



NSAI
Standards

Irish Standard
I.S. EN ISO 14405-2:2019

Geometrical product specifications (GPS) -
Dimensional tolerancing - Part 2:
Dimensions other than linear or angular
sizes (ISO 14405-2:2018)

I.S. EN ISO 14405-2:2019

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National Foreword

I.S. EN ISO 14405-2:2019 is the adopted Irish version of the European Document EN ISO 14405-2:2019, Geometrical product specifications (GPS) - Dimensional tolerancing - Part 2: Dimensions other than linear or angular sizes (ISO 14405-2:2018)

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EUROPEAN STANDARD

EN ISO 14405-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2019

ICS 17.040.10

Supersedes EN ISO 14405-2:2011

English Version

Geometrical product specifications (GPS) - Dimensional tolerancing - Part 2: Dimensions other than linear or angular sizes (ISO 14405-2:2018)

Spécification géométrique des produits (GPS) -
Tolérancement dimensionnel - Partie 2: Dimensions
autres que tailles linéaires ou angulaires (ISO 14405-
2:2018)

This European Standard was approved by CEN on 2 November 2018.

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EN ISO 14405-2:2019 (E)

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European foreword

This document (EN ISO 14405-2:2019) 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of an identical text or by endorsement, at the latest by July 2019, and conflicting national standards shall be withdrawn at the latest by July 2019.

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 14405-2:2011.

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**INTERNATIONAL
STANDARD**

**ISO
14405-2**

Second edition
2018-12

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

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

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

Partie 2: Dimensions autres que tailles linéaires ou angulaires



Reference number
ISO 14405-2:2018(E)

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ISO 14405-2:2018(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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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*.

This second edition cancels and replaces the first edition (ISO 14405-2:2011), which has been technically revised.

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

- the addition of angular sizes to reflect ISO 14405-3;
- clarifications around specification ambiguity and the use of geometrical tolerancing;
- a review and update of all normative references and other ISO GPS standards referenced in the text.

A list of all parts in the ISO 14405 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 link A of the chain of standards on distance.

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 dimensions other than linear or angular 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.

This specification ambiguity can only be avoided for features of size toleranced in accordance with ISO 14405-1 or ISO 14405-3. For all other dimensions, geometrical specifications should be used in order to control the specification ambiguity.

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

Geometrical product specifications (GPS) — Dimensional tolerancing —

Part 2: Dimensions other than linear or angular sizes

1 Scope

This document illustrates the ambiguity caused by the use of dimensional specifications to control properties other than linear or angular size and the benefit of using geometrical specifications instead.

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

The ambiguity caused by using \pm tolerances for dimensions other than linear or angular 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 document, 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 dimensional specifications, see the following:

- ISO 14405-1 for linear size;
- ISO 14405-3 for angular size;
- ISO 2538-1 and ISO 2538-2 for wedges;
- ISO 3040 for cones.

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

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 129-1, *Technical product documentation (TPD) — Presentation of dimensions and tolerances — Part 1: General principles*

ISO 1101, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 8015, *Geometrical product specifications (GPS) — Fundamentals — Concepts, principles and rules*

ISO 13715, *Technical product documentation — Edges of undefined shape — Indication and dimensioning*

ISO 14405-1, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 1: Linear sizes*

ISO 14405-3, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 3: Angular sizes*

ISO 17450-1, *Geometrical product specifications (GPS) — General concepts — Part 1: Model for geometrical specification and verification*

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