



# DRAFT INTERNATIONAL STANDARD ISO/DIS 2538-1

ISO/TC 213

Secretariat: DS

Voting begins on  
2012-02-16

Voting terminates on  
2012-07-16

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

## Geometrical product specifications (GPS) — Wedges —

### Part 1: Series of angles and slopes

*Spécification géométrique des produits (GPS) — Cales —  
Partie 1: Séries d'angles et d'inclinaisons*

(Revision of ISO 2538:1998)

ICS 17.040.01

#### 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.**

**Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.**

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/fb984fd1-3576-4c58-b22b-05315252c4c2/iso-2538-1-2014>

### Copyright notice

This ISO document is a Draft International Standard and is copyright-protected by ISO. Except as permitted under the applicable laws of the user's country, neither this ISO draft nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Reproduction may be subject to royalty payments or a licensing agreement.

Violators may be prosecuted.

# Contents

|  | Page |
|--|------|
| Foreword .....   | iv   |
| Introduction.....  | v    |
| 1 <b>Scope</b> .....   | 1    |
| 2 <b>Normative references</b> .....  | 1    |
| 3 <b>Terms and definitions</b> .....                                       | 1    |
| 4 <b>Values</b> .....  | 2    |
| <b>Annex A</b> (informative) <b>Relation to the GPS matrix model</b> ..... | 4    |
| <b>Bibliography</b> .....  | 5    |

DRAFT

12

0

iTeh STANDARD PREVIEW  
 (standards.iteh.ai)  
 Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/b984fd1-3576-4c58-b22b-05315232c4c2/iso-2538-1-2014>

## 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 2538-1 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

Together with ISO 2538-2, this edition cancels and replaces the first edition (ISO 2538:1998), which has been technically revised.

ISO 2538 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Wedges*:

- *Part 1: Series of angles and slopes*
- *Part 2: Dimensioning and tolerancing*

Annex A of this International Standard is for information only.

## Introduction

This International Standard is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences chain links 1 and 2 of the chain of standards on angle.

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 International Standard to other standards and the GPS matrix model, see annex A.

**DR**

**DRAFT**

**ISO**

**ITEH STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sis/15252c4c2/iso-2538-1-2014>  
3576-4c58-b22b-05315252c4c2

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/fb984fd1-3576-4c58-b22b-05315252c4c2/iso-2538-1-2014>

# Geometrical product specifications (GPS) — Wedges —

## Part 1: Series of angles and slopes

### 1 Scope

This International Standard specifies three series of wedge angles from 120° to 0° 30' and a series of wedge slopes from 1:10 to 1:500, for general mechanical engineering purposes.

### 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 2538-2<sup>1)</sup>, *Geometrical Product Specifications (GPS) — Wedges — Part 2: Dimensioning and tolerancing*

### 3 Terms and definitions

For the purposes of this International Standard, the following definitions apply.

#### 3.1

##### wedge

pair of intersecting planes

See figure 1

NOTE A wedge is a feature of size defined by an angular size.

#### 3.2

##### wedge angle

$\beta$

angular size of the wedge defined in a plane perpendicular to the wedge edge

See figure 1

#### 3.3

##### wedge slope

$S$

ratio of the difference between the heights  $H$  and  $h$  in two determined cross-sections to the distance  $L$  between these cross-sections

$$S = \tan \beta$$

When % is used

$$S = \tan \beta \times 100 = x\%$$

1) To be published

**3.4 rate of wedge**  
**C**

2 x the tangent of half the wedge angle

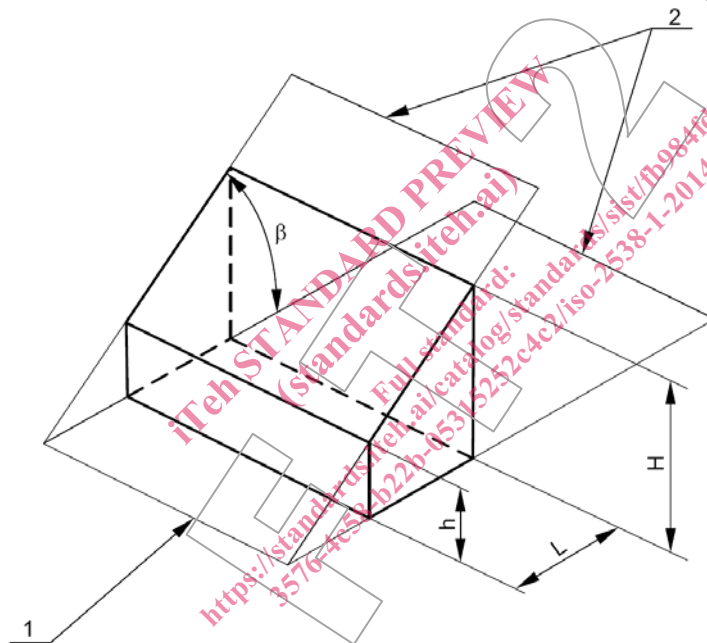
$$C = 2 \tan \frac{\beta}{2}$$

See figure 1

**3.5 wedge edge**

straight line established by the intersection of the wedge planes

See figure 1



- Key
- 1 wedge edge
  - 2 wedge planes

**Figure 1 — Wedge**

**4 Values**

Table 1 shows the nominal values for angles and slopes and the calculated values for rates of wedges, slopes and slope angles for the nominal slopes,

The angle series 1 and 2 as specified in table 1 shall be used in this order of preference, with a view to reducing the range of tools, gauges and measuring instruments required for production of parts with one or more wedges.

The nominal values for angles of special wedges shall only be used for the applications as mentioned in the footnotes.



Table 1 Nominal and calculated values of Slope angles, slopes and rate of wedges

| Nominal values |           |          |           |                   |           | Calculated values |                       |               |                           |
|----------------|-----------|----------|-----------|-------------------|-----------|-------------------|-----------------------|---------------|---------------------------|
| Slope angle    |           |          |           |                   |           | Slope<br>S        | Rate of<br>wedge<br>C | Slope<br>S    | Slope<br>angle<br>$\beta$ |
| Series 1       |           | Series 2 |           | Special wedges    |           |                   |                       |               |                           |
| $\beta$        | $\beta/2$ | $\beta$  | $\beta/2$ | $\beta$           | $\beta/2$ |                   |                       |               |                           |
| 120°           | 60°       |          |           |                   |           |                   | 1:0,288 675           | —             | —                         |
|                |           |          |           | 108° <sup>a</sup> | 54°       |                   | 1:0,363 271           | —             | —                         |
| 90°            | 45°       |          |           |                   |           |                   | 1:0,500 000           | —             | —                         |
|                |           | 75°      | 37° 30'   |                   |           |                   | 1:0,651 643           | 1:0,267 949   | —                         |
|                |           |          |           | 72° <sup>a</sup>  | 36°       |                   | 1:0,638 190           | 1:0,324 920   | —                         |
| 60°            | 30°       |          |           |                   |           |                   | 1:0,866 025           | 1:0,577 350   | —                         |
|                |           |          |           | 50° <sup>b</sup>  |           |                   | 1:1,072 253           | 1:0,839 100   | —                         |
| 45°            | 22° 30'   |          |           |                   |           |                   | 1:1,207 107           | 1:1,000 000   | —                         |
|                |           | 40°      | 20°       |                   |           |                   | 1:1,373 739           | 1:1,191 754   | —                         |
| 30°            | 15°       |          |           |                   |           |                   | 1:1,866 025           | 1:1,732 051   | —                         |
| 20°            | 10°       |          |           |                   |           |                   | 1:2,835 641           | 1:2,747 477   | —                         |
| 15°            | 7° 30'    |          |           |                   |           |                   | 1:3,797 877           | 1:3,732 051   | —                         |
|                |           | 10°      | 5°        |                   |           |                   | 1:5,715 026           | 1:5,671 282   | —                         |
|                |           | 8°       | 4°        |                   |           |                   | 1:7,150 333           | 1:7,115 370   | —                         |
|                |           | 7°       | 3° 30'    |                   |           |                   | 1:8,174 928           | 1:8,144 346   | —                         |
|                |           | 6°       | 3°        |                   |           |                   | 1:9,540 568           | 1:9,514 364   | —                         |
|                |           |          |           |                   |           | 1:10              | —                     | —             | 5°42'38,1"                |
| 5°             | 2° 30'    |          |           |                   |           |                   | 1:11,451 883          | 1:11,430 052  | —                         |
|                |           | 4°       | 2°        |                   |           |                   | 1:14,318 127          | 1:14,300 666  | —                         |
|                |           | 3°       | 1° 30'    |                   |           |                   | 1:19,094 230          | 1:19,081 137  | —                         |
|                |           |          |           |                   |           | 1:20              | —                     | —             | 2°51'44,7"                |
|                |           | 2°       | 1°        |                   |           |                   | 1:28,644 981          | 1:28,636 253  | —                         |
|                |           |          |           |                   |           | 1:50              | —                     | —             | 1°8'44,7"                 |
|                |           | 1°       | 0° 30'    |                   |           |                   | 1:57,294 325          | 1:57,289 962  | —                         |
|                |           |          |           |                   |           | 1:100             | —                     | —             | 34'22,6"                  |
|                |           | 0° 30'   | 0° 15'    |                   |           |                   | 1:114,590 832         | 1:114,588 650 | —                         |
|                |           |          |           |                   |           | 1:200             | —                     | —             | 17'11,3"                  |
|                |           |          |           |                   |           | 1:500             | —                     | —             | 6'52,5"                   |

<sup>a</sup> Application on vee-blocks

<sup>b</sup> Application on dovetails