

**AWS C3.8M/C3.8:2005**  
**An American National Standard**



# **Specification for the Ultrasonic Examination of Brazed Joints**



**American Welding Society**

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**Key Words**—Ultrasonic examination, brazed joint discontinuities, quality control, examination of brazed joints

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**Approved by  
American National Standards Institute  
June 29, 2005**

# **Specification for the Ultrasonic Examination of Brazed Joints**

**Supersedes ANSI/AWS C3.8-90**

Prepared by  
AWS C3 Committee on Brazing and Soldering

Under the Direction of  
AWS Technical Activities Committee

Approved by  
AWS Board of Directors

## **Abstract**

This specification presents minimum fabrication, equipment, and process procedure requirements for the ultrasonic examination of brazed joints. Its purpose is to standardize brazed-joint ultrasonic examination requirements for all applications in which brazed joints of assured quality are required. It provides minimum requirements for equipment, procedures, and the documentation of such tests.



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# Specification for the Ultrasonic Examination of Brazed Joints

## 1. Scope

This specification presents the minimum equipment and procedure requirements for the ultrasonic examination of brazed joints.

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 other sources, including, but not limited to, ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*, and applicable federal and state regulations.

This standard makes use of both U.S. Customary Units and the International System of Units (SI). The measurements may not be exact equivalents; therefore, each system must be used independently of the other without combining in any way. The standard with the designation C3.8M:2005 uses SI Units. The standard with the designation C3.8:2005 uses U.S. Customary Units.

## 2. Referenced Documents

The following standards contain provisions which, through reference in this text, constitute provisions of this AWS standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this AWS standard are encouraged to investigate the possibility of applying the most recent editions of the documents shown below. For undated references, the latest edition of the standard referred to applies.

### 2.1 American Society for Nondestructive Testing (ASNT)<sup>1</sup>

(1) American Society for Nondestructive Testing (ASNT), *Recommended Practice No. SNT-TC-1A, Personnel Qualification and Certification in Nondestructive Testing*.

1. ASNT documents are published by the American Society for Nondestructive Testing, P.O. Box 28518, 1711 Arlingate Lane, Columbus, OH 43228-0518.

### 2.2 ASTM International<sup>2</sup>

(1) ASTM E 214, *Standard Practice for Immersed Ultrasonic Examination by the Reflection Method Using Pulsed Longitudinal Waves*

(2) ASTM E 114, *Standard Practice for Ultrasonic Pulse Echo Straight Beam Examination Contact Method*

### 2.3 National Aerospace Standards Committee (NAS)<sup>3</sup>

(1) NAS 410, *NAS Certification and Qualification of Nondestructive Test Personnel*.

## 3. Terms and Definitions

In this standard, the following terms and definitions shall apply:

**A-scan.** A display of the discrete wave form signal collected from a pulse-echo transducer, which, as a function of time, displays the acoustic reflections coming back from a tested brazement.

*NOTE: The individual A-scan data is assembled by the computer to create a C-scan image.*

**B-scan.** A cross-sectional view that displays travel time along the vertical axis and the linear position of the transducer along the horizontal axis.

**C-scan.** A method of displaying ultrasonic pulse-echo results. It uses computer tomography to assemble a planar image of the acoustic reflection signals assembled from millions of discrete acoustic wave forms taken by a computer as a transducer scans over a brazement. It is normally performed using the immersion methods.

2. ASTM documents are published by the American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

3. NASC documents are published by the National Aerospace Standards Committee, 1250 Eye Street, NW, Suite 1200, Washington, DC 20005-3924.