INTERNATIONAL STANDARD

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Non-destructive testing — Image quality of radiographs —

Part 4:
Experimental evaluation of image quality values and image quality tables

Essais non destructifs — Qualité d'image des radiogrammes —

Partie 4: Évaluation expérimentale des indices de qualité d'image et des tables de qualité d'image

Contents

Page

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 19232-4 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 19232-4:2004), of which it constitutes a minor revision with the following changes:

— updated references;

— correction of Figure 1 and its key.

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 4:
Experimental evaluation of image quality values and image quality tables

1 Scope

This part of ISO 19232 gives instructions for the determination of image quality values and image quality tables.

If the IQI requirements specified in ISO 19232-3 cannot be used because, for example, the absorption coefficients of the IQI material and the inspected material differ by more than 30 %, test exposures are necessary to determine acceptance of image quality values. The image quality values achieved by the test exposures are required for all exposures made under the same radiographic conditions.

2 Terms and definitions

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

2.1
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.

2.2
image quality
characteristic of a radiographic image which determines the degree of detail which it shows

2.3
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

2.4
image quality table
table of minimum required image quality values versus the penetrated thickness ranges

3 Experimental evaluation of image quality values

For the experimental determination of image quality values, the same radiographic conditions and IQI shall be used as specified for the subsequent examination.

Two test exposures shall be made under the specified conditions. If the image quality values read from these two exposures are identical, this value shall be accepted as the required image quality value. If the image quality values from the two test exposures are different, the procedure shall be repeated.

4 Determination of image quality tables

If different thicknesses of the same material are radiographed, an image quality table shall be established. An example of the image quality values for different penetrated thicknesses is shown in Figure 1. The step curve below the experimental values defines the image quality values and penetrated thickness steps of the image quality table. For an example, see Table 1.
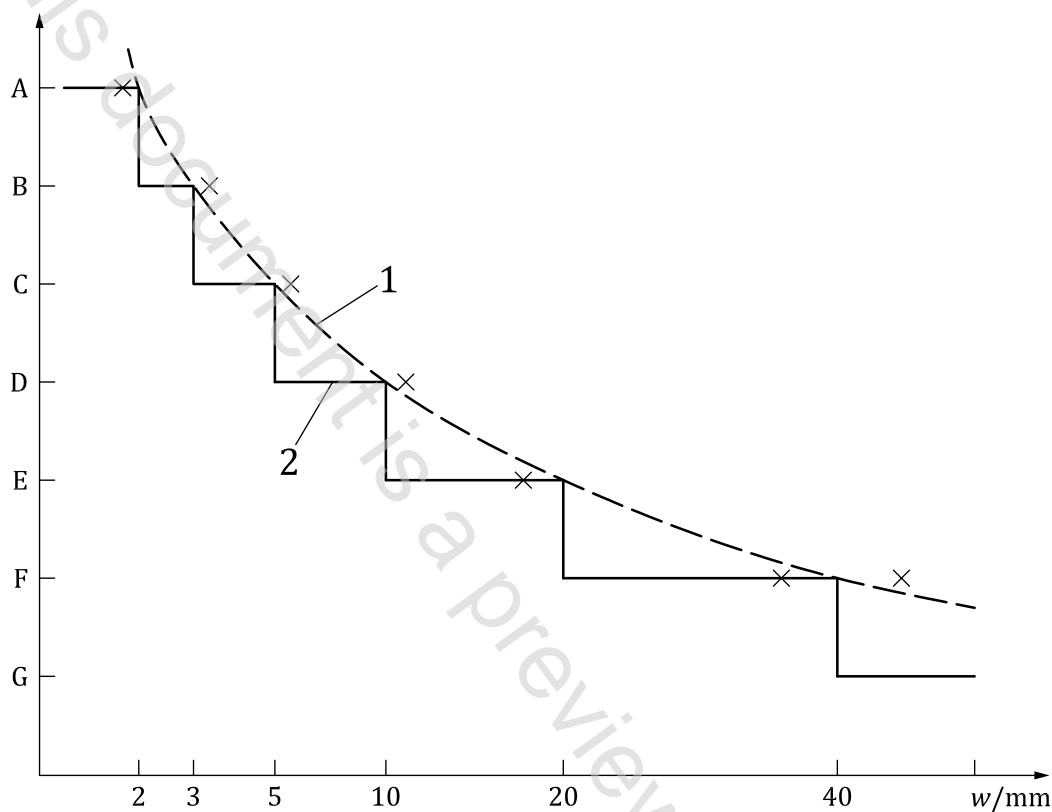
Key

A ... G image quality value

w penetrated thickness

1   interpolated experimental curve

2   resulting step curve corresponding to Table 1

$\times$ image quality determined, material e.g. steel

Figure 1 — Example for the determination of an image quality table

Table 1 — Example of an image quality table

Penetrated thickness w mm	Image quality value
$w \leq 2$	A
$2 < w \leq 3$	B
$3 < w \leq 5$	C
$5 < w \leq 10$	D
$10 < w \leq 20$	E
$20 < w \leq 40$	F
$w > 40$	G