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Non-destructive testing — Image quality of radiographs —

Part 3: Minimum image quality values

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiographic testing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 138, *Non-destructive testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 19232-3:2013), which has been technically revised.

The main changes are as follows:

— title change from: “image quality classes” to “Minimum image quality values”;

— additions to definitions 3.2 and 3.3;

— renamed Clause 4 “Image quality values”;

— revision of Clause 7 “Acceptable reduction of image quality values for gamma radiography”;

— renamed Clauses 8, 9, 10, 11, 12 and 13 for better readability and traceability;

— updated nominal thickness values for IQI values W2 to W5 in table 1;

— updated titles of all tables for better readability and traceability;

— editorial changes.

A list of all parts in the ISO 19232 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Non-destructive testing — Image quality of radiographs —

Part 3:
Minimum image quality values

1 Scope

This document specifies the minimum image quality values (IQIs) to ensure a uniform radiographic quality. This document specifies the minimum IQI values for the two testing classes, A and B, of radiographic techniques as specified in ISO 5579. This document is applicable to the two types of image quality indicator as detailed in ISO 19232-1 for wire-type IQIs and ISO 19232-2 for step/hole-type IQIs, and for the two testing, classes A and B, as specified in ISO 5579.

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.

ISO 5579, *Non-destructive testing — Radiographic testing of metallic materials using film and X- or gamma rays — Basic rules*

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

ISO 17636 (all parts), *Non-destructive testing of welds — Radiographic testing*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5579 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
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.

[SOURCE: ISO 19232-1:2013, 3.2]

3.2
image quality value
IQI value
measure of the image quality required or achieved

Note 1 to entry: IQI value is equal to the thinnest element which can be detected on the radiograph.

Note 2 to entry: See Tables 1 to 12 for the related values.

3.3
image quality table
IQI table
table of minimum required image quality values versus the penetrated thickness ranges for a given testing class

4 Image quality values

4.1 Single-wall radiography

The minimum image quality values given in Tables 1 to 4 shall be achieved if the following testing requirements are met:

a) for testing class A, using basic radiographic techniques in accordance with ISO 5579;

b) for testing class B, using improved radiographic techniques in accordance with ISO 5579.

The minimum image quality values given in Tables 1 to 4 shall be achieved in cases where the IQI is placed on the source side. If it is not possible to place the IQI on the source side, it may be placed on the detector side. Tables 1 to 4 shall not be applied in this case.

NOTE The use of alternate techniques (for example, use of an iridium 192 source for thin plate sections) can result in obtaining different image quality values from those specified (see Clause 7).

4.2 Double-wall radiography

The minimum image quality values given in Tables 5 to 12 shall be obtained if the following testing requirements are met:

a) for the testing class A, using radiographic techniques (see ISO 5579);

b) for the testing class B, using radiographic techniques (see ISO 5579).

NOTE The use of alternate techniques can result in obtaining different image quality values from those specified (see Clause 7).

When using a double-wall radiographic technique, the penetrated thickness, w, shall be the sum of penetrated nominal wall thicknesses, $t+t$.

Tables 5 to 8 provide the minimum image quality values which shall be achieved corresponding to testing classes A and B for a double-wall radiographic technique with interpretation of the two walls, the IQI being placed on the source side of the object (IQI on the source side).

Tables 9 to 12 provide the minimum image quality values which shall be achieved corresponding to testing classes A and B for a double-wall radiographic technique with interpretation of the single-image, the IQI being placed on the detector side of the object (IQI on the detector side).

Tables 9 to 12 shall be used to indicate the image quality corresponding to the double-wall penetration/double-image evaluation technique when the IQI is placed on the detector side; this is applicable for elliptical radiographs used for pipe weld testing in accordance with the ISO 17636 series.