SLOVENSKI STANDARD
SIST EN ISO 25178-604:2013

01-oktober-2013

Specifikacija geometrijskih veličin izdelka - Tekstura površine: ploskovna - 604. del: Imenske značilnosti nekontaktnih instrumentov (interferometrija s koherentnim optičnim čitalnikom) (ISO 25178-604:2013)

Geometrical product specifications (GPS) - Surface texture: Areal - Part 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments (ISO 25178-604:2013)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Flächenhaft - Teil 604: Merkmale von berührungslos messenden Geräten (der Kohärenz-Scannungs-Interferometrie) (ISO 25178-604:2013)

Spécification géométrique des produits (GPS) - État de surface: Surfacique - Partie 604: Caractéristiques nominales des instruments sans contact (à interférométrie par balayage à cohérence) (ISO 25178-604:2013)

Ta slovenski standard je istoveten z: **EN ISO 25178-604:2013**

ICS:

17.040.20	Lastnosti površin	Properties of surfaces

SIST EN ISO 25178-604:2013 **en,fr**

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Foreword

This document (EN ISO 25178-604:2013) 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of an identical text or by endorsement, at the latest by February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

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Endorsement notice

The text of ISO 25178-604:2013 has been approved by CEN as EN ISO 25178-604:2013 without any modification.

INTERNATIONAL STANDARD

ISO 25178-604

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

Part 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments

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

Partie 604: Caractéristiques nominales des instruments sans contact (à interférométrie par balayage à cohérence)

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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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 213, *Dimensional and geometrical product specifications and verification*. The document was prepared in collaboration with Technical Committee CEN/TC 290, *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 1: *Indication of surface texture*

— *Part 2: Terms, definitions and surface texture parameters*

— *Part 3: Specification operators*

— *Part 6: Classification of methods for measuring surface texture*

— *Part 70: Physical measurement standards*

— *Part 71: 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 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments*

— *Part 605: Nominal characteristics of non-contact (point autofocus probe) instruments*

— *Part 606: Nominal characteristics of non-contact (focus variation) instruments*

— *Part 701: Calibration and measurement standards for contact (stylus) instruments*

The following part is under preparation:

— *Part 72: XML file format x3p*

Introduction

This part of ISO 25178 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences chain link 5 of the chains of standards on roughness profile, waviness profile, primary profile and areal surface texture.

The ISO/GPS Masterplan given in ISO/TR 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 specifications made in accordance with this document, unless otherwise indicated.

For more detailed information on the relation of this part of ISO 25178 to other standards and to the GPS matrix model, see Annex E.

This part of ISO 25178 describes the metrological characteristics of coherence scanning interferometric microscopes, designed for the measurement of surface topography maps. For more detailed information on the coherence scanning technique, see Annex A and Annex B.

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

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

Part 604: Nominal characteristics of non-contact (coherence scanning interferometry) instruments

1 Scope

This part of ISO 25178 specifies the metrological characteristics of coherence scanning interferometry (CSI) systems for 3D mapping of surface height.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

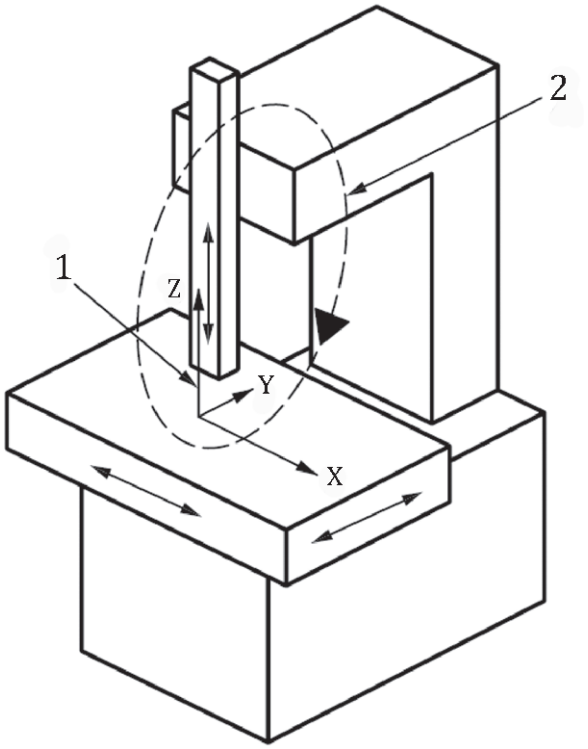
2.1 Terms and definitions related to all areal surface texture measurement methods

2.1.1
areal reference
component of the instrument that generates a reference surface with respect to which the surface topography is measured

2.1.2
coordinate system of the instrument
right hand orthonormal system of axes (x, y, z) defined as:

— (x, y) is the plane established by the areal reference of the instrument (note that there are optical instruments that do not possess a physical areal guide)

— z-axis is mounted parallel to the optical axis and is perpendicular to the (x, y) plane for an optical instrument; the z-axis is in the plane of the stylus trajectory and is perpendicular to the (x, y) plane for a stylus instrument (see Figure 1)



Key

1 coordinate system of the instrument

2 measurement loop

Figure 1 — Coordinate system and measurement loop of the instrument

Note 1 to entry: Normally, the *x*-axis is the tracing axis and the *y*-axis is the stepping axis. (This note is valid for instruments that scan in the horizontal plane.)

Note 2 to entry: See also "specification coordinate system" [ISO 25178-2:2012, 3.1.2] and "measurement coordinate system" [ISO 25178-6:2010, 3.1.1].

2.1.3
measurement loop
closed chain which comprises all components connecting the workpiece and the probe, e.g. the means of positioning, the work holding fixture, the measuring stand, the drive unit, the probing system

Note 1 to entry: The measurement loop will be subjected to external and internal disturbances that influence the measurement uncertainty.

SEE: Figure 1.

2.1.4
real surface of a workpiece
set of features which physically exist and separate the entire workpiece from the surrounding medium

Note 1 to entry: The real surface is a mathematical representation of the surface that is independent of the measurement process.

Note 2 to entry: See also "mechanical surface" [ISO 25178-2:2012, 3.1.1.1 or ISO 14406:2010, 3.1.1] and "electromagnetic surface" [ISO 25178-2:2012, 3.1.1.2 or ISO 14406:2010, 3.1.2].

Note 3 to entry: The electro-magnetic surface considered for one type of optical instrument may be different from the electro-magnetic surface for other types of optical instruments.

2.1.5
surface probe
device that converts the surface height into a signal during measurement

Note 1 to entry: In earlier standards, this was termed “transducer”.

2.1.6
measuring volume
range of the instrument stated in terms of the limits on all three coordinates measured by the instrument

Note 1 to entry: For areal surface texture measuring instruments, the measuring volume is defined by the measuring range of the *x*- and *y*- drive units, and the measuring range of the *z*-probing system.

[SOURCE: ISO 25178-601:2010, 3.4.1]

2.1.7
response curve
F_x, F_y, F_z
graphical representation of the function that describes the relation between the actual quantity and the measured quantity

Note 1 to entry: An actual quantity in x (respectively y or z) corresponds to a measured quantity x_M (respectively y_M or z_M).

Note 2 to entry: The response curve can be used for adjustments and error corrections.

[SOURCE: ISO 25178-601:2010, 3.4.2]

2.1.8
amplification coefficient
α_x, α_y, α_z
slope of the linear regression curve obtained from the *response curve* (2.1.7)

Note 1 to entry: There will be amplification coefficients applicable to the x, y and z quantities.

Note 2 to entry: The ideal response is a straight line with a slope equal to 1, which means that the values of the measurand are equal to the values of the input quantities.

Note 3 to entry: See also “sensitivity of a measuring system” (ISO/IEC Guide 99:2007,[1] 4.12)

[SOURCE: ISO 25178-601:2010, 3.4.3, modified —Note 3 to entry has been added.]

2.1.9
instrument noise
N_i
internal noise added to the output signal caused by the instrument if ideally placed in a noise-free environment

Note 1 to entry: Internal noise can be due to electronic noise, as e.g. amplifiers, or optical noise, as e.g. stray light.

Note 2 to entry: This noise typically has high frequencies and it limits the ability of the instrument to detect small spatial wavelengths of the surface texture.

Note 3 to entry: The S-filter according ISO 25178-3 may reduce this noise.

Note 4 to entry: For some instruments, instrument noise cannot be estimated because the instrument only takes data while moving.

2.1.10
measurement noise
N_M
noise added to the output signal occurring during the normal use of the instrument

Note 1 to entry: Notes 2 and 3 of 2.1.9 apply as well to this definition.