

STN	Zlievarenstvo Rádiografické skúšanie Časť 2: Metódy s digitálnymi detektormi	STN EN 12681-2 42 9742
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Founding - Radiographic testing - Part 2: Techniques with digital detectors

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Founding - Radiographic testing - Part 2: Techniques with digital detectors

Fonderie - Contrôle par radiographie - Partie 2 :
Techniques à l'aide de détecteurs numériques

Gießereiwesen - Durchstrahlungsprüfung - Teil 2:
Technik mit digitalen Detektoren

This European Standard was approved by CEN on 16 July 2017.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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

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EN 12681-2:2017 (E)

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	7
4	Symbols and abbreviations	13
5	Classification of radiographic techniques and compensation principles	14
5.1	Classification	14
5.2	Compensation principles	14
6	General preparations and requirements	15
6.1	Protection against ionizing radiation	15
6.2	Surface preparation and stage of manufacture	15
6.3	Agreements	15
6.4	Personnel qualification	16
7	Test arrangements	16
7.1	General	16
7.2	Single wall radiography of plane areas	16
7.3	Single wall radiography of curved areas	16
7.4	Double wall radiography of plane and curved areas	17
7.5	Choice of test arrangements for complex geometries	17
7.6	Acceptable test area dimensions	17
8	Choice of tube voltage and radiation source	21
8.1	X-ray devices up to 1 000 kV	21
8.2	Other radiation sources	23
9	Metal screens for IPs and shielding	23
10	Reduction of scattered radiation	25
10.1	Metal filters and collimators	25
10.2	Interception of backscattered radiation	26
11	Source object and detector position	26
11.1	General	26
11.2	Source-to-object distance for magnification < 1,5	26
11.3	Conditions for magnification ≥ 1,5	28
11.4	Identification of image, test area, detector position plan	30
12	Data processing	30
12.1	Scan and read out of image	30
12.2	Calibration of DDAs	30
12.3	Bad pixel interpolation	31
12.4	Image processing	31
13	Monitor viewing conditions and storage of digital images	32
14	Techniques for increasing the covered thickness range	32
14.1	General	32

14.2	Contrast decreasing by higher radiation energy	33
14.3	Beam hardening	33
14.4	Thickness equalization	33
15	Requirements on images	34
15.1	Identification of images	34
15.2	Marking of the test areas	34
15.3	Overlap of digital images	34
16	Image quality	34
16.1	Types and positions of image quality indicators (IQI)	34
16.2	Minimum image quality values	35
16.3	Minimum normalized signal-to-noise ratio (SNR_N)	35
16.4	Compensation principle CP II	36
16.5	Regular performance verification of digital radiography systems	36
17	Influence of crystalline structure	36
18	Acceptances criteria	37
18.1	General	37
18.2	Severity levels	37
18.3	Wall section zones	37
19	Test report	38
	Annex A (normative) Minimum image quality values	40
	Annex B (normative) Severity levels for steel castings	44
	Annex C (normative) Severity levels for cast iron castings	47
	Annex D (normative) Severity levels for aluminium and magnesium alloy castings	49
	Annex E (normative) Severity levels for titanium and titanium alloy castings	52
	Annex F (normative) Determination of basic spatial resolution	54
	Annex G (normative) Determination of minimum grey values for CR practice	58
	Annex H (informative) Grey values, general remarks (from EN ISO 17636-2:2013, Annex E)	63

EN 12681-2:2017 (E)**European foreword**

This document (EN 12681-2:2017) 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 May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

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

Within its programme of work, Technical Committee CEN/TC 190 requested CEN/TC 190/WG 10 “Testing for inner discontinuities”:

- to revise EN 12681:2003 into EN 12681-1, *Founding — Radiographic testing — Part 1: Film techniques*;
- and the preparation of a further standard EN 12681-2, *Founding — Radiographic testing — Part 2: Techniques with digital detectors*.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Radiography can be used to detect internal discontinuities in a casting. The discontinuities can be gas holes, non-metallic inclusions, shrinkage, cracks, inserts or chills or inclusions that have lower or higher densities than the parent metal. This European Standard gives acceptance criteria through severity levels.

EN 12681-2:2017 (E)**1 Scope**

This European Standard gives specific procedures for industrial X-ray and gamma radiography for discontinuity detection purposes, using NDT (non-destructive testing) digital X-ray image detectors. This part of EN 12681 specifies the requirements for digital radiographic testing by either computed radiography (CR) or radiography with digital detector arrays (DDA) of castings.

Digital detectors provide a digital grey value image which can be viewed and evaluated using a computer.

NOTE This part of EN 12681 complies with EN 14784-2 for CR. Some clauses and annexes are taken from EN ISO 17636-2.

This part of EN 12681 specifies the recommended procedure for detector selection and radiographic practice. Selection of computer, software, monitor, printer and viewing conditions are important but are not the main focus of this standard. The procedure specified in this standard provides the minimum requirements for radiographic practice which permit exposure and acquisition of digital images with equivalent sensitivity for detection of imperfections as film radiography, as specified in Part 1 of this standard.

This standard does not consider radiographic or radiosopic fitness for purpose testing as applied for specific castings based on manufacturer's internal requirements and procedures.

The requirements on image quality in class A and B testing of Annex A consider the good workmanship quality for general casting applications as also required in Part 1 of this standard for film radiography.

The classes A_A and B_A reflect the quality requirements of current automated and semi-automated radiographic testing systems with DDAs and computer or operator based image evaluation, and mini or micro focus tubes (spot size ≤ 1 mm) with reduced requirements to the unsharpness, but unchanged requirements to contrast sensitivity as also required in Part 1 of this standard for film radiography.

The specified procedures are applicable to castings produced by any casting process, especially for steels, cast irons, aluminium, cobalt, copper, magnesium, nickel, titanium, zinc and any alloys of them.

This part of this European Standard does not apply to:

- the testing of welded joints (see EN ISO 17636-2);
- film radiography (see EN 12681-1:2017);
- real time testing with radioscopy (see EN 13068-1; radioscopy with image intensifiers).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12543 (all parts), *Non-destructive testing — Characteristics of focal spots in industrial X-ray systems for use in non-destructive testing*

EN 12679, *Non-destructive testing - Determination of the size of industrial radiographic sources - Radiographic method*

EN 14784-1, *Non-destructive testing - Industrial computed radiography with storage phosphor imaging plates - Part 1: Classification of systems*

EN ISO 9712, *Non-destructive testing - Qualification and certification of NDT personnel (ISO 9712:2012)*

EN ISO 17636-2:2013, *Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors (ISO 17636-2:2013)*

EN ISO 19232-1, *Non-destructive testing - Image quality of radiographs - Part 1: Determination of the image quality value using wire-type image quality indicators (ISO 19232-1:2013)*

EN ISO 19232-2, *Non-destructive testing - Image quality of radiographs - Part 2: Determination of the image quality value using step/hole-type image quality indicators (ISO 19232-2:2013)*

EN ISO 19232-4, *Non-destructive testing - Image quality of radiographs - Part 4: Experimental evaluation of image quality values and image quality tables (ISO 19232-4:2013)*

EN ISO 19232-5, *Non-destructive testing - Image quality of radiographs - Part 5: Determination of the image unsharpness value using duplex wire-type image quality indicators (ISO 19232-5:2013)*

ISO 5576, *Non-destructive testing — Industrial X-ray and gamma-ray radiology — Vocabulary*

ISO 16371-1:2011, *Non-destructive testing — Industrial computed radiography with storage phosphor imaging plates — Part 1: Classification of systems*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN