


AWS C3.8M/C3.8:2020
An American National Standard



Specification for the Ultrasonic Pulse-Echo Examination of Brazed Joints



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Approved by
American National Standards Institute
July 9, 2020

Specification for the Ultrasonic Pulse-Echo Examination of Brazed Joints

4th Edition

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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 provides the minimum requirements for the ultrasonic pulse-echo examination of brazed joints. Its purpose is to standardize brazed-joint ultrasonic examination requirements for all applications in which brazed joints of acceptable quality are required. It provides the minimum requirements for equipment, procedures, and the documentation of such tests.



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This standard is subject to revision at any time by the AWS C3 Committee on Brazing and Soldering. It must be reviewed every five years, and if not revised, it must be either reaffirmed or withdrawn.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 C3 Committee on Brazing and Soldering 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 C3 Committee on Brazing and Soldering 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.

Foreword

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

The American Welding Society (AWS) C3 Committee on Brazing and Soldering has prepared this specification to provide specific criteria and requirements for the application of ultrasonic pulse-echo examination to brazed joints.

This specification may be used for the inspection of brazements to show conformance to five associated independent brazing process specifications. These are AWS C3.4M/C3.4, *Specification for Torch Brazing*; AWS C3.5M/C3.5, *Specification for Induction Brazing*; AWS C3.6M/C3.6, *Specification for Furnace Brazing*; AWS C3.7M/C3.7, *Specification for Aluminum Brazing*; and AWS C3.9M/C3.9, *Specification for Resistance Brazing*.

Previous editions of this standard include:

AWS C3.8M/C3.8:2011

AWS C3.8M/C3.8:2005

ANSI/AWS C3.8-90

Revisions to this edition include an update to the personnel certification requirements and an updated Normative References.

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. These should be sent to the Secretary, AWS C3 Committee on Brazing and Soldering, American Welding Society, 8669 NW 36th Street, #130, Miami, FL 33166.

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Specification for the Ultrasonic Pulse-Echo Examination of Brazed Joints

1. General Requirements

1.1 Scope. This specification establishes the minimum equipment and procedure requirements for the ultrasonic pulse-echo examination of brazed joints. This specification addresses the following techniques: pulse-echo contact (manual) and pulse-echo immersion (automated).

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 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:

- (1) United States Department of Labor, Occupational Safety & Health Administration (OSHA)
- (2) Equivalent agencies of other countries and individual states

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.