


**AWS D18.1:1999**  
**An American National Standard**



**Specification for  
Welding of  
Austenitic  
Stainless Steel  
Tube and Pipe  
Systems in  
Sanitary (Hygienic)  
Applications**



**American Welding Society**



**Key Words**— Visual examination acceptance criteria, food processing equipment, qualification, sanitary application, stainless steel tubing

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**Approved by**  
**American National Standards Institute**  
**April 14, 1999**

# **Specification for Welding of Austenitic Stainless Steel Tube and Pipe Systems in Sanitary (Hygienic) Applications**

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Under the Direction of  
AWS Technical Activities Committee

Approved by  
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## **Abstract**

This specification provides the requirements for welds in tubing systems in dairy and other food processing plants. The document addresses qualifications, fabrication, extent of visual examination, acceptance criteria, and documentation requirements.



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# Specification for Welding of Austenitic Stainless Steel Tube and Pipe Systems in Sanitary (Hygienic) Applications

## 1. Scope

This specification covers the requirements for gas tungsten arc welding (GTAW) of austenitic stainless steel tube and pipe 1/4 in. (6 mm) diameter and larger in the fabrication and construction of new sanitary (hygienic) processing systems. Sanitary processing systems are intended to include those systems handling products for human and animal consumption. Such products include dairy, meat, poultry, vegetable, beverage, and other products consumed by humans and animals. This specification addresses welding qualification and visual examination requirements prior to postweld conditioning.

This specification is intended for new construction, however the requirements may also be applied to maintenance of food processing equipment. This specification does not address requirements designed to prevent corrosion damage during service.

This specification does not address the health and safety of manufacturer or contractor personnel performing the fabrication or construction of food processing equipment. Users should refer to federal, state, and local regulations as well as other safety standards such as ANSI/ASC Z49.1, *Safety in Welding, Cutting, and Allied Processes*.

## 2. References and Definitions

**2.1 References.** The following documents are incorporated into this specification by reference.

(1) ANSI/AWS A3.0, *Standard Welding Terms and Definitions*.

(2) ANSI/AWS B2.1, *Specification for Welding Procedure and Performance Qualification*.

(3) ANSI/AWS B4.0, *Standard Methods for Mechanical Testing of Welds*.

(4) ANSI/ASC Z49.1, *Safety in Welding, Cutting, and Allied Processes*.

(5) ANSI/ASME B 46.1, *Surface Texture*.

**2.2 Definitions.** Welding terms used in this specification are defined in ANSI/AWS A3.0, *Standard Welding Terms and Definitions*. Other terms not defined in A3.0 are defined in the following.

**contractor.** Includes contractors, subcontractors, fabricators, erectors, or other organizations that fabricate weldments that are intended to meet the requirements of this specification.

**dross.** Oxides remaining on the flame, arc, and other cut surfaces of the base metals.

**essential variable.** A variable in which a change beyond that described in 3.1.5 is considered to affect the mechanical properties of the weldment, and shall require requalification of the Welding Procedure Specification (WPS).

**gas tungsten arc welding (GTAW).** An arc welding process that uses an arc between a tungsten electrode (nonconsumable) and the weld pool. The process is used with shielding gas and without the application of pressure. Nonstandard terms for GTAW are TIG and Heliarc® welding.

**nonessential variable.** A variable in which a change, as described in 3.1.5 may be made in the WPS without requalification.

**nonproduct contact surface.** An exposed surface other than a product contact surface.

**Owner.** Organization that will operate the sanitary (hygienic) processing system, or the organization's authorized representative.