



SLOVENSKI STANDARD
oSIST prEN ISO 25178-71:2015
01-september-2015

**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)

Ta slovenski standard je istoveten z: prEN ISO 25178-71 rev

ICS:

17.040.20	Lastnosti površin	Properties of surfaces
17.040.30	Merila	Measuring instruments

oSIST prEN ISO 25178-71:2015 **en**

DRAFT INTERNATIONAL STANDARD

ISO/DIS 25178-71

ISO/TC 213

Secretariat: DS

Voting begins on:

Voting terminates on:

2015-06-11

2015-09-11

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN ISO 25178-71:2017

<https://standards.iteh.ai/catalog/standards/sist/b775cd37-4d37-4a10-aac7-784e5af1a000/sist-en-iso-25178-71-2017>

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

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.



Reference number
ISO/DIS 25178-71:2015(E)

© ISO 2015

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 25178-71:2017

<https://standards.iteh.ai/catalog/standards/sist/b775cd37-4d37-4a10-aac7-784e5af1a000/sist-en-iso-25178-71-2017>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Type S software measurement standards	2
4.1 General.....	2
4.2 Type S1, reference data.....	2
4.3 Type S2, reference software.....	3
5 File format for type S1 reference data	3
5.1 General.....	3
5.2 Record 1 — Header.....	3
5.2.1 Version number.....	3
5.2.2 Measurement instrument manufacturer's identifier.....	3
5.2.3 Original creation date and time.....	3
5.2.4 Last modification date and time.....	4
5.2.5 Number of points per profile, <i>M</i>	4
5.2.6 Number of profiles or traces, <i>N</i>	4
5.2.7 <i>X</i> , <i>Y</i> and <i>Z</i> axis scale factors.....	4
5.2.8 <i>Z</i> axis resolution.....	4
5.2.9 Compression type.....	4
5.2.10 Data type.....	4
5.2.11 Checksum type.....	4
5.3 Record 2 — Data area.....	5
5.4 Record 3 — Trailer.....	5
6 Software measurement standard certificate	6
Annex A (informative) Examples	7
Annex B (informative) Relation to the GPS matrix model	10
Bibliography	12

ISO/DIS 25178-71:2015(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.

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

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN ISO 25178-71:2017

<https://standards.iteh.ai/catalog/standards/sist/b775cd37-4d37-4a10-aac7-784e5af1a000/sist-en-iso-25178-71-2017>

ISO/DIS 25178-71:2015(E)

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.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN ISO 25178-71:2017](https://standards.iteh.ai/catalog/standards/sist/b775cd37-4d37-4a10-aac7-784e5af1a000/sist-en-iso-25178-71-2017)

<https://standards.iteh.ai/catalog/standards/sist/b775cd37-4d37-4a10-aac7-784e5af1a000/sist-en-iso-25178-71-2017>

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

ISO/DIS 25178-71:2015(E)**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 $\pm (1+(1-2^{-52})) \cdot 2^{1-023}$ approximately $\pm 1,797\,693\,134\,862\,315\,7e^{308}$. The smallest nonzero value is $-2^{1-023} \approx -2\,1023 \pm 2,225\,0738\,585\,072\,014e^{-308}$

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.

Type S1 reference data are used to test software by inputting them as data into the software under test/calibration and comparing the results from the software under test with the certified results from the calibration certificate of the softgauge.

NOTE The certified results for mathematically designed synthetic data can often be calculated directly without the need for certification by Type S2 measurement standards.

4.3 Type S2, reference software

These measurement standards are reference software. Reference software consists of traceable computer software against which software in a measuring instrument can be compared.

NOTE 1 Traceable here means a traceable chain of comparisons, with uncertainty, back to a mathematically designed synthetic data set whose results can be calculated directly.

Type S2 reference software are used to test software by inputting a common data set into the software under test/calibration and the reference software and comparing the results from the software under test with the certified results from the reference software. Reference software values shall be traceable.

NOTE 2 Type S2 measurement standards can also be used to certify type S1 reference data.

5 File format for type S1 reference data

5.1 General

The file extension of this file protocol is SDF. The file protocol for the softgauge is divided into three separate sections or records. For implementation of the ASCII and BINARY representations of an SDF data format, see [Annex A](#).

NOTE For the purposes of this document, a right-handed coordinate system is assumed (see ISO 25178-2). Looking from the top, the first point in the data file is in the top left corner.

5.2 Record 1 — Header

The header contains general information about each specific measurement. The record is composed of various “fields” in which the information is coded.

The BINARY format consists of fixed length fields defined in [Table 1](#).

Except for the version number, the ASCII format, for the header, consists of a series “keyword = value of field” where the keyword is the ASCII field name given in [Table 1](#).

5.2.1 Version number

The version of a softgauge file format is an array of 8 characters formatted the following way: “aISO-1.0” for the ASCII file format or “bISO-1.0” for the BINARY file format. Future evolutions of this format will modify the version number, such as “-2.0”.

5.2.2 Measurement instrument manufacturer’s identifier

The identifier includes the source of the data and might also include hardware and software identifiers.

5.2.3 Original creation date and time

This 12-character field (DDMMYYYYHHMM) stores the date and time that the measurement was completed. Redundant separator characters are not stored but clearly zero padding of fields is required (i.e. 0307 for 3 July not 37).