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

GB/T 26958.20-2025

Replacing GB/Z 26958.20-2011

**Geometrical product specifications (GPS) - Filtration - Part 20:
Linear profile filters: Basic concepts**

产品几何技术规范（GPS）滤波 第20部分：线性轮廓滤波器：基本概念
(English Translation)

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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 20 of GB/T 26958 "Technical Specification for Product Geometry (GPS) Filtering". GB/T 26958 has been published in Lower part.

--- Part 1: Overview and basic concepts;

- Part 20: Linear profile filters. Basic concepts;
- Part 21: Linear profile filters Gaussian filters;
- Part 22: Linear profile filters and spline filters;
- Part 28: Profile filter end effects;
- Part 29: Linear profile filter wavelets;
- Part 30: Robust contour filters. Basic concepts;
- Part 31: Robust contour filters Gaussian regression filters;
- Part 32: Robust contour filters and spline filters;
- Part 40: Basic concepts of morphological contour filters;
- Part 41: Morphological contour filters, disk and horizontal line segment filters;
- Part 49: Morphological contour filter scale space technique;
- Part 60: Linear area filters. Basic concepts;
- Part 61: Linear area filters Gaussian filters;
- Part 71: Robust regional filter Gaussian regression filter;
- Part 85: Morphological region filter segmentation.

This document replaces GB/Z 26958.20-2011 "Product Geometry Technical Specification (GPS) Filtering Part 20: Linear Profile Filtering" Compared with GB/Z 26958.20-2011, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- The nature of the standard is changed from a guiding technical document to a recommended national standard;
- Changed the introductory words of "Terms and Definitions" (see Chapter 3, Chapter 3 of the 2011 edition);
- Changed the term and definition of "linear profile filter" (see 3.1, 3.1 of the 2011 edition);
- Changed the term and definition of "phase correction (linear) profile filter" (see 3.2, 3.2 of the 2011 edition);
- Changed the terminology and definition of "weight function" (see 3.3, 3.3 of the 2011 edition);
- Changed the term and definition of "cut-off wavelength" (see 3.5, 3.5 of the 2011 edition);
- Changed the terminology and definition of "multi-resolution analysis" (see 3.7, 3.7 of the

2011 edition);

--- Changed the expression of "kernel function" (see 4.1, 4.1 of the 2011 edition);

--- Changed the expression of "discrete representation of linear profile filter" (see 4.3, 4.3 of the 2011 edition).

This document is modified to adopt ISO 16610-20:2015 "Geometric Product Specification (GPS) Filtering Part 20: Linear Profile Filtering" Instruments. Basic Concepts.

The technical differences between this document and ISO 16610-20:2015 and their reasons are as follows.

--- Replaced ISO 16610-1 with the normative reference GB/T 26958.1 to adapt to my country's technical conditions (see Chapter 3), added Operability;

--- Changed the definition of "weight function" (see 3.3) to be consistent with the trend of technological development;

--- Changed the definition of "cut-off wavelength" (see 3.5) to be consistent with GB/T 26958.1 published at the same time.

The following editorial changes were made to this document.

--- ISO 8015 was replaced by the informative GB/T 4249 to adapt to my country's technical conditions (see C.1), and operability was increased.

Sexuality;

--- The informative reference GB/T 18779.1 replaces ISO 14253-1 to adapt to my country's technical conditions (see C.1), and adds Operability;

--- ISO 14638 was replaced by the informative GB/T 20308 to adapt to my country's technical conditions (see C.1), and operability was increased.

Sexuality;

--- ISO 16610-21 was replaced by the informative reference GB/T 26958.21 to adapt to my country's technical conditions (see 4.4), and the addition Operability.

Introduction

In the process of analyzing the surface roughness characteristic information of the product, the filter model, filter parameters, filter transmission characteristics, surface There is no consistent standard specification for the separation, extraction and reconstruction of the long-wave and short-wave components of the profile, and the treatment of the end effect.

The concept of GPS consistency specification is required. The focus is on the processing technology and filtering method of surface roughness characteristic information that obeys Gaussian statistical distribution.

This paper proposes a surface roughness filtering specification system for the new generation of GPS.

GB/T 26958 "Product Geometry Technical Specification (GPS) Filter" is based on the new generation of GPS product geometry specification system, providing industrial production A complete set of filter calculation tools is provided, which can be used together with other calculation tools to ensure the smooth and reasonable progress of product specification and certification.

It is widely used in surface topography measurement and analysis and has become an important analytical tool for existing surface topography measurement instruments.

This system provides unified normative support for the measurement and analysis of surface morphology information in the manufacturing field, and for the development and application standardization of related instruments.

The formulation of standards will help improve the diverse surface morphology analysis tools and enhance the quality, performance and international competitiveness of corporate products.

GB/T 26958 is intended to consist of 16 parts.

--- Part 1: Overview and basic concepts. Aims to define the basic terms of GPS filtering and the basic process used by GPS filtering frame.

--- Part 20: Linear profile filters. Basic concepts. Aims to define the basic concepts of linear profile filters.

--- Part 21: Linear profile filters Gaussian filters. Aims to specify the metrological characteristics of Gaussian filters for profile filtering.

A method for separating the long-wave and short-wave components of surface profiles is given.

--- Part 22: Linear profile filter spline filter. Aims to specify spline filters for profile filtering, with particular reference to How to separate the long-wave and short-wave components of a contour.

--- Part 28: Profile filter end effects. Aims to give a method for dealing with the end effects of linear profile filters.

--- Part 29: Linear contour filter wavelets. Aims to specify spline wavelets and related concepts for contour filtering and give Basic terminology and applications of compactly supported spline wavelets.

--- Part 30: Robust contour filters. Basic concepts. Aims to define the basic concepts of robust contour filters.

--- Part 31: Robust profile filter Gaussian regression filter. Aims to specify the discrete