Welding Services for Equipment Used in the Petroleum and Natural Gas Industry

API STANDARD 20G
FIRST EDITION, JANUARY 2020

REAFFIRMED, MAY 2025



Special Notes

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be used. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Users of this standard should not rely exclusively on the information contained in this document. Sound business, scientific, engineering, and safety judgment should be used in employing the information contained herein.

Any manufacturer marking equipment or materials in conformity with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard, and this standard does not limit the responsibility of the manufacturer for ensuring compliance with all applicable requirements of that standard or any API certification program requirements. API does not represent, warrant, or guarantee that such products do, in fact, conform to the applicable API standard.

All rights reserved. No part of this work may be reproduced, translated, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001-5571.

Copyright © 2020 American Petroleum Institute

Foreword

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

The verbal forms used to express the provisions in this document are as follows.

Shall: As used in a standard, “shall” denotes a minimum requirement in order to conform to the standard.

Should: As used in a standard, “should” denotes a recommendation or that which is advised but not required in order to conform to the standard.

May: As used in a standard, “may” denotes a course of action permissible within the limits of a standard.

Can: As used in a standard, “can” denotes a statement of possibility or capability.

This document was produced under API standardization procedures that ensure appropriate notification and participation in the developmental process and is designated as an API standard. Questions concerning the interpretation of the content of this publication or comments and questions concerning the procedures under which this publication was developed should be directed in writing to the Director of Standards, American Petroleum Institute, 200 Massachusetts Avenue, Suite 1100, Washington, DC 20001. Requests for permission to reproduce or translate all or any part of the material published herein should also be addressed to the director.

Generally, API standards are reviewed and revised, reaffirmed, or withdrawn at least every five years. A one-time extension of up to two years may be added to this review cycle. Status of the publication can be ascertained from the API Standards Department, telephone (202) 682-8000. A catalog of API publications and materials is published annually by API, 200 Massachusetts Avenue, Suite 1100, Washington, DC 20001.

Suggested revisions are invited and should be submitted to the Standards Department, API, 200 Massachusetts Avenue, Suite 1100, Washington, DC 20001, standards@api.org.

Contents

Page

1 Scope 1
1.1 Purpose 1
1.2 Applicability 1

2 Normative References 1

3 Terms, Definitions, Acronyms, and Abbreviations 2
3.1 Terms and Definitions 2
3.2 Abbreviations 3

4 Welding Services Supplier Qualification 3
4.1 General 3
4.2 Facilities and Equipment 4
4.3 Welding Services Supplier Quality Management System (QMS) 4
4.4 Technical Review Requirements 4

5 Personnel Training and Competency Requirements 4

6 Weld Processes, Equipment, and Qualification Requirements 5
6.1 General 5
6.2 Equipment Inventory (Welding, Inspection, Heat Treatment, NDE, Monitoring) 5
6.3 Calibration and Verification 5

7 Material Preservation and Control 6
7.1 General 6
7.2 Welding Consumable Storage and Control 7
7.3 Base Material Control 7
7.4 Identification and Traceability 8
7.5 Preservation of Product 9

8 Qualification of Weld Procedure Specifications and Controls 9
8.1 General 9
8.2 Control of Weld Procedure Specifications 9
8.3 Welder Performance Qualification 10
8.4 Welding Inspection Personnel 10

9 Inspection Requirements 11
9.1 General 11
9.2 In-process Inspection 11
9.3 Final Inspection 11
9.4 Inspection Records 11

10 Control of Service Suppliers 12
10.1 General 12
10.2 Service Supplier Qualification Requirements 12
10.3 Periodic Evaluation of Sub-suppliers of Welding services and Service Suppliers 13
10.4 Review of Order Requirements with Service Suppliers 14

11 Welding Services Supplier Performed Processes 14

12 Records and Document Control 14

Contents

Page

Annex A (informative) Weld Supplier Audit Process 16

Bibliography 29

Tables

1 Service Supplier Qualification Requirements 13

Welding Services for Equipment Used in the Petroleum and Natural Gas Industry

1 Scope

1.1 Purpose

This standard specifies requirements for the qualification of suppliers of welding services used in the manufacturer of equipment for the petroleum and natural gas industries.

1.2 Applicability

The requirements of this standard apply to welding operations performed in a welding facility or in the field. Included are pressure-containing, pressure-controlling, overlay, and structural welds.

NOTE This standard does not limit the responsibility of any manufacturer of commercial products using welding services and manufactured to an API standard from its responsibility for compliance with all applicable requirements of that API standard.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies, except that new editions may be used on issue and become mandatory upon the effective date specified by the publisher or six months from the date of the revision (where no effective date is specified).

API Specification Q1, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

API Standard 20D, *Nondestructive Examination Services for Equipment Used in the Petroleum and Natural Gas Industry*

API Standard 20H, *Heat Treatment Services—Batch Type for Equipment used in the Petroleum and Natural Gas Industry*

ASME[1] Boiler and Pressure Vessel Code Section II—Materials, Part C, Specifications for Welding Rods, Electrodes and Filler Metals

ASME. BPVC Section IX—Welding, Brazing, and Fusing Qualifications

AWS[2] A5.01, *Welding Consumables—Procurement of Filler Metals and Fluxes*

AWS D1.1, *Structural Welding Code—Steel*

AWS QC1, *Specification for AWS Certification of Welding Inspectors*

ISO[3] 9001, *Quality management systems*

ISO 9606-1, *Qualification testing of welders – Fusion welding – Part 1: Steels*

---

1 American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016, www.asme.org.

2 American Welding Society, 8669 NW 36th Street, #130, Miami, FL 33166, www.aws.org.

3 International Organization for Standardization, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, www.iso.org.