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Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2025)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/26

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NORME EUROPÉENNE

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Supersedes EN ISO 15614-2:2005, EN ISO 15614-2:2005/AC:2009

English Version

Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 2: Arc welding of aluminium and its alloys (ISO 15614-2:2025)

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques - Épreuve de qualification d'un mode opératoire de soudage - Partie 2: Soudage à l'arc de l'aluminium et de ses alliages (ISO 15614-2:2025)

Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißverfahrensprüfung - Teil 2: Lichtbogenschweißen von Aluminium und seinen Legierungen (ISO 15614-2:2025)

This European Standard was approved by CEN on 8 August 2025.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 15614-2:2025 (E)

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European foreword

This document (EN ISO 15614-2:2025) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2026, and conflicting national standards shall be withdrawn at the latest by March 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 15614-2:2005, EN ISO 15614-2:2005/AC:2009.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA or ZB, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 15614-2:2025 has been approved by CEN as EN ISO 15614-2:2025 without any modification.

Annex ZA (informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 2014/68/EU (PED) aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/601 to provide one voluntary means of conforming to Essential Safety Requirements of the New Approach Pressure Equipment Directive 2014/68/EU.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in [Table ZA.1](#) and application of the edition of the normatively referenced standards as given in [Table ZA.2](#) confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Safety Requirements of that Directive and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of the Directive 2014/68/EU (PED)

Essential Requirements of Directive 2014/68/EU (PED)	Clauses of this EN	Remarks/Notes
3.1.2, paragraphs 3, 4 and 5	Clauses 4 , 5 , 6 , 7 , 8 , 9	Permanent joining. For pressure resistant components of pressure equipment in the categories II, III and IV the examiner/examining body is a competent third party.

Table ZA.2 — Normative references from Clause 2 of this document and their corresponding European publications

Column 1 Reference in Clause 2	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
ISO 2107	ISO 2107:2007	<i>Aluminium and aluminium alloys — Wrought products — Temper designations</i>	None For applicable standard edition see Column 2
ISO 3452-1	ISO 3452-1:2021	<i>Non-destructive testing — Penetrant testing — Part 1: General principles</i>	EN ISO 3452-1:2021
ISO 4136	ISO 4136:2022	<i>Destructive tests on welds in metallic materials — Transverse tensile test</i>	EN ISO 4136:2022
ISO 5173	ISO 5173:2023	<i>Destructive tests on welds in metallic materials — Bend tests</i>	EN ISO 5173:2023
ISO 6520-1	ISO 6520-1:2007	<i>Welding and allied</i>	EN ISO 6520-1:2007

Column 1 Reference in <u>Clause 2</u>	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
		<i>processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding</i>	
ISO 6947	ISO 6947:2019	<i>Welding and allied processes — Welding positions</i>	EN ISO 6947:2019
ISO 9017	ISO 9017:2017	<i>Destructive tests on welds in metallic materials — Fracture test</i>	EN ISO 9017:2018
ISO 10042	ISO 10042:2018	<i>Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections</i>	EN ISO 10042:2018
ISO 10863	ISO 10863:2020	<i>Non-destructive testing of welds — Ultrasonic testing — Use of time-of-flight diffraction technique (TOFD)</i>	EN ISO 10863:2020
ISO 13588	ISO 13588:2019	<i>Non-destructive testing of welds — Ultrasonic testing — Use of automated phased array technology</i>	EN ISO 13588:2019
ISO 14175	ISO 14175:2008	<i>Welding consumables — Gases and gas mixtures for fusion welding and allied processes</i>	EN ISO 14175:2008
ISO 15607	ISO 15607:2019	<i>Specification and qualification of welding procedures for metallic materials — General rules</i>	EN ISO 15607:2019
ISO 15609-1	ISO 15609-1:2019	<i>Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding</i>	EN ISO 15609-1:2019
ISO 15613	ISO 15613:2004	<i>Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test</i>	EN ISO 15613:2004

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Column 1 Reference in <u>Clause 2</u>	Column 2 International Standard Edition	Column 3 Title	Column 4 Corresponding European Standard Edition
ISO 17636-1	ISO 17636-1:2022	<i>Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film</i>	EN ISO 17636-1:2022
ISO 17636-2	ISO 17636-2:2022 Corrected version 2023-02	<i>Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors</i>	EN ISO 17636-2:2022
ISO 17637	ISO 17637:2016	<i>Non-destructive testing of welds — Visual testing of fusion-welded joints</i>	EN ISO 17637:2016
ISO 17639	ISO 17639:2022	<i>Destructive tests on welds in metallic materials — Macroscopic and microscopic examination of welds</i>	EN ISO 17639:2022
ISO 17640	ISO 17640:2018	<i>Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment</i>	EN ISO 17640:2018
ISO 18273	ISO 18273:2015	<i>Welding consumables — Wire electrodes, wires and rods for welding of aluminium and aluminium alloys — Classification</i>	EN ISO 18273:2015
ISO 18491	ISO/DIS 18491:	<i>Welding and allied processes — Measurement of arc energies</i>	None For applicable standard edition see Column 2
ISO/TR 25901-1	ISO/TR 25901-1:2016	<i>Welding and allied processes — Vocabulary — Part 1: General terms</i>	None For applicable standard edition see Column 2
ISO 25901-2	ISO 25901-2:2022	<i>Welding and allied processes — Vocabulary — Part 2: Health and safety</i>	EN ISO 25901-2:2023
ISO/TR 25901-4	ISO/TR 25901-4:2016	<i>Welding and allied processes — Vocabulary — Part 4: Arc welding</i>	None For applicable standard edition see Column 2

The documents listed in the Column 1 of Table ZA.2, in whole or in part, are normatively referenced in this document, i.e. are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of Table ZA.2.

WARNING 1 Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

EN ISO 15614-2:2025 (E)**Annex ZB**
(informative)**Relationship between this European Standard and the Essential Requirements of EU Directive 2014/29/EU (SPVD) aimed to be covered**

This European Standard has been prepared under a Commission's standardization request M/602 to provide one voluntary means of conforming to Essential Safety Requirements of the New Approach Simple pressure vessels Directive 2014/29/EU.

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZB.1 and application of the edition of the normatively referenced standards as given in Table ZA.2 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Safety Requirements of that Directive and associated EFTA regulations.

Table ZB.1 — Correspondence between this European Standard and Annex I of the Directive 2014/29/EU (SPVD)

Essential Requirements of Directive 2014/29/EU (SPVD)	Clauses of this EN	Remarks/Notes
3.2, paragraph 2	<u>Clauses 4, 5, 6, 7, 8, 9</u>	Welds on pressurized parts The examiner/examining body is a notified body.

The documents listed in the Column 1 of Table ZA.2, in whole or in part, are normatively referenced in this document, i.e. are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of Table ZA.2.

WARNING 1 Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 Other Union legislation may be applicable to the products falling within the scope of this standard.



International Standard

ISO 15614-2

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

Part 2: Arc welding of aluminium and its alloys

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

Partie 2: Soudage à l'arc de l'aluminium et de ses alliages

**Second edition
2025-08**

ISO 15614-2:2025(en)



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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 10, *Quality management in the field of 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).

This second edition cancels and replaces the first edition (ISO 15614-2:2005), which has been technically revised. It also incorporates the Technical Corrigenda ISO 15614-2:2005/Cor. 1:2005 and ISO 15614-2:2005/Cor. 2:2009.

The main changes are as follows:

- aligned with ISO 15614-1 as far as practicable;
- text from [Clause 1](#) moved to the Introduction;
- process 142 added (autogenous TIG);
- references updated;
- [Clauses 5, 6, 7](#) and [8](#) and associated tables and figures revised and/or updated;
- NDT and mechanical testing standards references updated.

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>.

ISO 15614-2:2025(en)**Introduction**

Qualification of welding procedures serves to demonstrate that production operations fully comply with the agreed welding procedure, including preliminary and subsequent treatment.

Before a particular welding procedure is used in a production operation, 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, post treatment and reworking.

All new welding procedure tests are intended to be carried out in accordance with this document from the date of its issue.

Specification and qualification of welding procedures that were made in accordance with previous editions of this document can be used for any application for which the current edition is specified. In this case, the ranges of qualification of previous editions remain applicable.

It is also possible to create a new WPQR range of qualification in accordance with this edition based on the existing qualified WPQR, provided the technical intent of the testing requirements of this document has been satisfied. Where additional tests are to be carried out to make the qualification technically equivalent, only the additional tests on a test piece need to be performed.

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

Part 2: Arc welding of aluminium and its alloys

1 Scope

This document specifies how a preliminary welding procedure specification (pWPS) is qualified by welding procedure tests.

This document applies to production welding, repair welding and build-up welding.

This document defines the conditions for the execution of welding procedure tests and the range of qualification for welding procedures for all practical welding operations within the qualification of this document.

This document applies to the arc welding of wrought and cast aluminium and its alloys. In this document the term aluminium stands for aluminium and for aluminium alloys.

This document does not apply to finishing welding of aluminium castings, which is addressed in ISO 15614-4.

Arc welding of aluminium is covered by the following welding processes in accordance with ISO 4063:2023:

- 131 — MIG welding with solid wire electrode;
- 141 — TIG welding with solid filler material (wire/rod);
- 142 — Autogenous TIG welding;
- 15 — plasma arc welding.

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 amendments) applies.

ISO 2107, *Aluminium and aluminium alloys — Wrought products — Temper designations*

ISO 3452-1, *Non-destructive testing — Penetrant testing — Part 1: General principles*

ISO 4136, *Destructive tests on welds in metallic materials — Transverse tensile test*

ISO 5173, *Destructive tests on welds in metallic materials — Bend tests*

ISO 6520-1, *Welding and allied processes — Classification of geometric imperfections in metallic materials — Part 1: Fusion welding*

ISO 6947, *Welding and allied processes — Welding positions*

ISO 9017, *Destructive tests on welds in metallic materials — Fracture test*

ISO 10042:2018, *Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections*

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ISO 10863, *Non-destructive testing of welds — Ultrasonic testing — Use of time-of-flight diffraction technique (TOFD)*

ISO 13588, *Non-destructive testing of welds — Ultrasonic testing — Use of automated phased array technology*

ISO 14175, *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*

ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules*

ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding*

ISO 15613, *Specification and qualification of welding procedures for metallic materials — Qualification based on pre-production welding test*

ISO 17636-1, *Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film*

ISO 17636-2, *Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors*

ISO 17637, *Non-destructive testing of welds — Visual testing of fusion-welded joints*

ISO 17639, *Destructive tests on welds in metallic materials — Macroscopic and microscopic examination of welds*

ISO 17640, *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment*

ISO 25901 (all parts), *Welding and allied processes — Vocabulary*

ISO 18273, *Welding consumables — Wire electrodes, wires and rods for welding of aluminium and aluminium alloys — Classification*

ISO 18491¹⁾, *Welding and allied processes — Measurement of arc energies*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

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