

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

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EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-EN ISO 11970:2008 sisaldab Euroopa standardi EN ISO 11970:2007 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 28.01.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 04.07.2007.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 11970:2008 consists of the English text of the European standard EN ISO 11970:2007.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 28.01.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 04.07.2007.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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Võtmesõnad:

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Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

English Version

Specification and approval of welding procedures for production
welding of steel castings (ISO 11970:2001)

Descriptif et qualification d'un mode opératoire de soudage
pour le soudage de production sur aciers moulés (ISO
11970:2001)

Anforderungen und Anerkennung von Schweißverfahren für
das Produktionsschweißen von Stahlguss (ISO
11970:2001)

This European Standard was approved by CEN on 24 June 2007.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of ISO 11970:2001 has been prepared by Technical Committee ISO/TC 17 "Steel" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 11970:2007 by Technical Committee ECISS/TC 31 "Steel castings", 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 January 2008, and conflicting national standards shall be withdrawn at the latest by January 2008.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Endorsement notice

The text of ISO 11970:2001 has been approved by CEN as EN ISO 11970:2007 without any modifications.

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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 normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 148:1983, *Steel — Charpy impact test (V-notch)*.

ISO 857-1:1998, *Welding and allied processes — Vocabulary — Part 1: Metal welding processes*.

ISO 4969:1980, *Steel — Macroscopic examination by etching with strong mineral acids*.

ISO 4986:1992, *Steel castings — Magnetic particle inspection*.

ISO 4987:1992, *Steel castings — Penetrant inspection*.

ISO 4992:—¹⁾, *Steel castings — Ultrasonic inspection*.

ISO 4993:1987, *Steel castings — Radiographic inspection*.

1) To be published.

ISO 5817:—²⁾, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections.*

ISO 6507-1:1997, *Metallic materials — Vickers hardness test — Part 1: Test method.*

ISO 6892:1998, *Metallic Materials — Tensile testing at ambient temperature.*

ISO 6947:1990, *Welds — Working positions — Definition of angles of slope and rotation.*

ISO 9606-1:1994, *Approval testing of welders — Fusion welding — Part 1: Steels.*

ISO 9692-1:—³⁾, *Welding and allied processes — Recommendations for joint preparation — Part 1: Manual metal-arc welding, gas-shielded metal-arc welding and gas welding of steels.*

ISO 9956-1:1995, *Specification and approval of welding procedures for metallic materials — Part 1: General rules for fusion welding.*

ISO 9956-2:1995, *Specification and approval of welding procedures for metallic materials — Part 2: Welding procedure specification for arc welding.*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 857-1 and ISO 9956-1 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 9956-2.

2) To be published. (Revision of ISO 5817:1992)

3) To be published. (Partial revision of ISO 9692:1992)