



NSAI
Standards

Irish Standard
I.S. EN ISO 16610-29:2020

Geometrical product specifications (GPS) -
Filtration - Part 29: Linear profile filters:
Wavelets (ISO 16610-29:2020)

I.S. EN ISO 16610-29:2020

Incorporating amendments/corrigenda/National Annexes issued since publication:

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NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

National Foreword

I.S. EN ISO 16610-29:2020 is the adopted Irish version of the European Document EN ISO 16610-29:2020, Geometrical product specifications (GPS) - Filtration - Part 29: Linear profile filters: Wavelets (ISO 16610-29:2020)

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EUROPEAN STANDARD

EN ISO 16610-29

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2020

ICS 17.040.20

Supersedes EN ISO 16610-29:2015

English Version

Geometrical product specifications (GPS) - Filtration - Part 29: Linear profile filters: Wavelets (ISO 16610-29:2020)

Spécification géométrique des produits (GPS) - Filtrage
- Partie 29: Filtres de profil linéaires: Ondelettes(ISO
16610-29:2020)

Geometrische Produktspezifikation (GPS) - Filterung -
Teil 29: Lineare Profilfilter: Wavelets (ISO 16610-
29:2020)

This European Standard was approved by CEN on 23 March 2020.

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

EN ISO 16610-29:2020 (E)

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European foreword

This document (EN ISO 16610-29:2020) 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of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

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.

This document supersedes EN ISO 16610-29:2015.

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Endorsement notice

The text of ISO 16610-29:2020 has been approved by CEN as EN ISO 16610-29:2020 without any modification.

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**INTERNATIONAL
STANDARD**

**ISO
16610-29**

Second edition
2020-04

**Geometrical product specifications
(GPS) — Filtration —**

Part 29:

Linear profile filters: wavelets

Spécification géométrique des produits (GPS) — Filtrage —

Partie 29: Filtres de profil linéaires: ondelettes



Reference number
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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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ISO 16610-29:2020(E)

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 documents 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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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).

This second edition cancels and replaces the first edition (ISO 16610-29:2015), which has been technically revised.

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

- The terminology and requirements around wavelets have been clarified and expanded to cover biorthogonal wavelets more fully.
- The requirements for cubic prediction wavelets are set out in Annex A.
- The requirements for cubic b-spline wavelets are given in Annex B.

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.

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 F of the chains of standards on profile and areal surface texture.

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 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 for wavelets.

Geometrical product specifications (GPS) — Filtration —

Part 29: Linear profile filters: wavelets

1 Scope

This document specifies biorthogonal wavelets for profiles and contains the relevant concepts. It gives the basic terminology for biorthogonal wavelets of compact support, together with their usage.

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16610-1, ISO 16610-20, ISO 16610-22 and ISO/IEC Guide 99 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1

mother wavelet

function of one or more variables which forms the basic building block for wavelet analysis, i.e. an expansion of a signal/profile as a linear combination of wavelets

Note 1 to entry: A mother wavelet, which usually integrates to zero, is localized in space and has a finite bandwidth. [Figure 1](#) provides an example of a real-valued mother wavelet.

3.1.1

biorthogonal wavelet

wavelet where the associated *wavelet transform* ([3.3](#)) is invertible but not necessarily orthogonal

Note 1 to entry: The merit of the biorthogonal wavelet is the possibility to construct symmetric wavelet functions, which allows a linear phase filter.

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