

AWS C3.11M/C3.11:2024
An American National Standard

Specification for Torch Soldering



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An American National Standard**

**Approved by
American National Standards Institute
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Specification for Torch Soldering

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Prepared by the
American Welding Society (AWS) C3 Committee on Brazing and Soldering

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This specification describes relevant equipment, fabrication procedures, and quality (inspection) requirements for the torch soldering of materials. This document includes criteria for classifying torch-solder joints based on loading and the consequences of failure and quality assurance criteria defining the limits of acceptability in each class.



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A. Rabinkin	<i>Brazing and Joining Consultant, LLC</i>
S. S. Rajan	<i>Raytheon Intelligence & Space</i>
A. E. Shapiro	<i>Titanium Brazing, Incorporated</i>
L. A. Shapiro	<i>Titanium Brazing, Incorporated</i>
R. W. Smith	<i>S-Bond Technologies</i>
C. M. Volpe	<i>Senior Aerospace—Metal Bellows Division</i>
C. Walker	<i>Consultant</i>
H. Zhao	<i>Creative Thermal Solutions</i>

Advisors to the AWS C3B Subcommittee on Soldering

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T. P. Hirthe	<i>Consultant</i>
R. P. McKinney	<i>Consultant</i>
R. R. Xu	<i>Consultant</i>

Foreword

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

This document establishes the requirements when using a torch to fabricate solder joints. Prior specifications were not sufficiently broad to provide adequate guidance to the process development engineer and solderer.

This is the second edition of this specification. This revision includes a number of editorial changes to further clarify the requirements being placed on a torch soldering process.

All errata to a standard shall be published in the *Welding Journal* and posted on the AWS website.

Underlined text or a vertical line in the margin indicates a change from the previous edition.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS C3 Committee on Brazing and Soldering, American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

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Specification for Torch Soldering

1. General Requirements

1.1 Scope. This specification presents the minimum process and quality requirements for the torch soldering of ceramics, precious metals, and refractory metals, as well as the alloys of copper (Cu), iron (Fe), nickel (Ni), aluminum (Al), magnesium (Mg), tin (Sn), lead (Pb), and zinc (Zn).

The purpose of this specification is to standardize torch soldering process requirements that will ensure that solder joints attain the quality level required by the application. This document establishes the minimum requirements for processes using a minimum amount of explanatory information so as to limit any ambiguity. This document assigns responsibility for solder joint quality to the Organization Having Quality Responsibility (OHQR) and permits that organization to modify requirements as necessary. However, this specification requires that proper documentation be developed and archived by that organization, to provide the basis and specific details of any such modifications.

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; 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 the 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.

See 5.6 for supplemental safety and health information.

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.