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Standards

Irish Standard  
I.S. EN ISO 14405-2:2011

# Geometrical product specifications (GPS) - Dimensional tolerancing - Part 2: Dimensions other than linear sizes (ISO 14405-2:2011)

## I.S. EN ISO 14405-2:2011

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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

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**Geometrical product specifications (GPS) - Dimensional  
tolerancing - Part 2: Dimensions other than linear sizes (ISO  
14405-2:2011)**

Spécification géométrique des produits (GPS) -  
Tolérancement dimensionnel - Partie 2: Dimensions autres  
que les tailles linéaires (ISO 14405-2:2011)

Geometrische Produktspezifikation (GPS) - Geometrische  
Tolerierung - Teil 2: Andere als lineare Maße (ISO 14405-  
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**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## **Foreword**

This document (EN ISO 14405-2:2011) 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of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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**

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**Geometrical product specifications  
(GPS) — Dimensional tolerancing —**

**Part 2:  
Dimensions other than linear sizes**

*Spécification géométrique des produits (GPS) — Tolérancement  
dimensionnel —*

*Partie 2: Dimensions autres que tailles linéaires*



Reference number  
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Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
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Web [www.iso.org](http://www.iso.org)

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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 14405-2 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

This first edition of ISO 14405-2 cancels and replaces ISO 406:1987.

ISO 14405 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Dimensional tolerancing*:

- *Part 1: Linear sizes*
- *Part 2: Dimensions other than linear sizes*

## **Introduction**

This part of ISO 14405 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). In the general GPS matrix, it influences chain link 1 in the distance and radius chains of standards and chain links 1, 2 and 3 in the angle chain of standards.

The ISO/GPS Masterplan given in ISO/TR 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 dimensions other than linear sizes, the requirement is ambiguous when applied to the real workpiece. It is the presence of form and angular deviations on all real workpieces that makes these requirements ambiguous, i.e. there is a specification ambiguity.

It has to be realized that this specification ambiguity can only be avoided for features of size toleranced in accordance with ISO 14405-1. For all other dimensions, geometrical tolerancing should be used in order to control the specification ambiguity.

For more detailed information on the relation of this part of ISO 14405 to other standards and to the GPS matrix model, see Annex B.

**I.S. EN ISO 14405-2:2011**

# Geometrical product specifications (GPS) — Dimensional tolerancing —

## Part 2: Dimensions other than linear sizes

### 1 Scope

This part of ISO 14405 illustrates the use of geometrical tolerancing for dimensions that are not linear sizes to avoid the ambiguity that the use of  $\pm$  tolerances on these dimensions causes. Both linear and angular dimensions, except size of features of size are covered.

Dimensional tolerancing can be indicated by  $\pm$  tolerancing or geometrical tolerancing.

The ambiguity caused by using  $\pm$  tolerances for dimensions other than linear sizes (for individual tolerances and general tolerances according to, e.g. ISO 2768-1 and ISO 8062-3) is explained in Annex A.

NOTE 1 The figures, as shown in this part of ISO 14405, merely illustrate the text and are not intended to reflect actual usage. The figures are consequently simplified to indicate only the relevant principles.

NOTE 2 For indications of size tolerances, see the following:

- ISO 14405-1 for linear size;
- ISO 2538 for wedges;
- ISO 3040 for cones.

NOTE 3 The rules for geometrical tolerancing are given in ISO 1101.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the cited editions apply. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 129-1:—<sup>1)</sup>, *Technical drawings — Indication of dimensions and tolerances — Part 1: General principles*

ISO 286-1:2010, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

ISO 2538:1998, *Geometrical Product Specifications (GPS) — Series of angles and slopes on prisms*

ISO 1101:—<sup>2)</sup>, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

1) To be published. (Revision of ISO 129-1:2004)

2) To be published. (Revision of ISO 1101:2004)

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