

AS 1796:2022



STANDARDS
Australia



Pressure equipment — Qualification of welders, welding supervisors and welding inspectors

Currently in review, click buy full version

AS 1796:2022

This Australian Standard ® was prepared by ME-001, Pressure Equipment. It was approved on behalf of the Council of Standards Australia on 6 June 2022.

This Standard was published on 24 June 2022.

The following are represented on Committee ME-001:

Australasian Institute of Engineer Surveyors
Australian Aluminium Council
Australian Industry Group
Australian Institute for Non-Destructive Testing
Australian Institute for the Certification of Inspection Personnel
Australian Institute of Petroleum
Better Regulation Division (Fair Trading, SafeWork NSW, TestSafe)
Bureau of Steel Manufacturers of Australia
Compressed Air Association of Australasia
Energy Networks Australia
Engineers Australia
Gas Energy Australia
Insurance Council of Australia
Materials Australia
Office of Industrial Relations, Qld
Victorian WorkCover Authority (WorkSafe Victoria)
Weld Australia

This Standard was issued in draft form for comment as DR AS 1796:2022.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

ISBN 978 1 76113 848 5

Pressure equipment — Qualification of welders, welding supervisors and welding inspectors

Originated as AS CB14.1—1947, AS CB14.2—1950, AS CB14.3—1959, AS CB14.4—
1966, AS CB14.5—1969 and AS CB14.6—1971.
Previous edition AS 1796—2001.
First edition AS 1796:2022.

© Standards Australia Limited 2022

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

Preface

This Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee ME-001, Pressure Equipment, to supersede AS 1796—2001, *Certification of welders and welding supervisors*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this document as an Australian Standard, rather than an Australian/New Zealand Standard.

The objective of this document is to specify the requirements for the qualification of welders, welding supervisors and welding inspectors engaged in welding processes used in the manufacture of pressure equipment, including requirements for the syllabus for the practical and/or theory components of each qualification.

The major changes in this edition are as follows:

- (a) Requirements for a welding inspector qualification, sourced from AS/NZS 4481, have been added as Certificate No. 11.
- (b) Test plate thickness for butt welds has been modified to permit maximisation of the range of welder qualification where joint qualification to AS/NZS ISO 9606 is sought.
- (c) Minimum requirements for Certificates No. 3 and No. 3E aligned with other qualifications.
- (d) Reference to cellulosic consumables has been removed.
- (e) Weld testing requirements, including minimum test plate width, have been aligned with those of AS/NZS ISO 9606.1, and requirements for free bend tests removed.
- (f) Editorial changes have been made, including the following:
 - (i) Clarification of the meanings of several clauses.
 - (ii) Revision of normative references and addition of Bibliography, which includes informative references for an updated list of further reading, and revision of normative references.
 - (iii) Replacement of references to “certification” consistent with Standards Australia requirements.
 - (iv) Alignment with current Standards Australia style and wording, including removal of roles and responsibilities.
- (g) The syllabi have been moved into the appendices and expanded to account for a clearer content, learning outcomes and assessment criteria.

It is not intended that the publication of this edition will invalidate certificates that were issued in respect of previous editions of this document.

The terms “normative” and “informative” are used in Standards to define the application of the appendix to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

Contents

Preface	ii
Section 1 Scope and general	1
1.1 Scope	1
1.2 Application	2
1.3 Normative references	2
1.4 Terms and definitions	3
1.5 Examination and assessment process	5
1.5.1 General	5
1.5.2 Impartiality	5
1.5.3 Quality system	5
1.5.4 Examination	6
1.5.5 Assessment	7
Section 2 Welder qualification	8
2.1 Pre-examination requirements	8
2.1.1 General	8
2.1.2 Documentation	8
2.1.3 Title and types of certificates	8
2.1.4 Certificates No. 1 and No. 1E	9
2.1.5 Certificate No. 2	9
2.1.6 Certificates No. 3 and No. 3E	9
2.1.7 Certificate No. 4	10
2.1.8 Certificate No. 5	10
2.1.9 Certificate No. 6	10
2.1.10 Certificate No. 7	10
2.1.11 Certificate No. 8F	11
2.1.12 Certificate No. 8G	11
2.1.13 Certificate No. 9	11
2.2 Theory examination	12
2.2.1 Syllabus	12
2.2.2 Modification of the syllabus	12
2.2.3 Type of examination	12
2.2.4 Evidence of prior learning	12
2.2.5 Duration of examination	12
2.2.6 Criteria for examination marking	12
2.3 Practical tests	13
2.3.1 Types of practical tests	13
2.3.2 Elective tests	13
2.3.3 Test pieces	13
2.3.4 Welding consumables	20
2.3.5 Assembly of test pieces for welding	20
2.3.6 Making a test weld	22
2.3.7 Thermal cutting test	23
2.3.8 Gouging test	23
2.3.9 Replacement of test piece	24
2.3.10 Heat treatment of test plates	24
2.3.11 Identification of completed test plates	24
2.3.12 Exemption from thermal cutting and gouging test	24
2.3.13 Duration of practical tests	25
2.4 Assessment of practical tests	25
2.4.1 General	25
2.4.2 Examination and assessment of practical tests	25
2.4.3 Visual examination	26
2.4.4 Destructive testing	30
2.4.5 Bend tests	32

2.4.6	Nick-break test.....	34
2.4.7	Fillet break test.....	35
2.4.8	Radiographic examination.....	36
2.4.9	Ultrasonic examination.....	37
2.5	Reporting of results.....	38
2.5.1	General.....	38
2.5.2	Exemption from examination and tests.....	38
2.5.3	Test certificate and wallet card.....	38
2.5.4	Application.....	39
2.5.5	Period of validity.....	39
2.5.6	Reissue of certificate and wallet card.....	39
2.5.7	Register.....	39
2.6	Failure in part.....	39
2.6.1	Repeat tests.....	39
2.6.2	Theory examination and practical tests.....	39
2.6.3	Bend tests and nick-break tests.....	40
2.6.4	Fillet break test.....	40
2.6.5	Thermal cutting and gouging.....	40
2.6.6	Radiographic examination.....	40
2.6.7	Ultrasonic examination.....	40
Section 3	Welding supervisor qualification.....	41
3.1	Pre-examination requirements.....	41
3.1.1	General.....	41
3.1.2	Certificate No. 10.....	41
3.2	Scope of examination.....	41
3.2.1	Type.....	41
3.2.2	Location of examination.....	42
3.2.3	Duration of the examination.....	42
3.2.4	Criteria for examination marking.....	42
3.3	Examination syllabus.....	42
3.3.1	Syllabus.....	42
3.3.2	Modification of the syllabus.....	42
3.4	Reporting of results.....	43
3.4.1	General.....	43
3.4.2	Test certificate and wallet card.....	43
3.4.3	Period of validity.....	43
3.4.4	Reissue of certificate and wallet card.....	43
3.4.5	Register.....	43
3.5	Failure in part.....	43
3.5.1	Documentary evidence.....	43
3.5.2	Re-examination.....	44
3.5.3	Date, location and duration for re-examination.....	44
Section 4	Welding inspector qualification.....	45
4.1	Pre-examination requirements.....	45
4.1.1	General.....	45
4.1.2	Criteria.....	45
4.2	Scope of examination.....	45
4.2.1	Type.....	45
4.2.2	Location of examination.....	46
4.2.3	Duration of the examination.....	46
4.2.4	Criteria for examination marking.....	46
4.3	Examination syllabus.....	47
4.3.1	Syllabus.....	47
4.3.2	Modification of the syllabus.....	47
4.3.3	Evidence of prior learning.....	47
4.4	Reporting of results.....	47
4.4.1	General.....	47

4.4.2	Test certificate and wallet card.....	47
4.4.3	Period of validity.....	48
4.4.4	Reissue of certificate and wallet card.....	48
4.4.5	Register.....	48
4.5	Failure in part.....	48
4.5.1	Documentary evidence.....	48
4.5.2	Re-examination.....	48
4.5.3	Date, location and duration for re-examination.....	48
Appendix A (normative) Theory syllabus for welder qualification.....		49
Appendix B (normative) Theory syllabus for welding supervisor qualification.....		58
Appendix C (normative) Syllabus for welding inspector qualification.....		70
Bibliography.....		78

Currently in preview, click buy full version.

NOTES

Currently in preview, click buy full version

Australian Standard®

Pressure equipment — Qualification of welders, welding supervisors and welding inspectors

Section 1 Scope and general

1.1 Scope

This document sets out the requirements for the qualification of welders, welding supervisors and welding inspectors engaged in welding processes used in the manufacture of pressure equipment, such as boilers, pressure vessels and associated piping, as defined in AS/NZS 1200, as well as other applications requiring a prescribed standard in the theory and practice of welding.

Qualification in welding is related primarily to welding techniques and processes and not to the parent metal of the joint.

The welder qualification comprises the following:

- (a) Preparation of test plates conforming to the requirements of this document.
- (b) Following designated weld procedure(s).
- (c) Qualifying welded test plates conforming to this document, and as appropriate, to AS/NZS ISO 9606.1.

NOTE 1 Unless otherwise specified, welders qualified to this document are required to undertake additional qualification tests as specified in the appropriate application standards (e.g. AS 3992) prior to the commencement of welding.

Requirements for the syllabus for the practical and theory component of the welder qualification are set out in [Section 2](#) and [Appendix A](#).

In addition, this document sets out requirements for the qualification of pressure equipment welding supervisors, which provide for a high degree of knowledge of the theory and practice of welding needed to supervise welders in accordance with AS/NZS 1200.

NOTE 2 The requirements are consistent with the requirements of AS/NZS ISO 14731 for the supervision of welding and welding-related activities on pressure equipment.

Requirements for the syllabus for the theory component of the welding supervisor qualification are set out in [Section 3](#) and [Appendix B](#).

This document also sets out requirements for the qualification of pressure equipment welding inspectors, which build on the knowledge of the theory and practice of welding in the welding supervisor qualification with a specific focus on inspection requirements.

NOTE 3 The syllabus items for welding inspector have been sourced from AS/NZS 4481.

Requirements for the syllabus for the practical and theory component of the welding inspector qualification are set out in [Section 4](#) and [Appendix C](#).

This document may be used when specified for applications to AS/NZS 2885.2.

This document excludes requirements for the qualification of personnel for the welding of non-metallic materials and for the certification of personnel.