SLOVENSKI STANDARD
oSIST prEN ISO 15614-6:2021

01-november-2021

Popis in kvalifikacija varilnih postopkov za kovinske materiale - Preskus varilnega postopka - 6. del: Obločno in plamensko varjenje bakra in njegovih zlitin (ISO/DIS 15614-6:2021)

Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 6: Arc and gas welding of copper and its alloys (ISO/DIS 15614-6:2021)

Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe - Schweißverfahrensprüfung - Teil 6: Lichtbogen- und Gasschweißen von Kupfer und seinen Legierungen (ISO/DIS 15614 6:2021)

Descriptif et qualification d'un mode opératoire de soudage pour les matériaux métalliques - Épreuve de qualification d'un mode opératoire de soudage - Partie 6: Soudage à l'arc et aux gaz du cuivre et de ses alliages (ISO/DIS 15614-6:2021)

Ta slovenski standard je istoveten z: **prEN ISO 15614-6**

ICS:

25.160.10	Varilni postopki in varjenje	Welding processes
77.120.30	Baker in bakrove zlitine	Copper and copper alloys

oSIST prEN ISO 15614-6:2021 **en,fr,de**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 15614-6

ISO/TC **44**/SC **10** Secretariat: **DIN**

Voting begins on: **2021-09-09**

Voting terminates on: **2021-12-02**

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

Part 6: Arc and gas welding of copper 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 6: Soudage à l'arc et aux gaz du cuivre et de ses alliages

ICS: 25.160.10

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 15614-6:2021(E)

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

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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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*.

This second edition cancels and replaces the first edition (ISO 15614-6:2006), which has been technically revised.

Any feedback, question or request for official interpretation related to any aspect of this document 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/members.html. Official interpretations, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

The main changes compared to the previous edition are as follows:

— normative references have been updated;

— to be updated closer to publication.

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

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

Part 6: Arc and gas welding of copper and its alloys

1 Scope

This document specifies how a preliminary welding procedure specification is qualified by welding procedure tests. It applies to arc and gas welding of copper and copper alloys in all product forms.

This document defines the conditions for the execution of welding procedure tests and the range of qualification for welding procedures for welding operations within the range of variables listed in Clause 9.

This document 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 document.

Additional tests can be required by application standards.

The principles of this document may be applied to other fusion welding processes.

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

ISO 4063:2009, *Welding and allied processes — Nomenclature of processes and reference numbers*

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 9606-3, *Approval testing of welders — Fusion welding — Part 3: Copper and copper alloys*

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

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

ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials*

ISO 15607, *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 15609-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 2: Gas welding*

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

ISO 17636 (all parts), *Non-destructive testing of welds — Radiographic testing*

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 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Welding processes

Arc and gas welding are covered by the following processes in accordance with ISO 4063:2009.

111 manual metal-arc welding (metal-arc welding with covered electrode);

131 MIG (metal inert gas) welding with solid wire electrode;

132 MIG welding with flux-cored electrode;

133 MIG welding with metal-cored electrode;

141 TIG (tungsten inert gas) welding with solid filler material (wire/rod);

142 Autogenous TIG welding;

143 TIG welding with tubular-cored filler material (wire/rod);

145 TIG welding using reducing gas and solid filler material (wire/rod);

146 TIG welding using reducing gas and tubular-cored filler material (wire/rod);

15 plasma arc welding;

311 oxy-acetylene welding.

5 Preliminary welding procedure specification (pWPS)

A preliminary welding procedure specification shall be prepared in accordance with ISO 15609-1 or ISO 15609-2.

6 Welding procedure test

Test pieces shall be prepared and tested in accordance with Clauses 7 and 8.

The welder or welding operator who undertakes the welding procedure test satisfactorily, in accordance with this document, is qualified for the appropriate range of qualification in accordance with ISO 9606-3 or ISO 14732 providing that the relevant testing requirements are met.

7 Test pieces

7.1 General

The welded joint to which the welding procedure will relate to in production shall be represented by making a standardized test piece or test pieces, in accordance with 7.2. Where the production/joint geometry requirements do not represent the standardized test pieces as shown in this document, ISO 15613 shall be used.

7.2 Shape and dimensions of test pieces

7.2.1 General

The length or number of test pieces shall be sufficient to allow all required tests to be carried out.

Additional test pieces, or test pieces longer than the minimum size, may be prepared in order to allow for extra testing and/or for re-testing specimens (see 8.6).

For all test pieces except branch connections (see Figure 5) and fillet welds (see Figure 4), the material thickness, *t*, shall be the same for both plates/pipes to be welded.

If required by the application standard, the direction of plate rolling shall be marked on the test piece.

The thickness and/or outside pipe diameter of the test pieces shall be selected in accordance with 9.3.2.1 to 9.3.2.4.

The shape and minimum dimensions of the test piece shall be as given in 7.2.2 to 7.2.6.

7.2.2 Butt joint in plate with full penetration

The test piece shall be prepared in accordance with Figure 1.

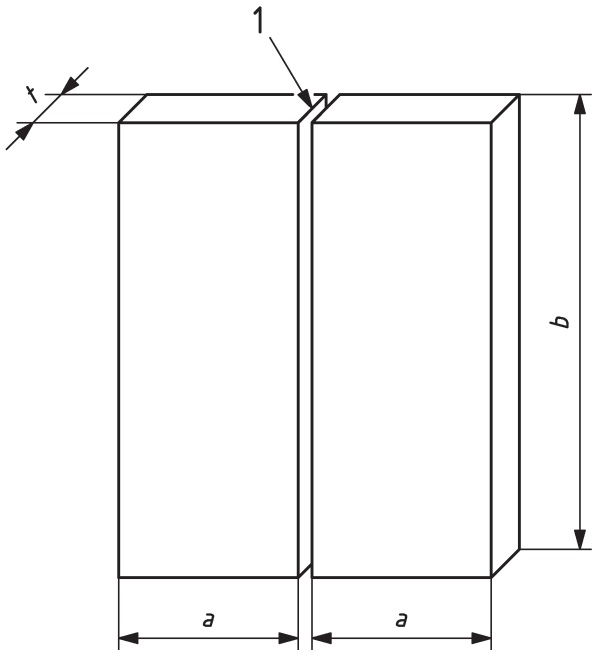
7.2.3 Butt weld between plates with raised edges

The test piece shall be prepared in accordance with Figure 2.

7.2.4 Butt joint in pipe with full penetration

The test piece shall be prepared in accordance with Figure 3.

NOTE The word “pipe”, alone or in combination, is used to mean “pipe”, “tube” or “hollow section”.



Key

1 joint preparation and fit-up as detailed in the preliminary welding procedure specification (pWPS)

a minimum value 150 mm

b minimum value 300 mm

t material thickness

Figure 1 — Test piece for a butt joint in plate with full penetration