



FINAL DRAFT International Standard

ISO/FDIS 15614-9

Specification and qualification of welding procedures for metallic materials — Welding procedure test —

Part 9: Underwater hyperbaric wet welding

*Descriptif et qualification d'un mode opératoire de soudage pour
les matériaux métalliques — Epreuve de qualification d'un mode
opératoire de soudage —*

Partie 9: Soudage hyperbare en pleine eau

ISO/TC 44/SC 15

Secretariat: **ANSI**

Voting begins on:
2025-08-14

Voting terminates on:
2025-10-09

ISO/CEN PARALLEL PROCESSING

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT,
WITH THEIR COMMENTS, NOTIFICATION OF ANY
RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE
AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS
BEING ACCEPTABLE FOR INDUSTRIAL, TECHNO-
LOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT
INTERNATIONAL STANDARDS MAY ON OCCASION HAVE
TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL
TO BECOME STANDARDS TO WHICH REFERENCE MAY BE
MADE IN NATIONAL REGULATIONS.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO/FDIS 15614-9

<https://standards.iteh.ai/catalog/standards/iso/9caea7dc-d915-4b97-a24a-863ba7a4e9b6/iso-fdis-15614-9>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Qualification of welding procedure specifications	3
4.1 General	3
4.2 Related to the parent material	4
4.2.1 Parent material grouping	4
4.3 Welding procedure qualification record (WPQR)	5
4.4 Welding procedure specification (WPS)	5
5 Classification of Welds	5
5.1 Definitions of weld quality levels	5
5.2 Selection of the weld quality level	6
6 Welding variables and range of qualification	6
7 Depth limitations	7
8 Welding procedure test	8
9 Test piece	8
9.1 General	8
9.2 Shape and dimensions of test pieces	8
9.3 Welding of test pieces	12
10 Testing and examination	13
10.1 General	13
10.2 Tensile shear tests for fillet welds	13
10.3 Type and extent of testing	13
10.4 Weld quality Levels A, B and Z	13
10.5 Location of test specimens	17
10.6 Non-destructive testing	25
10.7 Destructive testing	25
10.7.1 Transverse tensile test	25
10.7.2 Fillet weld shear-strength test	25
10.7.3 All-weld metal tensile test	26
10.7.4 Bend test	26
10.7.5 Macroscopic examination	27
10.7.6 Hardness testing	27
10.7.7 Impact testing	27
10.7.8 Fillet weld fracture test	28
10.8 Type and extent of testing for project specific test pieces	28
11 Acceptance requirements for test pieces	28
12 Re-testing	34
12.1 General	34
12.2 Hardness testing	34
12.3 Impact testing	34
13 Range of qualification	34
13.1 General	34
13.2 Range of qualification for welding positions	34
Annex A (informative) Different phases in welding procedure qualification	36
Annex B (informative) Branch connections	37

Annex C (informative) Example welding procedure qualification record (WPQR)	38
Bibliography	41

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/FDIS 15614-9](https://standards.iteh.ai/catalog/standards/iso/9caea7dc-d915-4b97-a24a-863ba7a4e9b6/iso-fdis-15614-9)

<https://standards.iteh.ai/catalog/standards/iso/9caea7dc-d915-4b97-a24a-863ba7a4e9b6/iso-fdis-15614-9>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 15, *Underwater welding*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 15614 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

Introduction

The primary purpose of welding procedure qualification is to demonstrate that the joining process proposed for construction, including preliminary and subsequent treatment, is capable of producing joints having the necessary mechanical properties and conforming to the non-destructive testing (NDT) requirements for the intended application.

Before a particular welding procedure is used in production, the manufacturer should determine and document the suitability of the welding procedure specification (WPS) to produce a weld of the required quality.

In this document, the term "welding procedure specification" comprises all the activities which influence the welding result, such as preparation, welding parameters, and post treatment.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO/FDIS 15614-9

<https://standards.iteh.ai/catalog/standards/iso/9caea7dc-d915-4b97-a24a-863ba7a4e9b6/iso-fdis-15614-9>