Non-destructive testing - Qualification of radiographic film digitisation systems - Part 1: Definitions, quantitative measurements of image quality parameters, standard reference film and qualitative control (ISO 14096-1:2005)

EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 14096-1:2020 sisaldab Euroopa standardi EN ISO 14096-1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 14096-1:2020 consists of the English text of the European standard EN ISO 14096-1:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.03.2020.	Date of Availability of the European standard is 04.03.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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English Version

Non-destructive testing - Qualification of radiographic film digitisation systems - Part 1: Definitions, quantitative measurements of image quality parameters, standard reference film and qualitative control (ISO 14096-1:2005)

Essais non destructifs - Qualification des systèmes de numérisation des films radiographiques - Partie 1: Définitions, mesures quantitatives des paramètres de qualité d'image, film de référence normalisé et contrôle qualitatif (ISO 14096-1:2005)

Zerstörungsfreie Prüfung - Qualifizierung von Röntgenfilm-Digitalisierungssystemen - Teil 1: Definitionen, quantitative Messung von Bildqualitätsparametern, Standard-Referenzfilm und Qualitätssicherung (ISO 14096-1:2005)

This European Standard was approved by CEN on 6 January 2020.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

The text of ISO 14096-1:2005 has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 14096-1:2020 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 September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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.

This document supersedes EN 14096-1:2003.

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

Endorsement notice

The text of ISO 14096-1:2005 has been approved by CEN as EN ISO 14096-1:2020 without any modification.

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Foreword

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

EN 14096 comprises a series of European Standards for radiographic film digitisation systems which is made up of the following:

EN 14096-1, *Non-destructive testing – Qualification of radiographic film digitisation systems – Part 1: Definitions, quantitative measurements of image quality parameters, standard reference film and qualitative control*

EN 14096-2, *Non-destructive testing – Qualification of radiographic film digitisation systems – Part 2: Minimum requirements*

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Radiographic film systems are used for industrial inspection by X- and gamma rays. To apply modern means of computer support for analysis, transmission and storage the information stored in the radiographic film should be converted into digital data (digitisation). This European Standard defines minimum requirements to ensure that the relevant information for evaluation of the digital data is preserved during the film digitisation process.

1 Scope

This European Standard specifies procedures for the evaluation of basic performance parameters of the radiographic film digitisation process such as spatial resolution and spatial linearity, density range, density contrast sensitivity and characteristic transfer curve. They can be integrated into the system software and together with a standard reference film (as described in clause 5) used for quality control of the digitisation process. This reference film provides a series of test targets for performance evaluation. The test targets are suitable for evaluating a digitisation system with a spatial resolution down to 25 µm, a density contrast sensitivity down to 0,02 optical density, a density range of 0,5 to 4,5 and a film size capacity of (350 x 430) mm². This standard does not address signal processing and display of the digitised data.

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 584-1, *Non-destructive testing — Industrial radiographic film — Part 1: Classification of film systems for industrial radiography.*

EN 14096-2, *Non-destructive testing — Qualification of radiographic film digitisation systems — Part 2: Minimum requirements.*

3 Terms and definitions

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

3.1
radiographic film digitisation system
digitiser
sequential application of the two functions below:

a) detection of the diffuse transmittance of a small unit area of the film (pixel, picture element) by means of an optical detector, giving an electric output signal (geometrical digitisation);

b) conversion of the above electrical signal into a numerical value (densitometrical digitisation)

3.2
scanning aperture
S_A
spatial extension (area) on the radiographic film through which the digitiser performs the scanning of one pixel for geometrical digitisation

The size of the scanning aperture corresponds: