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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33523.3-2022

**Geometrical product specifications (GPS) - Surface texture:
Areal - Part 3: Specification operators**

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foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules for Standardization Documents" drafting.

This document is part 3 of GB/T 33523 "Geometric Specification for Products (GPS) Surface Structure Area Law". GB/T 33523

The following parts have been published.

- Part 1. Representation of surface structure;
- Part 2. Terms, definitions and surface structure parameters;
- Part 3. Specification operation set;
- Part 6. Classification of surface structure measurement methods;
- Part 70. Physical measurement standards;
- Part 71. Software measurement standards;
- Part 72. XML file format x3p;
- Part 601. Nominal characteristics of contact (stylus) instruments;
- Part 602. Nominal characteristics of non-contact (confocal chromatic aberration probe) instruments;
- Part 603. Nominal characteristics of non-contact (phase-shift interference microscopy) instruments;
- Part 604. Nominal characteristics of non-contact (coherent scanning interference)

instruments;

--- Part 605.Nominal characteristics of non-contact (point autofocus probe) instruments;

--- Part 606.Nominal characteristics of non-contact (zoom) instruments;

--- Part 701.Calibration and measurement standards for contact (stylus) instruments.

This document is equivalent to ISO 25178-3:2012 "Geometric Product Specifications (GPS) Surface Structure Area Method Part 3.Specifications

Fan Operation Collection".

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

With the implementation of the national product quality improvement plan, the unified norms or principles used in the process of product design, manufacturing, measurement and inspection

needs are becoming more and more urgent. The surface structure representation method and related standards in the original product geometric technical specifications can no longer meet the requirements of the product manufacturing process.

Surface quality control requirements in the process.

GB/T 33523 "Product Geometric Specifications (GPS) Surface Structure Area Method" is based on the new generation of GPS product geometric specifications

Through digital measurement technology, software analysis technology and measurement evaluation, a new set of three-dimensional surface structure measurement and analysis recommended national standards. GB/T 33523, on the basis of proposing the surface structure representation, surface structure parameters and standard operation set, analyzes

The method of surface structure measurement is given, the measurement technique used and the nominal characteristics of the instrument are given. In particular, GB/T 33523 covers contact

At the same time, it focuses on introducing a variety of non-contact measuring instruments that are of great value in high-precision measurement applications but lack standard support.

Measuring instrument. The standard also regulates physical measurement and software measurement standards, and gives software file standards and metrological characteristics of surface structure measurement.

GB/T 33523 realizes the leap from two-dimensional profile measurement to three-dimensional surface structure measurement, and provides a design basis for the GPS product geometric specification system.

Quantitative test support.

GB/T 33523 is proposed to consist of 14 parts.

--- Part 1.Representation of surface structure. The purpose is to specify the product technical documents (such as drawings, specifications, contracts and reports)

Rules for representing the surface structure of a region using graphical symbols.

--- Part 2.Terms, definitions and surface structure parameters. The purpose of this document is to specify the terms, definitions and parameter.

--- Part 3.Specification operation set. The purpose is to provide complete rules applicable to the evaluation of surface structure (scale-limited surface) by the regional method.

Fan operation set.

--- Part 6.Classification of surface structure measurement methods. The purpose is to define a classification system mainly for methods of surface texture measurement,

Define three types of methods, describe the relationship between the three types of methods, and give a brief description of the specific methods.

--- Part 70.physical measurement standards. The purpose is to define a practice for the periodic verification and adjustment of area-based surface structure measurement instruments.

properties of physical measurement standards.

--- Part 71.Software measurement standards. The purpose is to specify the S1 and S2 software measurement standards for software calibration of measuring instruments.

Standard (etalon) term definition.

--- Part 72.XML file format x3p. The purpose is to specify XML files for storing and exchanging shape and contour data

Format x3p.

--- Part 601.Nominal characteristics of contact (stylus) instruments. The purpose is to specify the surface structure area method contact (stylus) type instrument

Nominal characteristics of the device.

--- Part 602.Nominal characteristics of non-contact (confocal chromatic aberration probe)

instruments. The purpose is to specify the use of axial

Design and metrological characterization of a non-contact instrument for measuring surface structure with a confocal chromatic aberration probe for dispersion properties.

--- Part 603.Nominal characteristics of non-contact (phase-shift interference microscopy) instruments. The purpose is to specify the phase-shift interferometry (PSI) profile and metrological properties of area surface structure measurement microscopes.

--- Part 604.Nominal characteristics of non-contact (coherent scanning interference) type instruments. The purpose is to specify the surface height three-dimensional mapping

Metrology characteristics of a coherent scanning interferometry (CSI) measurement system for radiation.

--- Part 605.Nominal characteristics of non-contact (point AF probe) instruments. The purpose is to specify the use of point AF probes

Metrological properties of non-contact instruments for measuring surface structures.

--- Part 606.Nominal characteristics of non-contact (zoom) instruments. The purpose is to specify the use of variable focus (FV) sensors to measure surfaces

Design and metrological characteristics of structured non-contact instruments.

--- Part 701.Calibration and measurement standards for contact (stylus) instruments. The purpose is to specify the area method surface structure contact (contact

The characteristics of physical measuring tools used as measurement standards for needle) instruments, the evaluation method of residual error, the inspection of calibration, acceptance and periodic verification

measurement method.

Product Geometry Specification (GPS)

Surface Structure Region Method

Part 3.Canonical Operation Sets

1 Scope

This document specifies a complete set of normative operations applicable to the assessment of surface structure (scale-bound surfaces) by the zonal approach.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references