

**Founding - Ultrasonic examination -
Part 2: Steel castings for highly
stressed components**

Founding - Ultrasonic examination - Part 2: Steel
castings for highly stressed components

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 12680-2:2003 sisaldab Euroopa standardi EN 12680-2:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 12680-2:2003 consists of the English text of the European standard EN 12680-2:2003.</p> <p>This document is endorsed on 18.02.2003 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>
--	---

<p>Käsitlusala: This European Standard specifies the requirements for the ultrasonic examination of steel castings (with ferritic structure) for highly stressed components and the methods for determining internal discontinuities by the pulse echo technique</p>	<p>Scope: This European Standard specifies the requirements for the ultrasonic examination of steel castings (with ferritic structure) for highly stressed components and the methods for determining internal discontinuities by the pulse echo technique</p>
---	---

ICS 77.040.20

Võtmesõnad: area, cast iron, e, finishes, foundries, foundry practice, materials, nodular-graphite cast-iron, pulse replies, specification (approval), specifications, surface discontinuities, surfaces, testing, turbine components, turbines, ultrasonic testing, wall thicknesses

ICS 77.040.20

English version

Founding - Ultrasonic examination - Part 2: Steel castings for highly stressed components

Fonderie - Contrôle par ultrasons - Partie 2: Pièces moulées en acier pour composants fortement sollicités

Gießereiwesen - Ultraschallprüfung - Teil 2: Stahlgussstücke für hoch beanspruchte Bauteile

This European Standard was approved by CEN on 21 November 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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

Contents

	page
Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions.....	4
4 Requirements	5
4.1 Order information	5
4.2 Extent of examination.....	6
4.3 Maximum permissible size of discontinuities.....	6
4.4 Personnel qualification	6
4.5 Wall section zones.....	6
4.6 Severity levels	7
5 Examination.....	7
5.1 Principles.....	7
5.2 Material.....	7
5.3 Equipment, coupling medium, sensitivity and resolution of detection	8
5.4 Preparation of casting surfaces for testing	8
5.5 Examination procedure.....	9
5.6 Examination report	12
Annex A (normative) Resolution of detection of the instrument/probe combination.....	20
Annex B (informative) Sound-beam diameters	21
Annex C (informative) Types of indications	23
Bibliography	35

Foreword

This document (EN 12680-2:2003) has been prepared by Technical Committee CEN/TC 190 "Foundry Technology", the secretariat of which is held by DIN.

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 July 2003, and conflicting national standards shall be withdrawn at the latest by July 2003.

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 4.10 "Inner defects" to prepare the following standard:

EN 12680-2, *Founding — Ultrasonic examination — Part 2: Steel castings for highly stressed components.*

This is one of three European Standards for ultrasonic examination. The other standards are:

EN 12680-1, *Founding — Ultrasonic examination — Part 1: Steel castings for general purposes.*

EN 12680-3, *Founding — Ultrasonic examination — Part 3: Spheroidal graphite cast iron castings.*

Annex A is normative. Annexes B and C are informative.

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

1 Scope

This European Standard specifies the requirements for the ultrasonic examination of steel castings (with ferritic structure) for highly stressed components and the methods for determining internal discontinuities by the pulse echo technique.

This European Standard applies to the ultrasonic examination of steel castings which have usually received a grain refining heat treatment and which have wall thicknesses up to and including 600 mm.

For greater wall thicknesses, special agreements apply with respect to test procedure and recording levels.

This European Standard does not apply to austenitic steels and joint welds.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 583-1, *Non-destructive testing — Ultrasonic examination — Part 1: General principles.*

EN 583-2, *Non-destructive testing — Ultrasonic examination — Part 2: Sensitivity and range setting.*

EN 583-5:2000, *Non-destructive testing — Ultrasonic examination — Part 5: Characterization and sizing of discontinuities.*

EN 12223, *Non-destructive testing — Ultrasonic examination — Specification for calibration block No. 1.*

EN 12668-1, *Non-destructive testing — Characterization and verification of ultrasonic examination equipment — Part 1: Instruments.*

EN 12668-2, *Non-destructive testing — Characterization and verification of ultrasonic examination equipment — Part 2: Probes.*

EN 12668-3, *Non-destructive testing — Characterization and verification of ultrasonic examination equipment — Part 3: Combined equipment.*

EN 27963, *Welds in steel — Calibration block No. 2 for ultrasonic examination of welds (ISO 7963:1985).*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

NOTE Other terms and definitions used in this European Standard are given in EN 583-1, EN 583-2, EN 583-5 and EN 1330-4.

3.1 reference discontinuity echo size

smallest indication to be recorded during the assessment phase of an ultrasonic examination, usually expressed as an equivalent flat-bottomed hole diameter

3.2 point discontinuity

discontinuity, the dimensions of which are smaller than or equal to the sound-beam diameter