AWS STANDARD WELDING PROCEDURE SPECIFICATION LICENSE

IMPORTANT—READ CAREFULLY BEFORE PROCEEDING

THE ENTITY OR INDIVIDUAL PURCHASING THIS AWS STANDARD WELDING PROCEDURE SPECIFICATION AGREES TO BE BOUND BY THE TERMS OF THIS LICENSE. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, DO NOT USE THE STANDARD AND PROMPTLY RETURN THE PACKAGE UNOPENED, AND THE LICENSE PRICE WILL BE REFUNDED.

The enclosed **AWS STANDARD WELDING PROCEDURE SPECIFICATION ("SWPS")** is provided to the End User by the **American Welding Society ("AWS")** for use only under the terms of this License. AWS reserves any right not expressly granted to the End User.

1. Ownership: The SWPS is proprietary to AWS and is protected by United States and foreign copyright laws. AWS retains the title to, and ownership of, the SWPS, which is licensed, not sold, to the End User.

2. Acceptance of responsibility: Prior to use of an SWPS, the employer shall signify acceptance of responsibility for the production application of the procedure by signing and dating the SWPS on the appropriate page.

3. Definitions:

Authorized User shall mean an employee or contractor of the End User.

End User shall mean the purchaser of the SWPS.

4. License: The End User is granted a limited, non-exclusive license to the SWPS for internal business purposes by Authorized Users.

5. Sublicensing: The End User may not sublicense, assign, or otherwise transfer this License to End User employees or contractors who are not Authorized Users.

6. Modifications: The End User may not modify, translate, sell, or make derivative works of, the SWPS.

7. Protection and Security: The End User shall use its best efforts and take all reasonable steps to safeguard the SWPS to ensure that no unauthorized person shall have access thereto and that no unauthorized copy, publication, disclosure or distribution shall be made. The End User shall notify AWS immediately should the End User discover any unauthorized access or copying.

8. Termination: This License will terminate immediately without notice from AWS if the End User fails to comply with any of its provisions.

9. DISCLAIMER OF WARRANTY: THE SWPS IS PROVIDED "AS IS." AWS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE END-USER ASSUMES ALL RISK AS TO THE SUITABILITY OF THE SWPS. IN NO EVENT WILL AWS, OR ITS DIRECTORS, OFFICERS, EMPLOYEES OR AFFILIATES, BE LIABLE TO THE END USER FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR EXEMPLARY DAMAGES. THE LIABILITY (IF ANY) OF AWS TO THE END USER FOR ACTUAL DIRECT DAMAGES FOR ANY CAUSE WHATSOEVER, AND REGARDLESS OF THE FORM OF THE ACTION, WILL BE LIMITED TO, AND IN NO EVENT SHALL EXCEED, THE AMOUNT ORIGINALLY PAID TO AWS FOR THIS LICENSE BY THE END USER.

10. Miscellaneous: This License is governed by and construed in accordance with the laws of the State of Florida and shall inure to the benefit of AWS and End User and their respective successors and legal representatives. If any provision of this License is held by a court of competent jurisdiction to be invalid or unenforceable, that provision will be enforced to the maximum extent permissible, and the remaining provisions of this License will remain in full force and effect. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof. This Agreement may not be changed or amended except by a written instrument executed by a duly authorized officer of Licensor. The exclusive forum for resolution of legal disputes shall be State or federal court in or for Miami, Florida.

AVA Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

AWS-NAVSEA B2.1-1-316:2018
An American National Standard

Standard Welding Procedure Specification for Naval Applications (SWPS-N) for Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (S-1), 1/8 inch [3 mm] through 1-1/2 inch [38 mm] Thick, MIL-70S-3, in the As-Welded or PWHT Condition, Primarily Pipe for Naval Applications

Site License





AVA Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

AWS-NAVSEA B2.1-1-316:2018
An American National Standard

Approved by the
American National Standards Institute
December 19, 2017

Standard Welding Procedure Specification for Naval Applications (SWPS-N) for Argon Plus 2% Oxygen Shielded Gas Metal Arc Welding (Spray Transfer Mode) of Carbon Steel (S-1), 1/8 inch [3 mm] through 1-1/2 inch [38 mm] Thick, MIL-70S-3, in the As-Welded or PWHT Condition, Primarily Pipe for Naval Applications

1st Edition

Prepared by the
American Welding Society (AWS) B2 Committee on Procedure and Performance Qualification

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard contains the essential welding variables for carbon steel in the thickness range of 1/8 inch [3 mm] through 1-1/2 inch [38 mm], using semiautomatic gas metal arc welding. It cites the base metals and operating conditions necessary to make the weldment, the filler metal specifications, and joint designs for groove and fillet welds. This SWPS-N was developed primarily for naval applications that require performance to NAVSEA Technical Publication S9074-AQ-GIB-010/248, *Requirements for Welding and Brazing Procedure and Performance Qualification*.

American Welding Society®

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

ISBN: 978-0-87171-942-3
© 2017 by American Welding Society
All rights reserved
Printed in the United States of America

Photocopy Rights. No portion of this standard may be reproduced, stored in a retrieval system, or transmitted in any form, including mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner.

Authorization to photocopy items for internal, personal, or educational classroom use only or the internal, personal, or educational classroom use only of specific clients is granted by the American Welding Society provided that the appropriate fee is paid to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, tel: (978) 750-8400; Internet: <www.copyright.com>.

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

Statement on the Use of American Welding Society Standards

All standards (codes, specifications, recommended practices, methods, classifications, and guides) of the American Welding Society (AWS) are voluntary consensus standards that have been developed in accordance with the rules of the American National Standards Institute (ANSI). When AWS American National Standards are either incorporated in, or made part of, documents that are included in federal or state laws and regulations, or the regulations of other governmental bodies, their provisions carry the full legal authority of the statute. In such cases, any changes in those AWS standards must be approved by the governmental body having statutory jurisdiction before they can become a part of those laws and regulations. In all cases, these standards carry the full legal authority of the contract or other document that invokes the AWS standards. Where this contractual relationship exists, changes in or deviations from requirements of an AWS standard must be by agreement between the contracting parties.

AWS American National Standards are developed through a consensus standards development process that brings together volunteers representing varied viewpoints and interests to achieve consensus. While AWS administers the process and establishes rules to promote fairness in the development of consensus, it does not independently test, evaluate, or verify the accuracy of any information or the soundness of any judgments contained in its standards.

AWS disclaims liability for any injury to persons or to property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this standard. AWS also makes no guarantee or warranty as to the accuracy or completeness of any information published herein.

In issuing and making this standard available, AWS is neither undertaking to render professional or other services for or on behalf of any person or entity, nor is AWS undertaking to perform any duty owed by any person or entity to someone else. Anyone using these documents should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. It is assumed that the use of this standard and its provisions is entrusted to appropriately qualified and competent personnel.

This standard may be superseded by new editions. This standard may also be corrected through publication of amendments or errata, or supplemented by publication of addenda. Information on the latest editions of AWS standards including amendments, errata, and addenda is posted on the AWS web page (www.aws.org). Users should ensure that they have the latest edition, amendments, errata, and addenda.

Publication of this standard does not authorize infringement of any patent or trade name. Users of this standard accept any and all liabilities for infringement of any patent or trade name items. AWS disclaims liability for the infringement of any patent or product trade name resulting from the use of this standard.

AWS does not monitor, police, or enforce compliance with this standard, nor does it have the power to do so.

Official interpretations of any of the technical requirements of this standard may only be obtained by sending a request, in writing, to the appropriate technical committee. Such requests should be addressed to the American Welding Society, Attention: Managing Director, Standards Development (see Annex A). With regard to technical inquiries made concerning AWS standards, oral opinions on AWS standards may be rendered. These opinions are offered solely as a convenience to users of this standard, and they do not constitute professional advice. Such opinions represent only the personal opinions of the particular individuals giving them. These individuals do not speak on behalf of AWS, nor do these oral opinions constitute official or unofficial opinions or interpretations of AWS. In addition, oral opinions are informal and should not be used as a substitute for an official interpretation.

This standard is subject to revision at any time by the AWS B2 Committee on Procedure and Performance Qualification. 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 B2 Committee on Procedure and Performance Qualification 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 B2 Committee on Procedure and Performance Qualification 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.

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

This page is intentionally blank

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

Personnel

AWS B2 Committee on Procedure and Performance Qualification

J. L. Cooley, Chair	*J. C. & Associates, Incorporated*
H. R. Castner, 1st Vice Chair	
E. W. Beckman, 2nd Vice Chair	*Consultant*
J. M. Rosario, Secretary	*American Welding Society*
D. M. Allbritten	*Salco Products*
J. Alston	*Jefferson Lab*
J. P. Bell	*Yates Construction*
M. Bernasek	*C-SPEC*
K. L. Bingham	*Los Alamos National Laboratory*
M. W. Bumgarner	*Consultant*
M. C. Cook	*St. Louis Carpenters Apprenticeship Program*
T. A. Davenport	*PRL Industries, Incorporated*
J. J. Fluckiger	*Idaho National Laboratory*
E. H. Gray	*U.S. Nuclear Regulatory Commission*
M. F. Herrle	*Arise*
K. G. Kofford	*Idaho National Laboratory*
G. S. Michels	*Summit Design and Engineering Services*
S. D. Mobley	*Oak Ridge National Laboratory*
C. D. Morell	*U.S. Nuclear Regulatory Commission (retired)*
T. C. Mueller	*TransCanada Pipelines*
W. M. Ruof	*Bechtel Plant Machinery, Incorporated*
J. J. Sekely	*Welding Services, Incorporated*
M. L. Thomas	*Rocky Mountain Testing, LLC*
G. M. Wisbrock, Jr.	*Consultant*
R. K. Wiswesser	*Welder Training & Testing Institute*

Advisors to the AWS B2 Committee on Procedure and Performance Qualification

L. P. Connor	*Consultant*
B. J. Hable	*Ford Motor Company*
K. Y. Lee	*U.S. Department of Transportation*
B. B. MacDonald	*Consultant*
J. F. Pike	*NASA Langley Research Center*
F. A. Schweighardt	*Airgas*
A. W. Sindel	*TRC Solutions*
C. E. Spaeder, Jr.	*Consultant*
W. J. Sperko	*Sperko Engineering Services, Incorporated*
R. F. Waite	*Consultant*

AWS B2D Subcommittee on Standard Welding Procedure Specifications

H. R. Castner, Chair	
J. M. Rosario, Secretary	*American Welding Society*
D. M. Allbritten	*Salco Products*
J. Alston	*Jefferson Lab*

Documents
Document Sharing Hub
Full document details: NAVSEA B2.1-1-316-2018

E. W. Beckman	*Consultant*
M. Bernasek	*C-SPEC*
K. L. Bingham	*Los Alamos National Laboratory*
M. C. Cook	*St. Louis Carpenters Apprenticeship Program*
J. L. Cooley	*J. C. & Associates, Incorporated*
T. A. Davenport	*PRL Industries, Incorporated*
J. D. Farren	*Naval Surface Warfare Center*
J. J. Fluckiger	*Idaho National Laboratory*
G. L. Franke	*Consultant*
K. G. Kofford	*Idaho National Laboratory*
C. D. Morrell	*U.S. Nuclear Regulatory Commission (retired)*
W. M. Ruof	*Bechtel Plant Machinery, Incorporated*
J. J. Sekely	*Welding Services, Incorporated*
T. J. White	*First Energy*

Advisors to the AWS B2D Subcommittee on Standard Welding Procedure Specifications

L. P. Connor	*Consultant*
K. Y. Lee	*U.S. Department of Transportation*
F. A. Schweighardt	*Airgas*
G. M. Wisbrock, Jr.	*Consultant*

Documents
Document Sharing Hub
Full document details: NAVSEA B2.1-1-316-2018

Foreword

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

The American Welding Society and the Welding Research Council have joined in a cooperative effort to generate standard welding procedures for industry. The need for pretested welding procedures that are supported by adequate test data and that satisfy the technical requirements for the commonly used construction codes and specifications has been expressed by many individuals and organizations. The purpose of a welding procedure qualification is to provide test data for assessing the properties of a weld joint.

This Standard Welding Procedure Specification for Naval Applications is an outgrowth of the coordinated work of the Welding Procedures Committee of the Welding Research Council, the AWS B2 Committee on Procedure and Performance Qualification, and a Task Group of this committee that included the Naval Sea Systems Command (NAVSEA) and representatives of the shipbuilding industry. The Welding Procedures Committee provided the test data documented by a Summary of Procedure Qualification Records. This SWPS-N was prepared by adapting AWS B2.1-1-235 to include requirements from NAVSEA Technical Publication S9074-AQ-GIB-010/248, *Requirements for Welding and Brazing Procedure and Performance Qualification,* and other relevant fabrication documents.

The welding terms used in this specification shall be interpreted in accordance with the definitions given in the latest edition of AWS A3.0M/A3.0, *Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying.* Welding symbols shall be those shown in the latest edition of AWS A2.4, *Standard Symbols for Welding, Brazing, and Nondestructive Examination.* The AWS designation for welding gases should be those shown in the latest edition of AWS A5.32M/A5.32 (ISO 14175 MOD), *Welding Consumables—Gases and Gas Mixtures for Fusion Welding and Allied Processes.*

The AWS B2 Committee on Procedure and Performance Qualification was formed in 1979 to provide welding standards concerning the subject of qualification. The primary document developed by this committee is AWS B2.1/B2.1M, *Specification for Welding Procedure and Performance Qualification*. This document established the foundation and framework for Standard Welding Procedure Specifications (SWPSs). The Task Group on Standard Welding Procedure Specifications for Naval Applications was formed in 2009 to address the need for SWPS-N documents that support the requirements of NAVSEA Technical Publication S9074-AQ-GIB-010/248 and fabrication requirements for naval applications.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary of the AWS B2 Committee on Welding Procedure and Performance Qualification, American Welding Society, 8669 NW 36 St., # 130, Miami, FL 33166.

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018

This page is intentionally blank

Documents
Document Sharing Hub

Full document details: NAVSEA B2.1-1-316-2018