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

GB/T 26958.21-2026

Replacing GB/T 26958.21-2020

**Geometrical product specifications (GPS) - Filtration - Part 21:
Linear profile filters: Gaussian filters**

产品几何技术规范 (GPS) 滤波 第21部分: 线性轮廓滤波器: 高斯滤波器
(English Translation)

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References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 21 of GB/T 26958 "Product Geometric Specification (GPS) - Filtering". GB/T 26958 has been published.

The following section.

---Part 1: Overview and Basic Concepts;

---Part 20: Linear Profilometry. Basic Concepts;

---Part 21: Linear Profilometry. Gaussian Filter;

---Part 22: Linear Profilofilters and Spline Filters;

---Part 28: Profilofilter End Effects;

---Part 29: Linear Contour Filter Wavelet;

---Part 30: Robust Profile Filters. Basic Concepts;

---Part 31: Robust Profilofilters and Gaussian Regression Filters;

- Part 40: Morphological Contour Filters. Basic Concepts;
- Part 41: Morphological Contour Filters. Disk and Horizontal Segment Filters;
- Part 49: Morphological Contour Filters. Scale-Space Techniques;
- Part 60: Basic Concepts of Linear Region Filters;
- Part 61: Linear Region Filters - Gaussian Filters;
- Part 62: Linear Region Filters. Spline Filters;
- Part 71: Robust Region Filters and Gaussian Regression Filters;
- Part 85: Morphological Region Filter Segmentation.

This document replaces GB/T 26958.21-2020 "Product Geometric Specification (GPS) - Filtering - Part 21: Linear Profile Filtering" Compared with GB/T 26958.21-2020, the main technical changes in the "Gaussian Filter" standard, apart from structural adjustments and editorial modifications, are as follows.

---Change the long-wavelength components to large-scale transverse components and the short-wavelength components to small-scale transverse components (see Chapter 1, 2020 edition).

Chapter 1);

---Extending the scope of application to roundness filtering, as well as generalized closed contour filtering (see Chapter 1, Chapter 1 of the 2020 edition);

---Added terms and definitions such as surface profile, unbounded open profile, weighting function, filter transmission characteristics, and wavenumber per revolution (see 3.1).

3.1.2, 3.3, 3.4, 3.6);

---The definition of the linear contour filter has been changed (see 3.2, 3.1 in the 2020 version);

---The formula for the Gaussian weight function of unbounded open contours has been modified (see 4.2, 4.1 in the 2020 version);

---Added filtering equations (see 4.3 and 5.3);

---The end effect has been removed (see 4.3 in the 2020 version);

---Added nested exponential series values (see Chapter 6);

--- Added filter identifiers (see Chapter 7).

This document is equivalent to ISO 16610-21:2025 "Geometric Specifications for Products (GPS) - Filtering - Part 21: Linear Profile Filtering".

Device. Gaussian filter.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Product Geometric Specifications (SAC/TC240).

Introduction

In the analysis of surface roughness characteristics of products, filter models, filter parameters, filter transmission characteristics, and surface roughness information are considered.

There are still no consistent standard specifications for the separation, extraction, and reconstruction of the long-wavelength and short-wavelength components of the profile, as well as the handling of end-effects. In order to...

To meet the requirements of GPS consistency principles, it is necessary to focus on the processing and filtering techniques for surface roughness characteristic information that follows a Gaussian statistical distribution.

Methods were developed to construct a new generation of GPS surface roughness filtering standard system.

GB/T 26958 "Product Geometric Specification (GPS) Filtering" is based on the new generation GPS product geometric specification system and provides a basis for industrial production.

It provides a complete set of filtering calculation tools, which can be used in conjunction with other calculation tools to ensure the smooth and reasonable implementation of product specifications and certification.

The formulation and implementation of these standards provide a unified framework for the measurement and analysis of surface morphology information in the manufacturing field, and for the standardization of the development and application of related instruments.

Standard support. The formulation of GB/T 26958 is conducive to improving diverse surface morphology analysis tools and enhancing the quality and performance of enterprise products.

International competitiveness.

GB/T 26958 is proposed to consist of 17 parts.

---Part 1: Overview and Basic Concepts. The purpose is to define the basic terminology of GPS filtering and the basic processes employed in GPS filtering.

Process framework.

---Part 20: Linear Profile Filters. Basic Concepts. The purpose is to define the basic

concepts of linear profile filters.

---Part 21: Linear Profilometry. Gaussian Filter. The purpose is to specify a linear Gaussian filter for surface profile filtering.

The instrument provides a method for separating the large-scale and small-scale lateral components of a surface profile.

---Part 22: Linear Profilometry Spline Filters. The purpose is to specify spline filters for contour filtering, particularly...

Explain how to separate the long-wavelength and short-wavelength components of the profile.

---Part 28: Profilometry Filter End Effects. The aim is to provide a method for handling end effects in linear profile filters.

method.

---Part 29: Wavelet for Linear Contour Filtering. The purpose is to define spline wavelets and related concepts used for contour filtering, and this paper presents the basic terminology and applications of compactly supported spline wavelets.

---Part 30: Robust Profile Filters. Basic Concepts. The purpose is to define the basic concepts of robust profile filters.

---Part 31: Robust Profile Filters and Gaussian Regression Filters. The aim is to define the discrete robust Gaussian regression filter...

characteristic.

---Part 32: Robust Profile Spline Filters. The aim is to define robust spline filters suitable for surface profiles.

---Part 40: Morphological Contour Filters. Basic Concepts. The aim is to define morphological operations and filters (including envelope filtering).

Basic terms and concepts of instruments.

---Part 41: Morphological Contour Filters. Disk and Horizontal Line Segment Filters. The aim is to specify the use of disks and horizontal line segments to construct...

The technical content of constructing elemental computational morphological filters (including envelope filters).

---Part 49: Morphological Contour Filters. Scale-Space Techniques. The aim is to define the content of morphological scale-space techniques and provide...

Basic terminology and usage of scale-space technology.

---Part 60: Basic Concepts of Linear Region Filters. The purpose is to define the basic