

SLOVENSKI STANDARD

SIST EN ISO 25178-701:2010

01-oktober-2010

**Specifikacija geometrijskih veličin izdelka - Tekstura površine: ploskovna - 701.
del: Standardi za kalibracijo in merjenje za kontaktne (s tipalom) instrumente (ISO
25178-701:2010)**

Geometrical product specifications (GPS) - Surface texture: Areal - Part 701: Calibration
and measurement standards for contact (stylus) instruments (ISO 25178-701:2010)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Flächenhaft -
Teil 701: Kalibrierung und Normale für berührend messende Geräte (mit Taster) (ISO
25178-701:2010)

Spécification géométrique des produits (GPS) - Etat de surface: surfacique - Partie 701:
Étalonnage et étalons pour les instruments à contact (palpeur) (ISO 25178-701:2010)

Ta slovenski standard je istoveten z: EN ISO 25178-701:2010

ICS:

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| 17.040.20 | Lastnosti površin | Properties of surfaces |
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 25178-701

July 2010

ICS 17.040.20

English Version

**Geometrical product specifications (GPS) - Surface texture:
Areal - Part 701: Calibration and measurement standards for
contact (stylus) instruments (ISO 25178-701:2010)**

Spécification géométrique des produits (GPS) - État de surface: Surfaique - Partie 701: Étalonnage et étalons de mesure pour les instruments à contact (à palpeur) (ISO 25178-701:2010)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Flächenhaft - Teil 701: Kalibrierung und Normale für berührend messende Geräte (mit Taster) (ISO 25178-701:2009)

This European Standard was approved by CEN on 6 May 2010.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (EN ISO 25178-701:2010) 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 January 2011, and conflicting national standards shall be withdrawn at the latest by January 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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INTERNATIONAL STANDARD

ISO
25178-701

First edition
2010-07-01

Geometrical product specifications (GPS) — Surface texture: Areal — Part 701: Calibration and measurement standards for contact (stylus) instruments

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

*Partie 701: Étalonnage et étalons de mesure pour les instruments à
contact (à palpeur)*

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ISO 25178-701:2010(E)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 25178-701 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

ISO 25178 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Surface texture: Areal*:

- *Part 2: Terms, definitions and surface texture parameters*
- *Part 3: Specification operators*
- *Part 6: Classification of methods for measuring surface texture*
- *Part 7: Software measurement standards*
- *Part 601: Nominal characteristics of contact (stylus) instruments*
- *Part 602: Nominal characteristics of non-contact (confocal chromatic probe) instruments*
- *Part 603: Nominal characteristics of non-contact (phase-shifting interferometric microscopy) instruments*
- *Part 701: Calibration and measurement standards for contact (stylus) instruments*

The following parts are under preparation:

- *Part 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments*
- *Part 605: Nominal characteristics of non-contact (point autofocusing) instruments*

Introduction

This part of ISO 25178 is a geometrical product specification standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences chain link 6 of the chains of standards on areal surface texture.

For more detailed information of the relation of this standard to the GPS matrix model, see Annex C.

This part of ISO 25178 concerns the areal surface texture measuring instruments for which it defines

- the systematic errors linked with main metrological characteristics of the instrument if they are not given by the manufacturer,
- the calibration operation mode,
- the analysis of the results for the assessment of the potential errors, and
- the decision rules for corrective actions.

It allows the evaluation of the part of the measurement uncertainty which is linked with the metrological characteristics of the instrument and which influences the assessment of areal surface texture parameters.

These metrological characteristics are verified by testing the instrument with the measurement standards defined hereafter or with the measurement standards described in ISO 5436-1 and ISO 5436-2, and with complementary standards like optical flats.

The aim is to assess the errors in the corrected X, Y and Z quantities by using material measurement standards having simple geometry (i.e. optical flat, sphere, etc.) for which

- the uncertainty is lower than for surface texture standards,
- their characteristics are independent of the surface texture parameters.

The calibration procedure reports on the status of the measurement equipment. Depending on the report, the user can decide to perform the corrective actions or to alert the equipment manufacturer.

The method is as follows:

- a) assessment of the errors on the fundamental corrected quantities X, Y and Z;
- b) assessment of the uncertainty due to the mathematical algorithms used for filtering and for computation of parameters, checked with the help of software measurement standards as defined in ISO 5436-2 and ISO 25178-7.

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