AWS B5.1:2025
An American National Standard

Specification for the Qualification of Welding Inspectors



American Welding Society®



AWS B5.1:2025
An American National Standard

Approved by the
American National Standards Institute
July 30, 2024

Specification for the Qualification of Welding Inspectors

3rd Edition

Revises AWS B5.1:2013-AMD1

Prepared by the
American Welding Society (AWS) Qualification and Certification Committee

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard defines the qualification requirements to qualify welding inspectors. The qualification requirements for visual welding inspectors include experience and satisfactory completion of an examination, which includes demonstrated capabilities, and proof of visual acuity. The examination tests the inspector's knowledge of welding processes, welding procedures, nondestructive examinations, destructive tests, terms, definitions, symbols, reports, welding metallurgy, related mathematics, safety, quality assurance, and responsibilities.

American Welding Society®

ISBN Print: 978-1-64322-336-0
ISBN PDF: 978-1-64322-337-7
© 2025 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.

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: Director, Certification Department, 8669 NW 36 St, # 130, Miami, FL 33166 (see Annex B). 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 Qualification and Certification Committee. 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 Qualification and Certification Committee 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 Qualification and Certification Committee 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 Qualification and Certification Committee. A copy of these Rules can be obtained from the American Welding Society, 8669 NW 36 St, # 130, Miami, FL 33166.

This page is intentionally blank.

Personnel

AWS Qualification and Certification Committee

R. E. Dines, Chair	*United Technical, Incorporated*
H. B. Craft, Vice Chair	*Consultant*
J. L. Pariseau, 2nd Vice Chair	*National Inspection Academy*
D. Smith, Secretary	*American Welding Society*
E. A. Abbott	*Ironworkers Union*
T. J. Baber	*Santa Clarita Community College District*
S. Barrett	*Haberle Steel, Incorporated/Clover Field Services LLC*
M. C. Cook	*ACME Constructors*
J. S. Corder	*Ironworkers International*
I. A. Cross	*Valiant TMS*
C. H. Eskridge	*Becht Engineering*
M. T. Harris	*International Training Institute*
G. G. Hlifka	*Consultant*
R. L. Holdren	*ARC Specialties, Incorporated*
J. I. Johnson	*North Dakota State College of Science*
V. Kuruvilla	*Lexicon, Incorporated*
T. E. Logan	*Atema, Incorporated*
M. J. Mauris	*DOT Quality Services*
A. L. Petroski	*Atema, Incorporated*
T. H. Sumerix	*Muskegon Community College*
R. J. Tessier	*Consultant*

AWS Subcommittee on Welding Inspectors

H. B Craft, Chair	*Consultant*
B. L. Boddiger, Secretary	*American Welding Society*
J. E. Greer	*Moraine Valley College/Techno-Weld Consultants*
C. R. Cross	*Lincoln Electric*
M. T. Harris	*International Training Institute*
G. G. Hlifka	*Consultant*
R. L. Holdren	*ARC Specialties, Incorporated*
D. M. Ison	*Precision Build Companies, LLC*
M. A. Pelegrino	*Amex Nooter, LLC*
D. G. Viar	*Moraine Valley College/Techno-Weld Consultants*
R. K. Wiswesser	*Welder Training and Testing Institute, Incorporated*
A. L. Young	*McNDT Pipeline Ltd.*

Advisor to the Subcommittee on Welding Inspectors

V. Kuruvilla	*Lexicon, Incorporated*

This page is intentionally blank.

Foreword

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

The purpose of welding inspection is to determine if a weldment meets the acceptance criteria of a specific code, standard, or other document. The welding inspector must be thoroughly familiar with welding processes, welding procedures, welder qualifications, materials, the limitation of weld testing; be able to read drawings, prepare and keep records, prepare and make reports, and make responsible judgments. For welding inspectors to be effective, the activities performed should be consistent with the requirements and technical and ethical principles.

This is the third edition of this specification. The first edition superseded, in part, AWS QC1, *Standard for Certification of AWS Welding Inspectors*. AWS QC1 sets the requirements for the AWS Certified Welding Inspector program. AWS B5.1 establishes a basic definition of a welding inspector and is referenced by QC1. Companies or individuals wishing to establish in-house or internal qualification programs for inspection personnel may use AWS B5.1 as the basis for their program. Companies or individuals wishing to obtain AWS certification must follow the requirements in AWS QC1. Individuals who comply with AWS B5.1 but not with AWS QC1 should not be labeled as AWS Certified Welding Inspectors; only individuals who comply with AWS QC1, as determined by AWS, may obtain that title.

Previous editions of the document are as follows:

ANSI/AWS B5.1:2003	*Specification for the Qualification of Welding Inspectors*
ANSI/AWS B5.1:2013	*Specification for the Qualification of Welding Inspectors*
AWS B5.1:2013-AMD1	*Specification for the Qualification of Welding Inspectors*

The following is a summary of the most significant changes contained in B5.1:2025:

Summary of Changes

Clause/Table/Figure/Annex	Modification
Clause 1	Removed word “Material” from 1.3.2(1) from term “Safety Data Sheets”
Clause 2	(New) Added Normative References
Clause 3	Terms and Definitions, was presented as Clause 2 in the previous edition; added three definitions: employer, quality assurance, and quality control
Clause 4	Levels of Qualification, was presented as Clause 3 in the previous edition
Clause 5	Functions, was presented as Clause 4 in the previous edition; Table 5.1 was revised; Differentiation between SWI and WI added; Additions made to Knowledge and Skills, Quality Control, and Quality Assurance
Clause 6	Education and Experience, was presented as Clause 5 in the previous edition
Clause 7	Examination Requirements, was presented as Clause 6 in the previous edition; Statement on SWI Test Requirements added
Clause 8	Examination Structure, was presented as Clause 7 in the previous edition; Tables added for recommended examination subjects and recommended subject weight: Table 8.1 WI/AWI Examination Structure; Table 8.2 SWI Examination Structure
Clause 9	Maintenance of Qualification, was presented as Clause 8 in the previous edition
Annex A Informative References	Additional reference information was added to Informative References

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

This page is intentionally blank.

Table of Contents

Page No.

Personnel v
Foreword vii
List of Tables x

1. General Requirements 1
1.1 Scope 1
1.2 Units of Measurement 1
1.3 Safety 1

2. Normative References 2

3. Terms and Definitions 2

4. Levels of Qualification 2
4.1 Associate Welding Inspector (AWI) 2
4.2 Welding Inspector (WI) 2
4.3 Senior Welding Inspector (SWI) 2

5. Duties and Capabilities 2
5.1 Duties 2
5.2 Capabilities 3

6. Education and Experience Requirements 6
6.1 Associate Welding Inspector 6
6.2 Welding Inspector 6
6.3 Senior Welding Inspector 6
6.4 Documentation 7
6.5 Qualifying Experience 7

7. Examination Requirements 7
7.1 Visual Acuity Requirements 7
7.2 Associate and Welding Inspector (AWI, WI) Examination Requirements 8
7.3 Senior Welding Inspector (SWI) Examination Requirements 8

8. Examination Structure 8
8.1 Senior Welding Inspector (SWI) Alternative Qualification 10

9. Maintenance of Qualification 10

Annex A (Informative)—Informative References 11
Annex B (Informative)—Requesting an Official Interpretation on an AWS Standard 13
Annex C (Informative)—List of AWS Documents on Qualification and Certification 15

List of Tables

Table **Page No.**

5.1 Welding Inspection Capabilities Based on Qualification Level 3
8.1 WI/AWI Examination Structure 8
8.2 SWI Examination Structure 9

Specification for the Qualification of Welding Inspectors

1. General Requirements

1.1 Scope. This standard establishes the requirements for qualification and defines the body of knowledge applicable to welding inspection personnel.

1.1.1 Levels. There are three levels of qualification: Associate Welding Inspector (AWI), Welding Inspector (WI), and Senior Welding Inspector (SWI).

1.1.2 Responsibility. Qualification of AWI/WI/SWI personnel to the requirements of this standard does not eliminate the need of an employer to determine the ability of the individual to perform the duties involved in a particular welding inspection assignment.

1.1.3 Employer. This standard is intended to supplement the requirements of an employer, code, or other documents, and shall not be construed as a preemption of the employer's authority to assign an individual for the work or for the performance of the work.

1.1.4 Terminology Definitions. As used in this standard, the word ***shall*** denotes a requirement, the word ***should*** denotes a guideline, and the word ***may*** means it is permissible. As used in this specification the word ***welders*** includes welding operators, brazers, and brazing operators.

1.2 Units of Measurement. This standard does not require units of measure. Therefore, no equivalents or conversions are contained except when they are cited in examples.

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 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.

2. Normative References

The documents listed below are referenced within this publication and are mandatory to the extent specified herein. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments or revisions of the publications may not apply since the relevant requirements may have changed.

American Welding Society (AWS) documents:

AWS A3.0M/A3.0*, Standard Welding Terms and Definitions*

ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*

3. Terms and Definitions

AWS A3.0M/A3.0*, Standard Welding Terms and Definitions*, provides the basis for terms and definitions used herein. However, the following terms and definitions are included below to accommodate usage specific to this document:

active supervision. Direct on-site or readily available supervision by the WI/SWI in the form of necessary instructions to assure that the AWI can perform specific evaluations as specified by the employer.

candidate. The person attempting to qualify to this standard.

certification. The act of determining, verifying, and attesting in writing to the qualification of personnel in accordance with specified requirements.

employer. An individual or an organization in the government, private, nonprofit, or business sector hiring and paying people for their work.

qualification. Training, skill, knowledge, and experience required for personnel to perform a specific job or function, typically demonstrated by passing a specified examination or examinations.

quality assurance. (QA)**.** Those planned and systemic activities implemented within a quality system to provide confidence that a product or service will fulfill requirements for quality.

quality control. (QC)**.** Activities ensuring that a manufactured product or performed service adheres to a defined set of quality criteria.

4. Levels of Qualification

This standard recognizes three levels of qualifications for welding inspection personnel. These levels are:

4.1 Associate Welding Inspector (AWI). A person meeting the qualification requirements of 6.1 and Clause 7.

4.2 Welding Inspector (WI). A person meeting the qualification requirements of 6.2 and Clause 7.

4.3 Senior Welding Inspector (SWI). A person meeting the qualification requirements of 6.3 and Clause 7.

5. Duties and Capabilities

5.1 Duties

5.1.1 AWI. The AWI shall be capable of performing inspections in accordance with applicable standards. Such inspections shall be performed under the active supervision of a SWI or WI. As such, responsibility for determining if welded assemblies conform to applicable workmanship and acceptance criteria shall be maintained by the supervising SWI or WI.

5.1.2 WI. The WI shall be capable of performing inspections in accordance with applicable standards. The WI shall be capable of verifying welding compliance of suppliers and organizations providing materials or services. The WI shall ensure the work performed and associated records are maintained and conform to the requirements of the applicable standards or other contract documents. The WI shall also be capable of supervising and training AWIs.