

**Non-destructive testing - Ultrasonic examination -
Part 6: Time-of-flight diffraction technique as a
method for detection and sizing of discontinuities**

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 583-6:2009 sisaldab Euroopa standardi EN 583-6:2008 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 29.01.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 03.12.2008.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 583-6:2009 consists of the English text of the European standard EN 583-6:2008.

This standard is ratified with the order of Estonian Centre for Standardisation dated 29.01.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 03.12.2008.

The standard is available from Estonian standardisation organisation.

ICS 19.100

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English Version

Non-destructive testing - Ultrasonic examination - Part 6: Time-of-flight diffraction technique as a method for detection and sizing of discontinuities

Essais non destructifs - Contrôle ultrasonore - Partie 6:
Technique de diffraction du temps de vol utilisée comme
méthode de détection et de dimensionnement des
discontinuités

Zerstörungsfreie Prüfung - Ultraschallprüfung - Teil 6:
Beugungslaufzeittechnik, eine Technik zum Auffinden und
Ausmessen von Inhomogenitäten

This European Standard was approved by CEN on 29 October 2008.

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.



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Foreword

This document (EN 583-6:2008) has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", 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 June 2009, and conflicting national standards shall be withdrawn at the latest by June 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes ENV 583-6:2000.

The relevant changes from the previous edition are as follows:

- the terminology was revised;
- the references were updated.

EN 583, *Non-destructive testing — Ultrasonic examination* consists of the following parts:

- 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 583-3, *Non-destructive testing — Ultrasonic examination — Part 3: Transmission technique*
- EN 583-4, *Non-destructive testing — Ultrasonic examination — Part 4: Examination for discontinuities perpendicular to the surface*
- EN 583-5, *Non-destructive testing — Ultrasonic examination — Part 5: Characterization and sizing of discontinuities*
- EN 583-6, *Non-destructive testing — Ultrasonic examination — Part 6: Time-of-flight diffraction technique as a method for detection and sizing of discontinuities*

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 the United Kingdom.

1 Scope

This European Standard defines the general principles for the application of the Time-Of-Flight Diffraction (TOFD) technique for both detection and sizing of discontinuities in low alloyed carbon steel components. It could also be used for other types of materials, provided the application of the TOFD technique is performed with necessary consideration of geometry, acoustical properties of the materials and the sensitivity of the examination.

Although it is applicable, in general terms, to discontinuities in materials and applications covered by EN 583-1, it contains references to the application on welds. This approach has been chosen for reasons of clarity as to the ultrasonic probe positions and directions of scanning.

Unless otherwise specified in the referencing documents, the minimum requirements of this standard are applicable.

Unless explicitly stated otherwise, this standard is applicable to the following product classes as defined in EN 583-2:

- class 1, without restrictions,
- classes 2 and 3, restrictions will apply as stated in Clause 9.

The inspection of products of classes 4 and 5 will require special procedures. These are addressed in Clause 9 as well.

The techniques to use TOFD for weld inspection are described in CEN/TS 14751.

The related acceptance criteria are given in prEN 15617.

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.

EN 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

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 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*