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Standards

Irish Standard  
I.S. EN ISO 16610-71:2014

# Geometrical product specifications (GPS) - Filtration - Part 71: Robust areal filters: Gaussian regression filters (ISO 16610- 71:2014)

## I.S. EN ISO 16610-71:2014

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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**EN ISO 16610-71**

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English Version

**Geometrical product specifications (GPS) - Filtration - Part 71:  
Robust areal filters: Gaussian regression filters (ISO 16610-  
71:2014)**

Spécification géométrique des produits (GPS) - Filtrage -  
Partie 71: Filtres surfaciques robustes: Filtres de régression  
gaussiens (ISO 16610-71:2014)

Geometrische Produktspezifikation (GPS) - Filterung - Teil  
71: Robuste Flächenfilter: Gaußsche Regressionsfilter (ISO  
16610-71:2014)

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**EN ISO 16610-71:2014 (E)**

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## **Foreword**

This document (EN ISO 16610-71:2014) 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of an identical text or by endorsement, at the latest by March 2015, and conflicting national standards shall be withdrawn at the latest by March 2015.

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

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### **Endorsement notice**

The text of ISO 16610-71:2014 has been approved by CEN as EN ISO 16610-71:2014 without any modification.

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

Part 71:

### **Robust areal filters: Gaussian regression filters**

*Spécification géométrique des produits (GPS) — Filtrage —*

*Partie 71: Filtres surfaciques robustes: Filtres de régression gaussiens*



Reference number  
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## ISO 16610-71:2014(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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

ISO 16610 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Filtration*:

- *Part 1: Overview and basic concepts [Technical Specification]*
- *Part 20: Linear profile filters: Basic concepts [Technical Specification]*
- *Part 21: Linear profile filters: Gaussian filters*
- *Part 22: Linear profile filters: Spline filters [Technical Specification]*
- *Part 28: Profile filters: End effects [Technical Specification]*
- *Part 29: Linear profile filters: Spline wavelets [Technical Specification]*
- *Part 30: Robust profile filters: Basic concepts [Technical Specification]*
- *Part 31: Robust profile filters: Gaussian regression filters [Technical Specification]*
- *Part 32: Robust profile filters: Spline filters [Technical Specification]*
- *Part 40: Morphological profile filters: Basic concepts [Technical Specification]*
- *Part 41: Morphological profile filters: Disk and horizontal line-segment filters [Technical Specification]*
- *Part 49: Morphological profile filters: Scale space techniques [Technical Specification]*
- *Part 60: Linear areal filters — Basic concepts*
- *Part 61: Linear areal filters — Gaussian filters*
- *Part 71: Robust areal filters: Gaussian regression filters*

— *Part 85: Areal Morphological: Segmentation*

The following parts are planned:

- *Part 26: Linear profile filters: Filtration on nominally orthogonal grid planar data sets*
- *Part 27: Linear profile filters: Filtration on nominally orthogonal grid cylindrical data sets*
- *Part 42: Morphological profile filters: Motif filters*
- *Part 62: Linear areal filters: Spline filters*
- *Part 69: Linear areal filters: Spline wavelets*
- *Part 70: Robust areal filters: Basic concepts*
- *Part 72: Robust areal filters: Spline filters*
- *Part 80: Morphological areal filters: Basic concepts*
- *Part 81: Morphological areal filters: Sphere and horizontal planar segment filters*
- *Part 82: Morphological areal filters: Motif filters*
- *Part 89: Morphological areal filters: Scale space techniques*

## **ISO 16610-71:2014(E)**

### **Introduction**

This part of ISO 16610 is a Geometrical Product Specification (GPS) standard and is to be regarded as a Global GPS standard (see ISO/TR 14638). It influences the chain links 3 and 5 of all chains of standards.

The ISO/GPS Masterplan given in ISO/TR 14638 gives an overview of the ISO/GPS system of which this standard is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this standard and the default decision rules given in ISO 14253-1 apply to specifications made in accordance with this standard, unless otherwise indicated.

For more detailed information of the relation of this document to the GPS matrix model, see [Annex C](#).

This part of ISO 16610 specifies the metrological characteristics of robust areal Gaussian regression filters, for the rotationally symmetric filtration of nominal planar surfaces and the filtration of nominal cylindrical surfaces.

The filter is insensitive against specific phenomena in the input data (e.g. spike discontinuities as well as deep valleys and high peaks, etc.). The boundaries of the measured surface are still usable.

# Geometrical product specifications (GPS) — Filtration —

## Part 71:

## Robust areal filters: Gaussian regression filters

### 1 Scope

This part of ISO 16610 specifies the characteristics of the robust areal Gaussian regression filter for the evaluation of surfaces that may contain spike discontinuities as well as deep valleys and high peaks. It specifies in particular how to separate large scale lateral components and short scale lateral components of a surface.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 16610-30:—<sup>1)</sup>, *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)*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16610-1, ISO 16610-30, ISO/IEC Guide 99 and ISO/IEC Guide 98-3 and the following apply.

#### 3.1

##### **robust planar filter**

non linear areal filter to separate a planar surface with specific phenomena (e.g. spike discontinuities as well as deep valleys and high peaks etc.) into large scale lateral components and short scale lateral components

#### 3.2

##### **robust cylindrical filter**

non linear areal filter to separate a cylindrical surface with specific phenomena (e.g. spike discontinuities as well as deep valleys and high peaks etc.) into large scale lateral components and short scale lateral components

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1) To be published. (Revision of ISO/TS 16610-30:2009)

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