BSI Standards Publication

Non-destructive testing - Radiographic testing - Determination of the size of industrial radiographic gamma sources

National foreword

This British Standard is the UK implementation of EN 12679:2018. It supersedes BS EN 12679:2000, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee WEE/46, Non-destructive testing.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Date	Text affected

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ICS 19.100 Supersedes EN 12679:1999

English Version

Non-destructive testing - Radiographic testing - Determination of the size of industrial radiographic gamma sources

Essais non destructifs - Contrôle radiographique - Détermination de la dimension des sources de radiographie industrielle gamma

Zerstörungsfreie Prüfung - Durchstrahlungsprüfung - Bestimmung der Strahlergrößen von industriell genutzten Radio-Nukliden

This European Standard was approved by CEN on 18 July 2018.

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COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12679:2018) 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of an identical text or by endorsement, at the latest by April 2019, and conflicting national standards shall be withdrawn at the latest by April 2019.

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 12679:1999.

In the framework of its scope, Technical Committee CEN/TC 138 entrusted CEN/TC 138/WG 1 “Radiographic testing” with preparing the following standard:

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

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.

1 Scope

This document specifies the determination of the size of gamma radiographic sources of 0,5 mm or greater, made from the radionuclides Iridium 192, Ytterbium 169, Selenium 75 or Cobalt 60, by a method of radiography with X-rays. The source size of a gamma radiography source is an important factor which affects the image quality of gamma ray images.

The source size is determined with an accuracy of ± 10 % but typically not better than ± 0,1 mm.

The source size is provided by the manufacturer as the mechanical dimension of the source insert. A measurement may be required if the manufacturing process is validated or monitored after implementation of the source into the holder.

This document can be used for other radionuclides after validation.

The standard test method ASTM E1114provides further information on the measurement of the Ir-192 source size, the characterization of the source shape, and its correct assembly and packaging.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 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)*

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

ASTM E2002 - 15, *Standard Practice for Determining Total Image Unsharpness and Basic Spatial Resolution in Radiography and Radioscopy*

ASTM E2597M - 14, *Standard Practice for Manufacturing Characterization of Digital Detector Arrays*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
source size
d
maximum dimension of the source of radiation

3.2
signal-to-noise ratio
SNR
ratio of mean value of the linearized grey values to the standard deviation of the linearized grey values (noise) in a given region of interest in a digital image