

STN	Geometrické špecifikácie výrobkov (GPS) Charakter povrchu: Plocha Časť 601: Konštrukcia a vlastnosti dotykových (hrotových) prístrojov (ISO 25178-601: 2025)	STN EN ISO 25178-601 01 4454
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Geometrical product specifications (GPS) - Surface texture: Areal - Part 601: Design and characteristics of contact (stylus) instruments (ISO 25178-601:2025)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/25

Obsahuje: EN ISO 25178-601:2025, ISO 25178-601:2025

Oznámením tejto normy sa ruší
STN EN ISO 25178-601 (01 4454) z novembra 2010

STN EN ISO 3274 (25 2321) z novembra 2000

140407

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 25178-601

February 2025

ICS 17.040.20

Supersedes EN ISO 25178-601:2010, EN ISO
3274:1997

English Version

**Geometrical product specifications (GPS) - Surface texture:
Areal - Part 601: Design and characteristics of contact
(stylus) instruments (ISO 25178-601:2025)**

Spécification géométrique des produits (GPS) - État de
surface: Surfacing - Partie 601: Conception et
caractéristiques des instruments à contact (palpeur)
(ISO 25178-601:2025)

Geometrische Produktspezifikation (GPS) -
Oberflächenbeschaffenheit: Flächenhaft - Teil 601:
Aufbau und Merkmale von berührend messenden
Geräten (mit Taster) (ISO 25178-601:2025)

This European Standard was approved by CEN on 21 February 2025.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 09 April 2025.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (EN ISO 25178-601:2025) has been prepared by Technical Committee ISO/TC 213 "Dimensional and geometrical product specifications and verification" in collaboration with Technical Committee CEN/TC 290 "Dimensional and geometrical product specification and verification" 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 August 2025, and conflicting national standards shall be withdrawn at the latest by August 2025.

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 25178-601:2010 and EN ISO 3274:1997.

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Endorsement notice

The text of ISO 25178-601:2025 has been approved by CEN as EN ISO 25178-601:2025 without any modification.



International Standard

ISO 25178-601

Geometrical product specifications (GPS) — Surface texture: Areal —

Part 601: Design and characteristics of contact (stylus) instruments

*Spécification géométrique des produits (GPS) — État de surface:
Surfacique —*

*Partie 601: Conception et caractéristiques des instruments à
contact (palpeur)*

**Second edition
2025-02**

ISO 25178-601:2025(en)



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Published in Switzerland

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ISO 25178-601:2025(en)**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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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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 213, *Dimensional and geometrical product specifications and verification*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 290, *Dimensional and geometrical product specification and verification*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 25178-601:2010), which has been technically revised, and cancels and replaces ISO 3274:1996, whose contents have been revised and incorporated into this document and others, see [Annex C](#) for more information.

The main changes are as follows:

- removal of information about the general metrological characteristics for the areal topography measuring method, which are specified in ISO 25178-600;
- removal of the terms and definitions now specified in ISO 25178-600;
- revision of all terms and definitions for clarity and consistency with other ISO standards documents;
- addition of [Clause 4](#) for instrument requirements, which summarizes normative features and characteristics;
- addition of an information flow concept diagram in [Clause 4](#);
- addition of [Clause 5](#) on metrological characteristics;
- addition of [Clause 6](#) on design features, which clarifies the types of instruments relevant to this document;
- revision of [Annex A](#) describing the principles of instruments addressed by this document;
- addition of [Annex B](#) on the metrological characteristics and influence quantities; replacement of the normative table of influence quantities with an informative description of common error sources and how these relate to the metrological characteristics in ISO 25178-600;

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- inclusion of nominal characteristics of a contact stylus instrument, which have been transferred from ISO 3274 to this document.

A list of all parts in the ISO 25178 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.

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Introduction

This document is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences chain link F of the chains of standards on profile and areal surface texture.

The ISO GPS matrix model given in ISO 14638 gives an overview of the ISO GPS system of which this document is a part. The fundamental rules of ISO GPS given in ISO 8015 apply to this document and the default decision rules given in ISO 14253-1 apply to the specifications made in accordance with this document, unless otherwise indicated.

For more detailed information on the relation of this document to other standards and the GPS matrix model, see [Annex D](#).

This document includes terms and definitions relevant to contact stylus instruments for the measurement of areal surface topography. [Annex A](#) briefly summarizes contact stylus instruments and methods to clarify the definitions and to provide a foundation for [Annex B](#), which describes common sources of uncertainty and their relation to the metrological characteristics of contact stylus instruments.

The stylus instrument for the profile method was previously defined in ISO 3274. Based on this, this document was published in 2010. Since this is the more modern instrument standard and stylus instruments for the profile method and the areal method differ only in the presence of a y -axis (drive unit y), this edition of this document replaces not only the previous version of ISO 25178-601 but also ISO 3274:1996 (and the Technical Corrigendum of 1998), see [Annex C](#) for more details.

NOTE Portions of this document, particularly the informative sections, describe patented systems and methods. This information is provided only to assist users in understanding the operating principles of contact stylus instruments. This document is not intended to establish priority for any intellectual property, nor does it imply a license to proprietary technologies described herein.

Geometrical product specifications (GPS) — Surface texture: Areal —

Part 601: Design and characteristics of contact (stylus) instruments

1 Scope

This document specifies the design, metrological characteristics and nominal characteristics of contact stylus instruments for the areal measurement of surface topography. Because surface profiles can be extracted from areal surface topography data, the methods described in this document are also applicable to profiling measurements.

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 25178-600, *Geometrical product specifications (GPS) — Surface texture: Areal — Part 600: Metrological characteristics for areal topography measuring methods*

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