SLOVENSKI STANDARD
oSIST prEN ISO 25178-71:2015

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Specifikacija geometrijskih veličin izdelka (GPS) - Tekstura površine: ravna - 71. del: Standardi za merilno programsko opremo (ISO/DIS 25178-1:2015)

Geometrical product specifications (GPS) - Surface texture: Areal - Part 71: Software measurement standards (ISO/DIS 25178-1:2015)

Geometrische Produktspezifikation (GPS) - Oberflächenbeschaffenheit: Flächenhaft - Teil 71: Software-Normale (ISO/DIS 25178-1:2015)

Spécification géométrique des produits (GPS) - État de surface: Surfacique - Partie 71: Étalons logiciels (ISO/DIS 25178-1:2015)

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ICS:

17.040.20	Lastnosti površin	Properties of surfaces
17.040.30	Merila	Measuring instruments

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

Part 71:
Software measurement standards

Spécification géométrique des produits (GPS) — État de surface: Surfacique —
Partie 71: Étalons logiciels

ICS: 17.040.20

ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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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

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. www.iso.org/patents

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

This second edition of ISO 25178-71 cancels and replaces the first edition (ISO 25178-71:2012) which has been technically revised. Changes (corrections) have been made to (3.7) DOUBLE Note 1 to entry and in Table 1 some ASCII Format Field names have been changed (corrected).

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

The following parts are under preparation:

— *Part 1: Indication of surface texture*

— *Part 72: XML file format x3p*

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

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 14638). It influences the chain link G of the chains of standards on 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 specifications made in accordance with this document, unless otherwise indicated.

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

This part of ISO 25178 is concerned with software gauges (Type S1) and reference software (Type S2). It also defines the SDF file format for type S1 software gauges.

The SURFACE DATA FILE (SDF) format is already used by industry in particular by instrument manufacturers and academia. The SDF file format as defined in this document is a standardized sub-set of the possibilities included in the SDF file format as initially defined in the European Surfstand project and EUR15178. It is envisaged that the SDF file format could evolve (as more experience in its usage and future requirements are identified) later in a version 2.0 with additional fields and possibilities.

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

Part 71: Software measurement standards

1 Scope

This part of ISO 25178 defines Type S1 and Type S2 software measurement standards (etalons) for verifying the software of measuring instruments. It also defines the file format of Type S1 software measurement standards for the calibration of instruments for the measurement of surface texture by the areal method as defined in the areal surface texture chain of standards, chain link 6.

NOTE Throughout this part of ISO 25178, the term "softgauge" is used as a substitute for "software measurement standard Type S1".

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5436-2:2001, *Geometrical Product Specifications (GPS) — Surface texture: Profile method; Measurement standards — Part 2: Software measurement standards*

ISO 17450-2:2012, *Geometrical product specifications (GPS) — General concepts — Part 2: Basic tenets, specifications, operators, uncertainties and ambiguities*

ISO 25178-2, *Geometrical product specifications (GPS) — Surface texture: Areal — Part 2: Terms, definitions and surface texture parameters*

ISO/IEC Guide 98-1:2009, *Uncertainty of measurement — Part 1: Introduction to the expression of uncertainty in measurement*

ISO/IEC Guide 99:2007, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

3 Terms and definitions

For the purpose of this document, the terms and definitions in ISO 25178-2, ISO 5436-2:2001, ISO 17250-2, ISO/IEC Guide 98-1 and ISO/IEC Guide 99, and the following apply.

3.1
software measurement standard
reference data or reference software intended to reproduce the value of a measurand with known specification uncertainty in order to verify the software used to calculate the value of a measurand

3.2
CHAR[n]
array of n ASCII characters

3.3
BYTE
1-byte (8-bit) representation of an ASCII character

3.4
UINT16
2-byte representation of an unsigned integer

Note 1 to entry: Unsigned integers have a minimum value of 0 and a maximum value of 65 535.

Note 2 to entry: The less significant bytes are stored in lower memory addresses; the more significant bytes are stored in higher memory addresses.

3.5
INT16
2-byte representation of a signed integer

Note 1 to entry: Short integers have a minimum value of −32 768 and a maximum value of +32 767.

Note 2 to entry: The less significant bytes are stored in lower memory addresses; the more significant bytes are stored in higher memory addresses.

3.6
INT32
4-byte representation of a signed integer

Note 1 to entry: Long integers have a minimum value of −2 147 483 648 and a maximum value of +2 147 483 647.

Note 2 to entry: The less significant bytes are stored in lower memory addresses; the more significant bytes are stored in higher memory addresses.

3.7
DOUBLE
8-byte representation consisting of a sign bit, an 11-bit binary exponent, and a 52-bit mantissa, plus the implied high-order 1 bit

Note 1 to entry: Normalized double precision float have a range of ± $(1+(1-2^{-52}))\cdot 2^{1\ 023}$ approximately ± 1,797 693 134 862 315 $7e^{308}$. The smallest nonzero value is $-2^{1\ 023} \approx \cdot 2\ 1023$ ± 2,225 0738 585 072 014e^{-308}

Note 2 to entry: The less significant bytes are stored in lower memory addresses; the more significant bytes are stored in higher memory addresses.

Note 3 to entry: See the IEEE 754-1985 Standard for binary floating-point arithmetic.

4 Type S software measurement standards

4.1 General

These measurement standards are designed to verify the measuring instrument's software (i.e. filter algorithms, parameter calculation, etc.).

The content of a measurement standard shall be considered a scale limited surface (i.e. an S-F surface or an S-L surface). No part of the content of a measurement standard shall be considered form and thus, no form removal shall be undertaken on a measurement standard prior to presenting it to the software being tested.

4.2 Type S1, reference data

This type of measurement standard is a computer data file that contains a digital representation of a scale limited surface in a suitable recording medium.

