SLOVENSKI STANDARD
oSIST prEN ISO 11970:2014

01-januar-2014

Popis in odobritev varilnih postopkov za proizvodno varjenje jeklenih ulitkov (ISO/DIS 11970:2013)

Specification and approval of welding procedures for production welding of steel castings (ISO/DIS 11970:2013)

Anforderungen und Anerkennung von Schweißverfahren für das Produktionsschweißen von Stahlguss (ISO/DIS 11970:2013)

Descriptif et qualification d'un mode opératoire de soudage pour le soudage de production des aciers moulés (ISO/DIS 11970:2013)

Ta slovenski standard je istoveten z: **prEN ISO 11970**

ICS:

25.160.10	Varilni postopki in varjenje	Welding processes
77.140.80	Železni in jekleni ulitki	Iron and steel castings

oSIST prEN ISO 11970:2014 **en,fr,de**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 11970

ISO/TC **17**/SC **11** Secretariat: **ANSI**

Voting begins on: **2013-10-03**

Voting terminates on: **2014-03-03**

Specification and approval of welding procedures for production welding of steel castings

Descriptif et qualification d'un mode opératoire de soudage pour le soudage de production sur aciers moulés

[Revision of first edition (ISO 11970:2001)]

ICS: 25.160.10;77.140.80

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
ISO/DIS 11970:2013(E)

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.

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 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 11, *Steel castings*.

This second/third/... edition cancels and replaces the first/second/... edition (ISO 11970:2001), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

Annex B forms a normative part of this International Standard. Annex A is for information only.

Introduction

All welding procedure approvals for production welding of steel castings shall be in accordance with this International Standard from the date of its issue.

Previous procedure approvals that conform to the range of approval of clause 8 are valid under this International Standard.

Where additional tests have to be carried out to complete the approval it is only necessary to perform the additional tests to the requirements of clauses 6 and 7.

Specification and approval of welding procedures for production welding of steel castings

1 Scope

This International Standard specifies how a welding procedure specification (WPS) for production welding of steel castings is approved,

It defines the conditions for the execution of welding procedure approval tests and the limits of validity of an approved welding procedure for all practical welding operations within the range of essential variables.

Tests shall be carried out in accordance with this International Standard unless additional tests are specified by the purchaser or by agreement between the contracting parties.

This International Standard applies to the arc welding of steel castings. The principles of this International Standard may be applied to other fusion welding processes subject to agreement between the contracting parties.

In the case of specific service, material or manufacturing conditions, more comprehensive tests may be specified by the purchaser, than are specified by this International Standard, in order to gain more information, e.g. longitudinal weld tensile tests, bend tests, chemical analyses, ferrite determination in austenitic stainless steels, elongation, Charpy “V” impact tests, radiography, etc.

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.

ISO 148-1, *Metallic materials -- Charpy pendulum impact test -- Part 1: Test method*.

ISO 857-1, *Welding and allied processes — Vocabulary —Part 1: Metal welding processes.*

ISO 4969, *Steel — Macroscopic examination by etching with strong mineral acids*.

ISO 4986, *Steel castings — Magnetic particle inspection.*

ISO 4987, *Steel castings — Liquid penetrant inspection*.

ISO 4992-1, *Steel castings — Ultrasonic examination -- Part 1: Steel castings for general purposes*.

ISO 4992-2, *Steel castings — Ultrasonic examination -- Part 2: Steel castings for highly stressed components*

ISO 4993, *Steel and iron castings -- Radiographic inspection*

ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections.*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*.

ISO 6892-1, *Metallic materials -- Tensile testing -- Part 1: Method of test at room temperature*.

ISO 6947, *Welding and allied processes -- Welding positions*.

ISO 9606-1, *Approval testing of welders — Fusion welding — Part 1: Steels.*

ISO 9692-1, *Welding and allied processes -- Recommendations for joint preparation -- Part 1: Manual metal-arc welding, gas-shielded metal-arc welding, gas welding, TIG welding and beam welding of steels.*

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

ISO 15612, *Specification and qualification of welding procedures for metallic materials -- Qualification by adoption of a standard welding procedure.*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 857-1 and ISO 15607 as well as the following apply.

3.1
production welding
any welding carried out during manufacturing before final delivery to the purchaser including joint welding of castings and finishing welding

3.1.1
joint welding
welding used to weld cast components together or weld cast components to wrought steels in order to obtain an integral unit

3.1.2
finishing welding
welding carried out in order to ensure the agreed quality of the casting

3.2
repair welding
any welding carried out after delivery to the end user, i.e. after the casting has been in service

4 Preliminary welding procedure specification (pWPS)

A preliminary welding procedure specification shall be prepared. It shall specify the range of all the relevant parameters according to ISO 15612.

5 Welding procedure qualification

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

The welder who undertakes the welding procedure test satisfactorily in accordance with this International Standard is approved for the appropriate range of approval according to ISO 9606-1. Additional welders shall be qualified in accordance with 7.6.

6 Test piece

6.1 General

The test piece shall be in accordance with that shown in Figures 1a and 1b.

6.2 Shape and dimensions of test piece

Additional test pieces, or longer test pieces than the minimum size may be prepared in order to allow for extra and/or retesting specimens (in accordance with 7.5).

6.3 Welding of test piece

The preparation and welding of the test piece shall be carried out in accordance with the relevant pWPS. Angular tolerances may be agreed between the contracting parties or by the relevant application standard.

The dimensions and shape of the groove shall be in accordance with ISO 9692-1.

If tack welds are to be fused into the final joint they shall be included in the test piece.

Unless otherwise specified in the purchase order or contract review, welding and testing of the test piece(s) shall be witnessed by an examiner (or test body). When the examiner (or test body) is not specified in the purchase order the manufacturer may appoint a suitable examiner.