

STN	Geometrické špecifikácie výrobkov (GPS) Filtrácia Časť 45: Morfológické profilové filtre: Segmentácia (ISO 16610-45: 2025)	STN EN ISO 16610-45 01 4453
------------	---	---

Geometrical product specifications (GPS) - Filtration - Part 45: Morphological profile filters: Segmentation (ISO 16610-45:2025)

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

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/25

Obsahuje: EN ISO 16610-45:2025, ISO 16610-45:2025

140529

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD

EN ISO 16610-45

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2025

ICS 17.040.20; 17.040.40

English Version

Geometrical product specifications (GPS) - Filtration - Part 45: Morphological profile filters: Segmentation (ISO 16610-45:2025)

Spécification géométrique des produits (GPS) - Filtrage
- Partie 45: Filtres de profil morphologiques :
Segmentation (ISO 16610-45:2025)

Geometrische Produktspezifikation (GPS) - Filterung -
Teil 45: Morphologische Profilfilter: Segmentierung
(ISO 16610-45:2025)

This European Standard was approved by CEN on 1 November 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 16610-45:2025 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 16610-45:2025) 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 September 2025, and conflicting national standards shall be withdrawn at the latest by September 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.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 16610-45:2025 has been approved by CEN as EN ISO 16610-45:2025 without any modification.



International Standard

ISO 16610-45

Geometrical product specifications (GPS) — Filtration —

Part 45: Morphological profile filters: Segmentation

*Spécification géométrique des produits (GPS) — Filtrage —
Partie 45: Filtres de profil morphologiques : Segmentation*

**First edition
2025-02**

ISO 16610-45:2025(en)**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ISO 16610-45:2025(en)**Contents**

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Terms related to geometrical features.....	1
3.2 Terms related to segmentation.....	3
3.3 Terms related to pruning.....	6
3.4 Terms related to the motif method.....	9
4 Segmentation details	10
4.1 General.....	10
4.2 Basic segmentation.....	10
4.3 Watershed segmentation using Wolf pruning.....	11
4.3.1 General.....	11
4.3.2 Calculation method for watershed segmentation using Wolf pruning.....	11
4.4 Crossing-the-line segmentation.....	12
4.4.1 General.....	12
4.4.2 Calculation method for crossing-the-line segmentation.....	12
5 General information	14
Annex A (informative) Crossing-the-line segmentation to determine profile elements	15
Annex B (informative) Other segmentation information — Hyperreal numbers	21
Annex C (informative) Relationship to the filtration matrix model	23
Annex D (informative) Concept diagrams	24
Annex E (informative) Relationship to the GPS matrix model	28
Bibliography	29

ISO 16610-45:2025(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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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).

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 16610-45:2025(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 specifications made in accordance with this document, unless otherwise indicated.

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

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

This document develops the terminology and concepts for profile segmentation.

This document will replace part of ISO 21920-2 as the source document for profile segmentation. ISO 21920-2 is under revision and its definitions will be aligned with this document.

Geometrical product specifications (GPS) — Filtration —

Part 45:

Morphological profile filters: Segmentation

1 Scope

This document defines the terminology and develops concepts for profile morphological segmentation. In particular it specifies the watershed segmentation method, the Wolf pruning method and the crossing-the-line method. This document assumes a continuous surface.

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*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN