



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 16831:2024**  
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**Neporušitvene preiskave - Ultrazvočne preiskave - Karakterizacija in preverjanje ultrazvočne opreme za določanje debeline (ISO/DIS 16831:2024)**

Non-destructive testing - Ultrasonic testing - Characterization and verification of ultrasonic equipment for the determination of thickness (ISO/DIS 16831:2024)

Zerstörungsfreie Prüfung - Ultraschallprüfung - Charakterisierung und Verifizierung der Ultraschall-Prüfausrüstung zur Dickenbestimmung (ISO/DIS 16831:2024)

Essais non destructifs - Contrôle par ultrasons - Caractérisation et vérification des appareils de contrôle par ultrasons pour la détermination de l'épaisseur (ISO/DIS 16831:2024)

**Ta slovenski standard je istoveten z: EN prEN ISO 16831**

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**ICS:**

19.100          Neporušitveno preskušanje          Non-destructive testing

**oSIST prEN ISO 16831:2024**

**en,fr,de**





# DRAFT International Standard

## ISO/DIS 16831

### Non-destructive testing — Ultrasonic testing — Characterization and verification of ultrasonic equipment for the determination of thickness

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## ISO/DIS 16831:2024(en)

## Contents

Page

<b>Foreword</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 General requirements of conformity</b> .....	<b>1</b>
<b>5 Manufacturer's technical specification for ultrasonic equipment for thickness determination</b> .....	<b>2</b>
5.1 General.....	2
5.2 General attributes.....	2
5.3 Display.....	3
5.4 Transmitter.....	3
5.5 Receiver.....	3
5.6 Other information.....	3
<b>6 Blocks</b> .....	<b>4</b>
6.1 General.....	4
6.2 Material.....	4
6.3 Shape and size.....	4
6.3.1 Accuracy blocks.....	4
6.3.2 Resolution block.....	5
<b>7 Performance requirements for ultrasonic equipment for thickness determination</b> .....	<b>5</b>
<b>8 Probes</b> .....	<b>6</b>
<b>9 Group 1 tests</b> .....	<b>7</b>
9.1 Equipment required for Group 1 tests.....	7
9.2 Stability against temperature of the instrument.....	7
9.2.1 Procedure.....	7
9.2.2 Acceptance criterion.....	7
9.3 Low-battery warning.....	7
9.3.1 Procedure.....	7
9.3.2 Acceptance criteria.....	8
9.4 Battery operational time.....	8
9.4.1 Procedure.....	8
9.4.2 Acceptance criteria.....	8
9.5 Stability against voltage variation.....	8
9.5.1 Procedure.....	8
9.5.2 Acceptance criterion.....	9
9.6 Operational current range.....	9
9.6.1 Procedure.....	9
9.6.2 Acceptance criterion.....	9
9.7 Extended operational temperature range of the probe.....	9
9.7.1 General.....	9
9.7.2 Procedure.....	9
9.7.3 Acceptance criterion.....	10
9.8 Pulse repetition frequency.....	10
9.8.1 Procedure.....	10
9.8.2 Acceptance criterion.....	10
9.9 Transmitter voltage, pulse rise time and duration.....	10
9.9.1 Procedure.....	10
9.9.2 Acceptance criteria.....	11
9.10 Gain control of the receiver.....	12
9.10.1 Procedure.....	12
9.10.2 Acceptance criteria.....	12
9.11 Frequency response of the receiver.....	12

**ISO/DIS 16831:2024(en)**

9.11.1	Procedure .....	12
9.11.2	Acceptance criteria.....	13
9.12	Accuracy and resolution .....	13
9.12.1	Procedure .....	13
9.12.2	Acceptance criteria .....	13
9.13	Setting of instrument.....	13
9.13.1	General .....	13
9.13.2	Procedure .....	13
9.13.3	Acceptance criterion.....	13
9.14	Display response time.....	14
9.14.1	Procedure .....	14
9.14.2	Acceptance criterion.....	14
<b>10</b>	<b>Group 2 tests .....</b>	<b>14</b>
10.1	Equipment required for Group 2 tests .....	14
10.2	General characteristics.....	14
10.3	General mechanical state and external aspects.....	14
<b>11</b>	<b>Group 3 tests .....</b>	<b>15</b>
11.1	General.....	15
11.2	General mechanical state and external aspects.....	15
11.3	Setting of instrument.....	15
11.3.1	Procedure .....	15
11.3.2	Acceptance criterion.....	15
	<b>Bibliography.....</b>	<b>16</b>

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[oSIST prEN ISO 16831:2024](https://standards.iteh.ai/catalog/standards/sist/f377626a-09d0-408c-88cf-8e8469b382ca/osist-pren-iso-16831-2024)

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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](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 3, *Ultrasonic testing*.

This second edition cancels and replaces the first edition (ISO 16831:2012), which has been technically revised.

The main changes are as follows:

- The terminology in the document has been changed from measurement to determination; as only the time of flight of the ultrasonic signal can be measured in relation to traceable references, thickness and sound velocity can only be determined.
- The tests have been adapted to the boundary conditions of digital instruments.
- The procedures for Group 2 and Group 3 tests have been simplified.
- Clauses for characterisation of the receiver have been added.

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](http://www.iso.org/members.html).





# Non-destructive testing — Ultrasonic testing — Characterization and verification of ultrasonic equipment for the determination of thickness

## 1 Scope

This document specifies methods and acceptance criteria within the frequency range of 0,5 MHz to 15 MHz, for assessing the performance of equipment dedicated for determining thickness using pulse-echo ultrasound, e.g. according to ISO 16809.

This document covers verifications needed for the determination of thickness, only.

This document covers both instruments with numerical display and instruments with A-scan presentation using either single- or dual-transducer probes.

This document can be used for verifying equipment covered by ISO 22232-1 and ISO 22232-2 when used for thickness determination.

## 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 5577, *Non-destructive testing — Ultrasonic testing — Vocabulary*

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

ISO 22232-2, *Non-destructive testing — Characterization and verification of ultrasonic test equipment — Part 2: Probes*

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

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5577 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/>

## 4 General requirements of conformity

Equipment for the determination of thickness using ultrasound complies with this document if it fulfils all the following requirements:

- a) the equipment shall comply with [Clause 8](#) and [Clause 9](#);

## ISO/DIS 16831:2024(en)

- b) a declaration of conformity shall be available, issued either by the manufacturer operating a quality management system (e. g. in accordance with ISO 9001) or by an organization operating a laboratory (e. g. in accordance with ISO/IEC 17025);
- c) each component shall be clearly marked to identify the manufacturer and shall carry a unique serial number or shall show a permanent reference number from which information can be traced to the data sheets and test reports;
- d) manufacturer's technical specifications corresponding to the instrument and probe(s) shall be available, which define the performance criteria for the items given in [Clause 8](#) and [Clause 9](#);
- e) test reports shall be delivered together with the instrument and the probe(s), which includes at least the test results given in [Clause 8](#) and [Clause 9](#). The test report shall include all information and all the results of the measurements specified in [Clauses 8, 9, 10](#) and [11](#), if applicable.

## 5 Manufacturer's technical specification for ultrasonic equipment for thickness determination

### 5.1 General

- a) The manufacturer's technical specification for a particular model of ultrasonic equipment for thickness determination shall contain, as a minimum, the information listed in [5.2](#) to [5.5](#).
- b) Values obtained from the tests described in [Clause 7](#) shall be quoted as nominal values with tolerances given as indicated.

### 5.2 General attributes

The following shall be detailed:

- a) dimensions;
  - b) mass (at an operational stage);
  - c) type(s) of power supply;
  - d) type(s) of probe sockets;
  - e) battery operational time (as new, at maximum power consumption with a specified duty cycle);
  - f) temperature and voltage (mains and/or battery) ranges, in which operation complies with the manufacturer's technical specification;
  - g) if a warm-up period is necessary, the duration of this shall be stated;
  - h) type and form of indication given when a low battery voltage takes the ultrasonic instrument performance outside of specification;
  - i) pulse repetition frequencies (switched positions and/or variable ranges);
  - j) if available, monitor outputs to indicate when the determined values fall outside a set tolerance;
  - k) if the equipment can determine the thickness through coatings;
  - l) minimum and maximum thicknesses which can be determined on a specified material;
- NOTE A minimum thickness of zero cannot be verified and therefore not specified.
- m) accuracy and resolution shall be stated in millimetres for longitudinal waves in steel.