Specification for Furnace Soldering
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Furnace Soldering

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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Personnel

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R. W. Smith, Chair  
S-Bond Technologies

G. L. Alexy, 1st Vice Chair  
Alexy Metals

C. M. Volpe, 2nd Vice Chair  
Senior Aerospace—Metal Bellows Division

J. R. Douglass, Secretary  
American Welding Society

J. J. Bassindale  
Woodward, Incorporated

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General Electric Aviation

J. A. Bush  
The Prince & Izant Companies

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Metglas, Incorporated

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P. Ditzel  
Parker Hannifin

W. J. Engeron  
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R. A. Gourley  
Curtiss-Wright

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University of Dayton Research Institute

S. R. Hazellbaker  
Consultant

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Kru-Mar Manufacturing Services

K. H. Holko  
Holko Consulting

J. R. Jachna  
Custom Glassworks

D. A. Javernick  
Los Alamos National Laboratory

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Aerofit Rocketdyne

J. A. Liguori  
SpaceX

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Lucas-Milhaupt, Incorporated

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Johns Manville

O. Mårs  
Höganas AB

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Protech Materials

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Harris Products Group

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ProEnergy

T. Oyama  
WESGO Metals

M. E. Paponetti  
Solar Atmospheres

M. J. Pohlman  
Consultant

T. C. Profughi  
Hi TecMetal Group, Incorporated

A. Rabinkin  
Brazing and Joining Consultant, LLC

S. S. Rajan  
Raytheon Space and Airborne Systems

R. X. Reed  
Lucas-Milhaupt, Incorporated

J. P. Sands  
Bellman-Melcor, LLC

A. E. Shapiro  
Titanium Brazing, Incorporated

M. Stroiczek  
Höganas GmbH

P. T. Vianco  
Sandia National Laboratories

C. Walker  
Sandia National Laboratories

M. Weinstein  
Wall Colmonoy Corporation

R. R. Xu  
Rolls-Royce Corporation

H. Zhao  
Creative Thermal Solutions
Advisors to the AWS C3 Committee on Brazing and Soldering

B. Barten  Delphi Thermal & Interior
A. Belohlav  Lucas-Milhaupt, Incorporated
S. S. Bhargava  American Axle & Manufacturing Company
D. W. Bucholz  Consultant
S. Christy  Pratt and Whitney
N. C. Cole  NCC Engineering
C. F. Darling  Hayes Performance Systems
Y. Flom  NASA Goddard Space Flight Center
B. Freund  Millennium Industries
C. E. Fuerstenau  Lucas-Milhaupt, Incorporated
P. K. Gupta  Honeywell Aerospace
A. N. Jain  Lucas-Milhaupt, Incorporated
D. Kay  Kay & Associates
E. Liguori  Consultant
W. J. Loofboro  Lucas-Milhaupt, Incorporated
E. Lugscheider  Aachen University of Technology
W. D. Rupert  Lucas-Milhaupt, Incorporated

AWS C3B Subcommittee on Soldering

P. T. Vianco, Chair  Sandia National Laboratories
J. R. Douglass, Secretary  American Welding Society
G. L. Alexy  Alexy Metals
J. A. Bush  The Prince & Izant Companies
W. M. Coughlan  Metglas, Incorporated
R. P. Detty  Ajax Tocco Magnethermic
S. L. Feldbauer  Abbott Furnace Company
M. T. Graham  The Prince and Izant Company
J. Longabucco  Lucas-Milhaupt, Incorporated
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T. C. Profughi  Hi TecMetal Group, Incorporated
A. Rabinkin  Brazing and Joining Consultant, LLC
S. S. Rajan  Raytheon Space and Airborne Systems
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R. W. Smith  S-Bond Technologies
C. M. Volpe  Senior Aerospace—Metal Bellows Division
C. Walker  Sandia National Laboratories
H. Zhao  Creative Thermal Solutions

Advisors to the C3B Subcommittee on Soldering

N. C. Cole  NCC Engineering
C. F. Darling  Hayes Performance Systems
C. E. Fuerstenau  Lucas-Milhaupt, Incorporated
P. K. Gupta  Honeywell Aerospace
T. P. Hirthe  Kru-Mar Manufacturing Services
W. J. Loofboro  Lucas-Milhaupt, Incorporated
J. C. Madeni  Johns Manville
R. P. McKinney  Harris Products Group
M. J. Pohlman  Honeywell Aerospace
R. X. Reed  Lucas-Milhaupt, Incorporated
R. R. Xu  Rolls-Royce Corporation
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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# Table of Contents

Personnel ...................................................................................................................................................................... v  
Foreword........................................................................................................................................................................ vii  
List of Figures.................................................................................................................................................................... x  

1. **General Requirements** ......................................................................................................................................... 1  
   1.1 Scope ................................................................................................................................................................. 1  
   1.2 Units of Measurement ........................................................................................................................................ 1  
   1.3 Safety ................................................................................................................................................................. 1  
   1.4 Ordering Information ....................................................................................................................................... 1  

2. **Normative References** ........................................................................................................................................ 2  

3. **Terms and Definitions** ........................................................................................................................................ 3  

4. **Classification of Structural Solder Joints** ........................................................................................................ 3  
   4.1 Method of Classification .................................................................................................................................... 3  
   4.2 Class A Joints ..................................................................................................................................................... 3  
   4.3 Class B Joints ..................................................................................................................................................... 4  
   4.4 Class C Joints ..................................................................................................................................................... 4  
   4.5 No Class Specified .......................................................................................................................................... 4  
   4.6 Symbols ............................................................................................................................................................ 4  

5. **Process Requirements** ........................................................................................................................................ 4  
   5.1 Process Description ........................................................................................................................................... 4  
   5.2 Equipment ......................................................................................................................................................... 4  
   5.3 Materials .......................................................................................................................................................... 6  
   5.4 Procedure Requirements .................................................................................................................................. 6  
   5.5 Soldering Procedure Qualification ..................................................................................................................... 8  
   5.6 Safety and Health .............................................................................................................................................. 8  

6. **Quality Assurance Provisions** .......................................................................................................................... 8  
   6.1 Responsibility for Inspection ............................................................................................................................. 8  
   6.2 Requirements for Compliance .......................................................................................................................... 8  
   6.3 Sequence of Inspection and Manufacturing Operations .................................................................................. 8  
   6.4 Required Inspection of Soldered Joints ............................................................................................................. 8  
   6.5 Acceptance Criteria ......................................................................................................................................... 10  

Annex A (Informative)—Informative References ................................................................................................. 13  
Annex B (Informative)—Requesting an Official Interpretation on an AWS Standard .............................................. 15  

List of AWS Documents on Brazing and Soldering ..................................................................................................... 17
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dimensions of Internal Discontinuities as They Pertain to Radiographic and Ultrasonic Inspection Specifications</td>
<td>11</td>
</tr>
</tbody>
</table>
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