheet Metal**

D. L. McQuaid	<i>D L McQuaid &amp; Associates, Incorporated</i>
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## Foreword

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

This code was developed to provide standardized requirements for the qualification, production, and acceptance of welding or braze welding of nonstructural sheet metal components. Preparation of this document is in response to the many requests received from the sheet metal and construction industries.

The AWS Committee on Welding of Sheet Metal was organized in May 1978 and has published six previous versions of D9.1.

The 1<sup>st</sup> edition, D9.1-80, *Specification for Welding of Sheet Metal*, was limited to the more common welding processes.

The 2<sup>nd</sup> edition, D9.1-84, bore the same title, but was augmented to provide coverage of braze welding.

The 3<sup>rd</sup> edition, D9.1-90, *Sheet Metal Welding Code*, was written to refine and clarify several areas of the standard and to upgrade it to the status of a code in order to enhance its use and to promote a minimum quality level for those who invoke it.

The 4<sup>th</sup> edition, D9.1M/D9.1:2000, *Sheet Metal Welding Code*, provides for maintenance of the document and updates to keep abreast of practices being encountered in sheet metal welding and joining processes since the last revision.

The 5<sup>th</sup> edition D9.1M/D9.1:2006, *Sheet Metal Welding Code*, also provides for maintenance of the document and presents up to date practices in sheet metal welding and joining processes since the 2000 revision.

The 6<sup>th</sup> edition D9.1M/D9.1:2012, *Sheet Metal Welding Code*, provides for maintenance of the document and incorporates many of the comments received during the balloting process for the 2006 edition.

The 7<sup>th</sup> edition D9.1/D9.1M:2017, *Sheet Metal Welding Code*, provides for maintenance of the document as well as some updates intended to enhance its use and to promote a minimum quality level for those who invoke it.

Underlined text in clauses, tables, or figures indicates an editorial or technical change from the 2012 edition. A vertical line in the margins indicates a deletion from the 6<sup>th</sup> edition, while a vertical line in the margins of Tables or Figures also indicates an addition or deletion from 6<sup>th</sup> edition (D9.1M/D9.1:2012).

As new applications are developed and more experience is gathered, it is anticipated that changes in this standard will be required. Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D9 Committee on the Welding of Sheet Metal, American Welding Society, 8669 NW 36<sup>th</sup> Street, #130, Miami, FL 33166.

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# Sheet Metal Welding Code

## 1. General Requirements

**1.1 Scope.** This code provides qualification, workmanship, and inspection requirements for both arc welding (Part A) and braze welding (Part B), as they apply to the fabrication, manufacture, and erection of nonstructural sheet metal components and systems.

**1.1.1** This code was developed to provide standardized requirements for the qualification, production, and acceptance of welding or braze welding of nonstructural sheet metal components.

**1.1.2** General applications of this code are in the following industrial areas:

- (1) Heating, ventilating, and air conditioning systems
- (2) Food processing equipment
- (3) Architectural sheet metal and similar applications
- (4) Other nonstructural sheet metal applications

This code covers sheet metal thicknesses up to and including 0.2391 in [6.07 mm]. Also covered are the attachment of accessories and components of the system, and joining or attachment of any member, regardless of thickness, whose sole purpose is stiffening, supporting, or reinforcing the sheet metal.

**1.1.2.1 Limitations/Exceptions.** This code is not intended to apply:

(1) Where negative pressure or positive pressure exceeds 5 psi [30 kPa], which is approximately 120 in [3 m] of standing water

(2) Where structural requirements apply (Note: AWS D1.3/D1.3M, Structural Welding Code—Sheet Steel is intended for such applications)

(3) Where sheet metal products related to automotive applications are concerned

(4) Where brazing qualifications are specified to be in accordance with AWS B2.2/B2.2M, Specification for Brazing Procedure and Performance Qualification

(5) Where soldering qualifications are specified to be in accordance with AWS B2.3/B2.3M, Specification for Soldering Procedure and Performance Qualification

**1.1.3** This code requires values to be specified by the Engineer for weld type, size, and location of the application. See subclauses 8.2, 8.4, 13.1, and 13.3.

**1.1.4** Symbols used in this code shall be in accordance with the latest edition of AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination*.

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