

**Metallide keevitusprotseduuride
spetsifitseerimine ja atesteerimine.
Keevitusprotseduuri katse. Osa 4:
Alumiiniumsulamite keevisvanni
viimistlemine**

Specification and qualification of welding procedures
for metallic materials - Welding procedure test - Part
4: Finishing welding of aluminium castings

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 15614-4:2005 sisaldab Euroopa standardi EN ISO 15614-4:2005 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 29.08.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 15614-4:2005 consists of the English text of the European standard EN ISO 15614-4:2005.</p> <p>This document is endorsed on 29.08.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This part of ISO 15614 is one of a series of standards, details of which are given in ISO 15607:2003, Annex A. It specifies how a welding procedure specification for finishing welding of aluminium castings is qualified by welding procedure tests. It does not apply to repair welding.</p>	<p>Scope:</p> <p>This part of ISO 15614 is one of a series of standards, details of which are given in ISO 15607:2003, Annex A. It specifies how a welding procedure specification for finishing welding of aluminium castings is qualified by welding procedure tests. It does not apply to repair welding.</p>
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Võtmesõnad:

English Version

Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 4: Finishing welding of aluminium castings (ISO 15614-4:2005)

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques - Epreuve de qualification d'un mode opératoire de soudage - Partie 4: Réparation par soudage pour les travaux de finition des pièces moulées en aluminium (ISO 15614-4:2005)

Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißverfahrensprüfung - Teil 4: Fertigungsschweißen von Aluminiumguss (ISO 15614-4:2005)

This European Standard was approved by CEN on 20 June 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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Foreword

This document (EN ISO 15614-4:2005) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

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 January 2006, and conflicting national standards shall be withdrawn at the latest by January 2006.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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

ANNEX ZA
(informative)

**Relationship between this European Standard and the Essential
Requirements of EU Directive 97/23 EEC**

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 97/23 EEC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

WARNING: Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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

**Part 4:
Finishing welding of aluminium castings**

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

*Partie 4: Réparation par soudage pour les travaux de finition des pièces
moulées en aluminium*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 15614-4 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, *Unification of requirements in the field of metal welding*.

ISO 15614 consists of the following parts, under the general title *Specification and qualification of welding procedures for metallic materials — Welding procedure test*:

- *Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys*
- *Part 2: Arc welding of aluminium and its alloys*
- *Part 3: Arc welding of cast iron*
- *Part 4: Finishing welding of aluminium castings*
- *Part 5: Arc welding of titanium, zirconium and their alloys*
- *Part 6: Arc welding of copper and its alloys*
- *Part 7: Overlay welding*
- *Part 8: Welding of tubes to tube-plate joints*
- *Part 9: Underwater hyperbaric wet welding*
- *Part 10: Hyperbaric dry welding*
- *Part 11: Electron and laser beam welding*
- *Part 12: Spot, seam and projection welding*
- *Part 13: Resistance butt and flash welding*

Annex ZZ provides a list of corresponding International and European Standards for which equivalents are not given in the text.

Requests for official interpretations of any aspects of this part of ISO 15614 should be directed to the Secretariat of ISO/TC 44/SC 10 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

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

Part 4: Finishing welding of aluminium castings

1 Scope

This part of ISO 15614 is one of a series of standards, details of which are given in ISO 15607:2003, Annex A.

It specifies how a welding procedure specification for finishing welding of aluminium castings is qualified by welding procedure tests. It does not apply to repair welding.

For joint welding, ISO 15614-2 applies.

Arc welding of aluminium castings is covered by the following processes as defined in ISO 4063:

- 131 metal inert gas welding, MIG welding;
- 141 tungsten inert gas arc welding; TIG welding;
- 15 plasma arc welding.

Other fusion welding processes by agreement.

Shielding gases used in these processes are:

- argon ISO 14175 I1;
- helium ISO 14175 I2;
- argon-helium mixture ISO 14175 I3.

Other shielding gases by agreement.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 571-1, *Non destructive testing — Penetrant testing — Part 1: General principles*

ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers*

ISO 6947, *Welds — Working positions — Definitions of angles of slope and rotation*

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

ISO 10042, *Arc-welded joints in aluminium and its weldable alloys — Guidance on quality levels for imperfections*

ISO 14175, *Welding consumables — Shielding gases for arc welding and cutting*

ISO 15607:2003, *Specification and qualification of welding procedures for metallic materials — General rules*

ISO/TR 15608, *Welding — Guidelines for a metallic materials grouping system*

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

ISO 15614-2:2005, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 2: Arc welding of aluminium and its alloys*

ISO 17635, *Non-destructive testing of welds — General rules for fusion welds in metallic materials*

ISO 17636, *Non-destructive testing of welds — Radiographic testing of fusion-welded joints*

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15607 and the following apply.

3.1

production welding

any welding carried out before final delivery to the end user

3.1.1

joint welding

production welding used to assemble components together to obtain an integral unit

NOTE This includes the welding of cast or wrought components as well as combinations of cast and wrought materials.

3.1.2

finishing welding

welding carried out during production in order to remove casting defects and core openings to ensure the agreed quality of castings

4 Preliminary welding procedure specification (pWPS)

The preliminary welding procedure specification shall be prepared in accordance with ISO 15609-1.

5 Welding procedure test

The preparation and testing of test pieces representing the type of welding used in production shall be in accordance with Clauses 6 and 7.

The welder shall only be qualified by welding test pieces in accordance with Clause 6.