SLOVENSKI STANDARD
oSIST prEN ISO 16826:2024

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Neporušitvene preiskave - Ultrazvočne preiskave - Preiskave za odkrivanje nehomogenosti, ki potekajo pravokotno na površino (ISO/DIS 16826:2024)

Non-destructive testing - Ultrasonic testing - Testing for discontinuities perpendicular to the surface (ISO/DIS 16826:2024)

Zerstörungsfreie Prüfung - Ultraschallprüfung - Prüfung auf Inhomogenitäten senkrecht zur Oberfläche (ISO/DIS 16826:2024)

Essais non destructifs - Contrôle par ultrasons - Contrôle des discontinuités perpendiculaires à la surface (ISO/DIS 16826:2024)

Ta slovenski standard je istoveten z: **prEN ISO 16826**

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DRAFT International Standard

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Non-destructive testing — Ultrasonic testing — Testing for discontinuities perpendicular to the surface

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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).

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).

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.

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 16823:2012), which has been technically revised.

The main changes are as follows:

— document technically revised,

— improved figures and formulas,

— editorial improvements.

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.

Introduction

The following documents are linked:

ISO 16810, *Non-destructive testing — Ultrasonic testing — General principles*

ISO 16811, *Non-destructive testing — Ultrasonic testing — Sensitivity and range setting*

ISO 16823, *Non-destructive testing — Ultrasonic testing — Transmission technique*

ISO 16826, *Non-destructive testing — Ultrasonic testing — Testing for discontinuities perpendicular to the surface*

ISO 16827, *Non-destructive testing — Ultrasonic testing — Characterization and sizing of discontinuities*

ISO 16828, *Non-destructive testing — Ultrasonic testing — Time-of-flight diffraction technique as a method for detection and sizing of discontinuities*

Non-destructive testing — Ultrasonic testing — Testing for discontinuities perpendicular to the surface

1 Scope

This document specifies the principles for the tandem technique and the longitudinal-longitudinal-transverse (LLT) wave technique for the detection of discontinuities perpendicular to the surface or almost perpendicular to the surface.

The general principles required for the ultrasonic testing of industrial products are described in ISO 16810.

The tandem or LLT techniques can be used for the detection of embedded planar discontinuities.

This document has been prepared for the testing of metallic materials with a thickness between 40 mm and 500 mm with parallel or concentric surfaces.

The procedures provided in this document may be used for testing of other materials or smaller thickness if special measures are taken according to a written testing procedure.

Phased array techniques can also be applied for the tandem technique and the LLT technique, but additional steps or verifications can be needed.

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*

ISO 16810, *Non-destructive testing — Ultrasonic testing — General principles*

ISO 16811, *Non-destructive testing — Ultrasonic testing — Sensitivity and range setting*

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 Test equipment and test personnel

The requirements of ISO 16810 on test equipment and test personnel apply unless stated otherwise.

5 Tandem technique

5.1 General

a) The testing normally shall be carried out using two similar 45° angle-beam transverse wave probes, one probe operating as transmitter and the other probe as receiver.

b) For wall thicknesses larger than 160 mm, it is recommended to use different transducer sizes for the transmitter probe and the receiver probe to ensure approximately the same beam dimensions in the test zone.

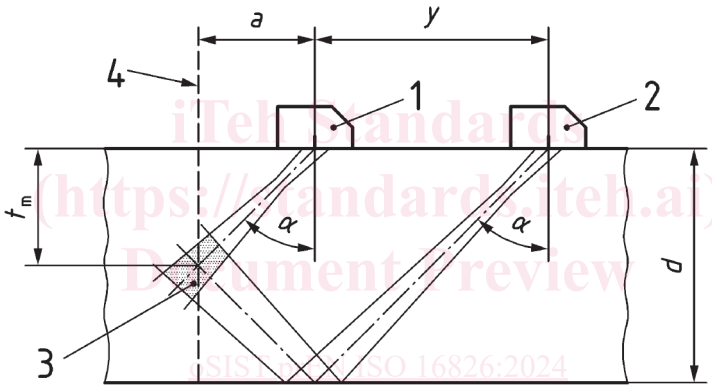
c) The use of beam angles other than 45° may be necessary to comply with particular geometrical conditions of the test object and/or the orientation of the expected discontinuity.

d) Beam angles that give rise to mode conversion shall be avoided.

NOTE For a test object with parallel surfaces the use of transverse wave probes with a beam angle of 60° results in the beam impinging on the reference line at 30°, which may result in mode conversion on a discontinuity in steel test objects.

e) The probes shall be located in a line with their beam axes in the same direction.

The sound beam from the rear probe will, after reflection from the opposite surface, intersect the sound beam from the front probe as shown in Figure 1. The area of intersection of the beams is the test zone. The intersection of the beam axes is the centre of the test zone, located at the reference line.



Key

1	front probe	d	material thickness
2	rear probe	t_m	depth position of the intersection of the beam axes
3	test zone	y	probe distance
4	reference line	α	beam angle
a	projected distance		

Figure 1 — Basic principle of tandem technique

When testing objects with plane parallel surfaces the distance between the probes can be determined using Formula (1), resp. Formula (2):

$$y = 2(d - t_m)\tan\alpha \quad (1)$$

for 45°

$$y = 2(d - t_m) \quad (2)$$