

STN	Geometrické špecifikácie výrobkov (GPS) Filtrácia Časť 31: Robustné profilové filtre: Gaussove regresné filtre (ISO 16610-31: 2025)	STN EN ISO 16610-31 01 4453
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Geometrical product specifications (GPS) - Filtration - Part 31: Robust profile filters: Gaussian regression filters (ISO 16610-31:2025)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

**Geometrical product specifications (GPS) - Filtration - Part
31: Robust profile filters: Gaussian regression filters (ISO
16610-31:2025)**

Spécification géométrique des produits (GPS) - Filtrage
- Partie 31: Filtres de profil robustes: Filtres de
régression gaussiens (ISO 16610-31:2025)

Geometrische Produktspezifikation (GPS) - Filterung -
Teil 31: Robuste Profilfilter: Gaußsche
Regressionsfilter (ISO 16610-31:2025)

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EN ISO 16610-31:2025 (E)

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European foreword

This document (EN ISO 16610-31:2025) has been prepared by Technical Committee ISO/TC 213 "Dimensional and geometrical product specifications and verification" in collaboration with Technical Committee CEN/TC 290 "Dimensional and geometrical product specification and verification" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2025, and conflicting national standards shall be withdrawn at the latest by August 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 16610-31:2025 has been approved by CEN as EN ISO 16610-31:2025 without any modification.



International Standard

ISO 16610-31

Geometrical product specifications (GPS) — Filtration —

Part 31: Robust profile filters: Gaussian regression filters

*Spécification géométrique des produits (GPS) — Filtrage —
Partie 31: Filtres de profil robustes: Filtres de régression
gaussiens*

**Second edition
2025-02**

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ISO 16610-31:2025(en)**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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 290, *Dimensional and geometrical product specification and verification*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 16610-31:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

- providing continuous Gaussian regression filters for open and for closed profiles;
- providing a normative iterative solution for continuous Gaussian regression filters.

A list of all parts in the ISO 16610 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 16610-31:2025(en)**Introduction**

This document is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences chain links C and E in the GPS matrix structure.

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 the specifications made in accordance with this document, unless otherwise indicated.

For more information on the relationship of this document to the filtration matrix model, see [Annex C](#).

For more detailed information on the relation of this document to other standards and the GPS matrix model, see [Annex D](#).

This document develops the terminology and concepts of robust Gaussian regression filters for surface profiles. It separates the large- and small-scale lateral components of surface profiles in such a way that the surface profiles can be reconstructed without altering. The robust Gaussian regression filter for surface profiles reduces the influence of protruding dales and hills. Depending on the selected nesting index and regression degree, robust Gaussian regression filters offer one possible method for the F-Operation.

Geometrical product specifications (GPS) — Filtration —

Part 31:

Robust profile filters: Gaussian regression filters

1 Scope

This document specifies robust Gaussian regression filters for the filtration of surface profiles. It defines, in particular, how to separate large- and small-scale lateral components of surface profiles with protruding dales and hills.

The concept presented for closed profiles are applicable to the case of roundness filtering. Where appropriate, these concept can be extended to generalized closed profiles, especially for surface profiles with re-entrant features.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 16610-1, *Geometrical product specifications (GPS) — Filtration — Part 1: Overview and basic concepts*

ISO 16610-20, *Geometrical product specifications (GPS) — Filtration — Part 20: Linear profile filters: Basic concepts*

ISO 16610-21, *Geometrical product specifications (GPS) — Filtration — Part 21: Linear profile filters: Gaussian filters*

ISO 16610-22, *Geometrical product specifications (GPS) — Filtration — Part 22: Linear profile filters: Spline filters*

ISO 16610-30, *Geometrical product specifications (GPS) — Filtration — Part 30: Robust profile filters: Basic concepts*

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

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