

**SLOVENSKI STANDARD**  
**oSIST prEN ISO 14405-3:2015**  
**01-september-2015**

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**Specifikacija geometrijskih veličin izdelka (GPS) - Tolerance dimenzij - 3. del:  
Velikosti kotov (ISO/DIS 14405-3:2015)**

Geometrical product specifications (GPS) - Dimensional tolerancing - Part 3: Angular sizes (ISO/DIS 14405-3:2015)

Geometrische Produktspezifikationen (GPS) - Dimensionelle Tolerierung - Teil 3: Winkelgrößenmaße (ISO/DIS 14405-3:2015)

Spécification géométrique des produits (GPS) - Tolérancement dimensionnel - Partie 3: Tailles angulaires (ISO/DIS 14405-3:2015)

**Ta slovenski standard je istoveten z: prEN ISO 14405-3**

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**ICS:**

17.040.10      Tolerance in ujemi      Limits and fits

**oSIST prEN ISO 14405-3:2015**      **en,fr,de**





## DRAFT INTERNATIONAL STANDARD ISO/DIS 14405-3.2

ISO/TC 213

Secretariat: DS

Voting begins on  
2015-06-11

Voting terminates on  
2015-08-11

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

# Geometrical product specifications (GPS) — Dimensional tolerancing —

## Part 3: Angular sizes

*Spécification géométrique des produits (GPS) — Tolérancement dimensionnel —  
Partie 3: Tailles angulaires*

ICS 17.040.10

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### ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five-month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

**To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.**

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Published in Switzerland

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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 14405-3 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

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

- Part 1: Linear sizes
- Part 2: Dimensions other than linear sizes
- Part 3: Angular 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 14638). In the general GPS matrix, it influences chain links A, B and C of the chains of standards.

This part of ISO 14405 is a general GPS standard which influences angular size in the general GPS matrix model.

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

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# Geometrical product specification (GPS) — Dimensional tolerancing — Part 3: Angular sizes

## 1 Scope

This part of ISO 14405 establishes the default specification operator for angular size and defines a number of special specification operators for features of size with angular size: cone, frustum (truncated or not), wedge (truncated or not), two opposite straight lines (intersection of a wedge/truncated wedge and a plane perpendicular to the median plane of the wedge/truncated wedge, intersection of a cone/frustum and a plane containing the axis of revolution of the cone/frustum). See Figures 1 and 2.

This part of ISO 14405 also defines the specification modifiers and the drawing indications for these angular sizes.

This part of ISO 14405 covers the following angular sizes.

- Local angular size;
  - Angular size between two lines;
  - Portion angular size.
- Global angular size;
  - Direct global angular size;
    - Least squares angular size;
    - Minimax angular size.
- Rank order angular size /indirect global angular size;
  - Maximum angular size;
  - Minimum angular size;
  - Average angular size;
  - Range of angular size;
  - Mid range angular size;
  - Median angular size;
  - Standard deviation of angular size.

## ISO/DIS 14405-3.2

This part of ISO 14405 defines the meaning of tolerances of angular sizes indicated as:

- + and/or – limit deviations, e.g.  $0^\circ/-0,5^\circ$ , or;
- indicated with upper limit of size (ULS) and/or lower limit of size (LLS), e.g.,  $35^\circ$  max. or  $15^\circ$  min.,  $34^\circ/36^\circ$ ;
- with or without modifiers.

This standard gives a set of tools, to express several types of angular size characteristic. It does not give any information on the relationship between a function or a use and an angular size characteristic.

## 2 Normative references

The following referenced documents are indispensable for the application 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 8015, *Geometrical Product Specifications (GPS) — Fundamental principles — Concepts, principles and rules*.

ISO 14660-2:1999, *Geometrical product specification (GPS) — Geometrical features — Part 2: Extracted median line of a cylinder and a cone; Extracted median surface; Local size of an extracted feature*.

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

ISO 17450-2:2002, *Geometrical product specification (GPS) — General concepts — Part 2: Basic tenets, specifications, operators and uncertainties*.

ISO 14405-1, *Geometrical product specification (GPS) — Dimensional tolerancing — Linear sizes*.

ISO 14405-2, *Geometrical product specification (GPS) — Dimensional tolerancing - Dimensions other than linear sizes*.

ISO 10579, *Geometrical product specifications (GPS) — Dimensioning and tolerancing — Non-rigid parts*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in of ISO 8015, ISO 14660-2, ISO 17450-1, ISO 17450-2, ISO 14405-1, ISO 14405-2 and the following apply.

**3.1 angular size**  
angular dimension of a cone or between two coplanar opposite straight lines or between two opposite non parallel planes

Note 1 to entry The angular size is defined from nominal features or from associated features which are features of angular size.

Note 2 to entry See example of angular size on Figures1 and 2

Note 3 to entry Definition of “angular feature of size (feature of angular size)” is given in ISO 17450-1, the angle dimension cannot be  $0^\circ$  or  $180^\circ$ .

Note 4 to entry Angular features of size are of two types:

- revolute angular feature of size: a cone, a frustum, two opposite straight lines (longitudinal section of a cone/frustum with a plane containing the axis of revolution of the cone/frustum)

- prismatic angular feature of size: a wedge (truncated or not), two opposite straight lines (cross section of a wedge/truncated wedge with a plane perpendicular to the intersection straight line of the two planes of the wedge/truncated wedge)”

Note 5 to entry Figures 1 and 2 illustrate angular features of size type wedge, cone, frustum and two lines.

Note 6 to entry Figure 3 illustrates the case of a angular feature of size and an angular distance between two planes which is not a angular feature of size and shows that an angular feature of size exists when the material directions are opposed (when rotation of one of the features around their intersection line to coincide with the other feature, then the material is on the opposite sides for the 2 features).

Note 7 to entry Envelope requirement cannot be applied for angular features of size.

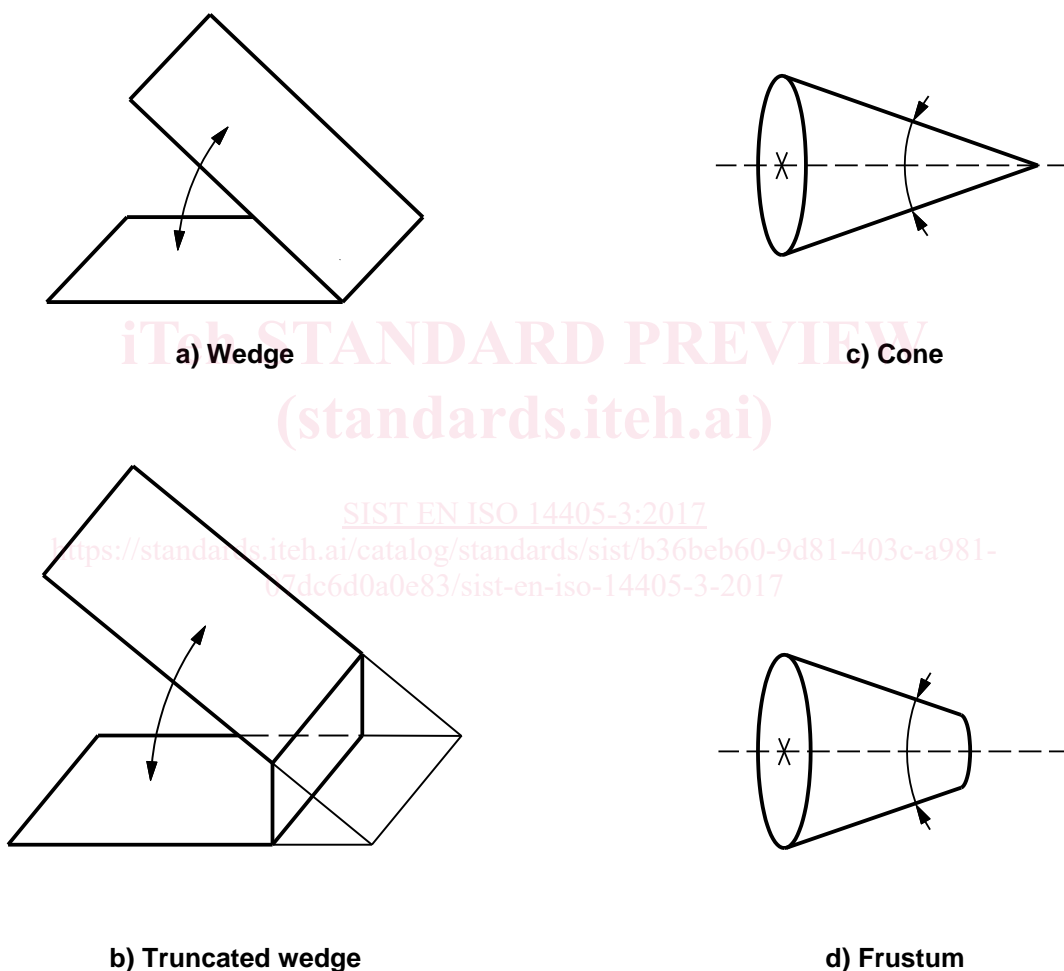


Figure 1 – Example of areal angular feature of size