

Non-destructive testing - Image quality of radiographs -
Part 5: Determination of the image unsharpness and
basic spatial resolution value using duplex wire-type
image quality indicators (ISO 19232-5:2018)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 19232-5:2018 sisaldab Euroopa standardi EN ISO 19232-5:2018 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 19232-5:2018 consists of the English text of the European standard EN ISO 19232-5:2018.
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 19.09.2018.	Date of Availability of the European standard is 19.09.2018.
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ICS 19.100

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English Version

**Non-destructive testing - Image quality of radiographs -
Part 5: Determination of the image unsharpness and basic
spatial resolution value using duplex wire-type image
quality indicators (ISO 19232-5:2018)**

Essais non destructifs - Qualité d'image des
radiogrammes - Partie 5: Détermination de l'indice de
flou de l'image et de la résolution spatiale de base à
l'aide d'indicateurs de qualité d'image duplex à fils (ISO
19232-5:2018)

Zerstörungsfreie Prüfung - Bildgüte von
Durchstrahlungsaufnahmen - Teil 5: Bestimmung der
Bildunschärfenzahl mit Doppeldraht-Typ-
Bildgüteprüfkörpern (ISO 19232-5:2018)

This European Standard was approved by CEN on 24 August 2018.

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

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

European foreword

This document (EN ISO 19232-5:2018) has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" in collaboration with 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of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.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 ISO 19232-5:2013.

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, 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.

Endorsement notice

The text of ISO 19232-5:2018 has been approved by CEN as EN ISO 19232-5:2018 without any modification.

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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.

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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiation methods*.

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.

This third edition cancels and replaces the second edition (ISO 19232-5:2013), which has been technically revised. The main changes compared to the previous edition are as follows:

- new high definition duplex IQI;
- extended description of usage;
- extended table with basic spatial resolution and linepairs/mm;
- evaluation of duplex wire-type IQI by visual evaluation and evaluation with profile function in digital images.

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

Non-destructive testing — Image quality of radiographs —

Part 5:

Determination of the image unsharpness and basic spatial resolution value using duplex wire-type image quality indicators

1 Scope

This document specifies a method of determining the total image unsharpness and basic spatial resolution of radiographs and radiosopic images. The IQI with up to 13 wire pairs can be used effectively with tube voltages up to 600 kV. The IQI with more than 13 wire pairs can be used effectively at tube voltages lower than 225 kV. When using source voltages in the megavolt range, it is possible that the results are not be completely satisfactory.

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 5576, *Non-destructive testing — Industrial X-ray and gamma-ray radiology — Vocabulary*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5576 and the following apply.

ISO and IEC maintain terminological 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

duplex wire-type image quality indicator

duplex wire-type IQI

image quality indicator specifically designed to assess the total image unsharpness and basic spatial image resolution of a radiograph or a digital image and composed of a series of pairs of wire elements made of high density metal

3.2

total image unsharpness value

U_T

smallest number of the duplex wire pair which is not sufficiently separable and corresponds to wire diameter plus wire spacing

Note 1 to entry: The corresponding unsharpness values are given in [Table 1](#).

Note 2 to entry: U_T can be U_T^{visual} , $U_T^{20\%}$ or $iU_T^{20\%}$.