SLOVENSKI STANDARD
oSIST prEN ISO 15614-7:2013

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Specifikacija in kvalifikacija varilnih postopkov za kovinske materiale - Preskus varilnega postopka - 7. del: Navarjanje (ISO/DIS 15614-7:2013)

Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 7: Overlay welding (ISO/DIS 15614-7:2013)

Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißverfahrensprüfung - Teil 7: Auftragschweißen (ISO/DIS 15614-7:2013)

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques - Epreuve de qualification d'un mode opératoire de soudage - Partie 7: Rechargement par soudage (ISO/DIS 15614-7:2013)

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ICS:

25.160.10	Varilni postopki in varjenje	Welding processes

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

Part 7: Overlay welding

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

Partie 7: Rechargement par soudage

[Revision of first edition (ISO 15614-7:2007)]

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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

Reference number
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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 15614-7 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 10, and by Technical Committee CEN/TC 121, *Welding and allied processes* in collaboration.

This second/third/... edition cancels and replaces the first/second/... edition (ISO 15614-7:2007), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

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 irons*
— *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: Flash and butt welding*
— *Part 14: Laser-arc hybrid welding of steels, nickel and nickel alloys*

Introduction

This standard is part of a series of standards, details of this series are given in ISO 15607:2003, Annex A.

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

Qualifications performed to previous editions of this standard are still valid. It is not necessary to perform additional tests to fulfil requirements for any application with reference to previous editions.

Requests for official interpretations of any aspect of this standard should be directed to the secretariat if ISO/TC 44/SC10 via your national standards body, a complete listing which can be found at www.iso.org.

Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 7: Overlay welding

1 Scope

This standard specifies how a preliminary welding procedure specification for overlay welding is qualified by welding procedure tests.

This standard defines the conditions for execution of welding procedure tests and the range of qualification for welding procedures for all practical welding operations within the range of variables listed in Clause 8.

Additional tests may be required by application standards.

This standard applies to all welding processes suitable for overlay welding. Building up and repair of parent materials is covered by ISO 15613 or ISO 15614-1.

This part of ISO 15614 is applicable to all new welding procedures. However, it does not invalidate previous welding procedure tests made to former national standards or specifications. Where additional tests have to be carried out to make the qualification technically equivalent, it is only necessary to do the additional tests on a test piece made in accordance with this part of ISO 15614.

If buttering is used for welding between dissimilar materials, the welding procedure shall be qualified in accordance with ISO 15614-1. This buttering may be required for weld combining different material structure or properties, e. g. joining martensitic steels or ferritic steels with austenitic steels.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO 9015-1, *Destructive tests on welds in metallic materials — Hardness testing — Part 1: Hardness test on arc welded joints*

ISO 14174, *Welding consumables — Fluxes for submerged arc welding — Classification*

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

ISO 15609-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 2: Gas welding*

ISO 15609-3, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 3: Electron beam welding*

ISO 15609-4, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 4: Laser beam welding*

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

ISO 15614-1, *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*

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 17405, *Non-destructive testing — Ultrasonic testing — Technique of testing claddings produced by welding, rolling and explosion*

ISO 23277:2006, *Non-destructive testing of welds — Penetrant testing of welds — Acceptance levels*

ISO 23278:2006, *Non-destructive testing of welds — Magnetic particle testing of welds — Acceptance levels*

ISO/TR 15608, *Welding – Guidelines for a metallic material grouping system*

ISO/TR 25901, *Welding and related processes — Vocabulary*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ISO/TR 25901 apply.

4 Preliminary welding procedure specification (pWPS)

4.1 Overlay welding

The preliminary welding procedure specification shall be in accordance with ISO 15609-1, ISO 15609-3 or ISO 15609-4. It shall specify the tolerances for all the relevant parameters.

4.2 Hardfacing

The preliminary welding procedure specification shall be in accordance with ISO 15609-1, ISO 15609-2, ISO 15609-3 or ISO 15609-4. It shall specify the tolerances for all the relevant parameters.

4.3 Buttering

If buttering is used for welding between dissimilar materials, the welding procedure shall be qualified in accordance with ISO 15614-1. This buttering may be required for weld combining different material structure or properties, e. g. joining martensitic steels or ferritic steels with austenitic steels.

5 Welding procedure test

A test piece shall be welded using the same welding processes or process combinations as those who were used in production (e. g. strip-overlay welding and manual metal arc overlay welding with covered electrode).

The welding and testing of test pieces shall be in accordance with Clauses 6 and 7.

6 Test piece

6.1 Shape and dimensions of test pieces

6.1.1 General

The welding procedure test shall be carried out on test piece(s) in accordance with Figures 1 and 2.

The dimensions and/or number of test pieces shall be sufficient to allow all required tests to be carried out (see Figures 1 and 2).

The thickness and/or diameter of the test pieces shall be selected in accordance with the range of qualification.

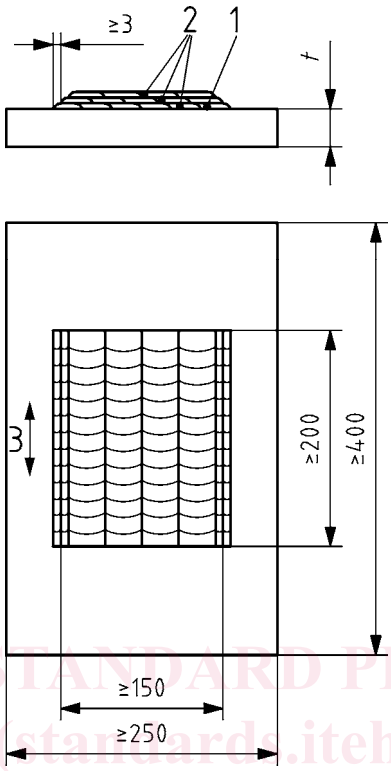
6.1.2 Overlay welding and hard-facing

A minimum number of three runs is required for the top layer.

6.1.3 Butter layer

If a butter layer is used in production welding, it shall be used in welding the test piece.

Dimensions in millimetres



Key

1 Butter layer, if necessary
2 Number of layers in accordance with the pWPS (see 6.1.2) or thickness of overlay deposit

3 Welding direction [a]
t Parent material thickness

[a] The orientation of weld runs is not defined. Specific requirements may be detailed in application standards.

Figure 1 — Test piece – plate