AWS C3.12M/C3.12:2017
An American National Standard

Specification for Furnace Soldering

American Welding Society®

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Approved by the
American National Standards Institute
May 23, 2017

Specification for Furnace Soldering

1st Edition

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 equipment, materials, processing procedures as well as inspection for metal and ceramic base materials that can be furnace soldered. This specification provides criteria for classifying furnace soldered joints based on loading and the consequences of failure. It also provides quality assurance criteria that define the limits of acceptability in each class. This specification describes acceptable furnace soldering equipment, materials, and procedures, as well as the required inspection for each class of solder joint so produced.

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Foreword

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

This document responds to the need of the structural soldering community for specifications that address the making of solder filler metal joints using furnace equipment. To date, there has been only one other voluntary consensus standard issued in structural soldering, AWS C3.11M/C3.11, *Specification for Torch Soldering*, published in 2011.

It is the objective of the AWS C3 Committee on Brazing and Soldering to continue the development of other specifications for the structural soldering community. While the respective brazing specifications have provided the templates for AWS C3.11M/C3.11 as well as this document, those documents have been tailored or further amended to reflect details that are particular to soldering technology.

This is the first edition of this specification.

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

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Specification for Furnace Soldering

1. General Requirements

1.1 Scope. This specification presents the minimum fabrication and quality requirements for the furnace soldering of materials that include elemental metals, metal alloys, and ceramic base materials that are in geometries that suit the application.

The purpose of this specification is to standardize furnace soldering process requirements that will assure that the solder joints attain the quality level designated by the application. This document establishes the minimum such requirements. It also provides explanations with details to prevent ambiguity within the descriptions. This document assigns responsibility for solder joint quality to the Organization Having Quality Responsibility and permits that organization to modify requirements as necessary. All such modifications shall be in writing. It assigns responsibility for the ultimate quality of the soldered product to a single organization and permits that organization to modify requirements if appropriate to the application. It requires proper documentation 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 in 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.

1.4 Ordering Information. The purchaser shall provide the following information to the fabricator:

(1) Part number and quantity of parts

(2) Parent metal alloy and condition

(3) Solder Filler Metal