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Non-destructive testing — Image quality of radiographs —

Part 1: Determination of the image quality value using wire-type image quality indicators

Essais non destructifs — Qualité d'image des radiogrammes —

*Partie 1: Détermination de l'indice de qualité d'image à l'aide
d'indicateurs à fils*



Reference number
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ISO 19232-1:2013(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 19232-1 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiation methods*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19232-1:2004), of which it constitutes a minor revision with the following changes:

- update of references and definitions;
- statement that EN wire IQIs of EN 462-1:1994^[1] and its designation are identical with ISO wire IQIs and its designation, as defined in this part of ISO 19232;
- replacement of film by detector, which includes film and digital detectors;
- addition of a new Annex for conversion of ASTM wire IQI identities to ISO wire IQI numbers.

It also incorporates the Technical Corrigendum, ISO 19232-1:2004/Cor. 1:2007.

ISO 19232 consists of the following parts under the general title *Non-destructive testing — Image quality of radiographs*:

- *Part 1: Determination of the image quality value using wire-type image quality indicators*
- *Part 2: Determination of the image quality value using step/hole-type image quality indicators*
- *Part 3: Image quality classes*
- *Part 4: Experimental evaluation of image quality values and image quality tables*
- *Part 5: Determination of the image unsharpness value using duplex wire-type image quality indicators*

Non-destructive testing — Image quality of radiographs —

Part 1:

Determination of the image quality value using wire-type image quality indicators

1 Scope

This part of ISO 19232 specifies a device and a method for the determination of the image quality of radiographs using wire-type image quality indicators.

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.

ISO 5580, *Non-destructive testing — Industrial radiographic illuminators — Minimum requirements*

ISO/IEC 17050-1, *Conformity assessment — Supplier's declaration of conformity — Part 1: General requirements*

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

3 Terms and definitions

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

3.1

image quality

characteristic of a radiographic image which determines the degree of detail it shows

3.2

image quality indicator

IQI

device comprising a series of elements of graded dimensions which enable a measure of the image quality to be obtained

Note 1 to entry: The elements of IQI are commonly wires or steps with holes.

3.3

image quality value

measure of the image quality required or achieved and is equal to the thinnest element which can be detected on the radiograph

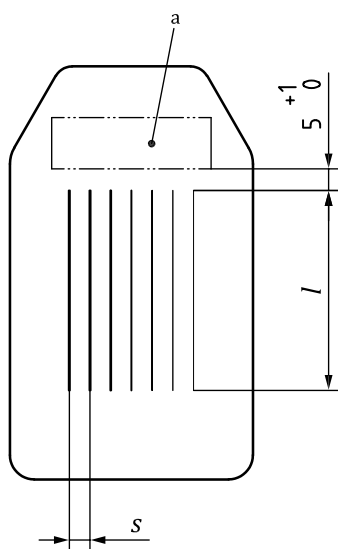
Note 1 to entry: For wire-type IQIs, the element numbers are given in [Table 1](#).

4 Specification for wire-type image quality indicators

4.1 Dimensions, designation

[Figure 1](#) represents a wire-type image quality indicator.

Dimensions in millimetres

**Key**

- l lengths of the wires
- s wire centreline spacing
- a Space for identification marking.

Figure 1 — Image quality indicator (wire-type)

The IQI system is based on a series of 19 wires of different diameters which are specified in [Table 1](#) together with the relevant tolerances and the wire numbers. This series of wires has been subdivided into four overlapping ranges of seven consecutive wire numbers, viz. W 1 to W 7, W 6 to W 12, W 10 to W 16, and W 13 to W 19. The seven wires in an IQI are arranged parallel to each other. The length of the wires, l , is 10 mm, 25 mm or 50 mm.

The written designation of an image quality indicator shall be labelled with the letters IQI, the number of this part of ISO 19232, the wire number of the thickest wire as specified in [Table 1](#) (e.g. W 10), the symbol denoting the wire material (e.g. FE), and the length (e.g. 25):

EXAMPLE 1 IQI ISO 19232-1 - W 10 FE-25

IQIs with the designation EN 462-1[1] are considered to be identical to IQIs with the designation ISO 19232-1.

NOTE [Annex A](#) gives a table for conversion of ASTM E747-04[2] wire identities to the wire IQI values of this part of ISO 19232.

The full designation may be abbreviated to the wire number of the thickest wire of the IQI (e.g. W 10) and the wire material (e.g. FE) where reference to this part of ISO 19232 is clear.

EXAMPLE 2 W 10 FE

4.2 Material

All the wires of an IQI shall consist of the same material and shall be embedded in a protective covering of a material which shall not affect the image quality value. See [Table 2](#) for usual wire materials.

4.3 Marking of IQI

The marking applied on the IQI (see [Figure 1](#)) shall give the following information:

- a) number of the thickest wire (1, 6, 10, or 13); this is located at the side of the thickest wire;