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**Geometrical product specifications  
(GPS) — General concepts —**

Part 2:

**Basic tenets, specifications, operators and  
uncertainties**

*Spécification géométrique des produits (GPS) — Concepts généraux —*

*Partie 2: Principes de base, spécifications, opérateurs et incertitudes*



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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 3.

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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years with a view to deciding whether it should be confirmed for a further three years, revised to become an International Standard, or withdrawn. In the case of a confirmed ISO/PAS or ISO/TS, it is reviewed again after six years at which time it has to be either transposed into an International Standard or withdrawn.

Attention is drawn to the possibility that some of the elements of this part of ISO/TS 17450 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 17450-2 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

ISO/TS 17450 consists of the following parts, under the general title *Geometrical product specifications (GPS) — General concepts*:

- *Part 1: Model for geometric specification and verification*
- *Part 2: Basic tenets, specifications, operators and uncertainties*

Annexes A, B and C of this part of ISO/TS 17450 are for information only.

## Introduction

This part of ISO/TS 17450 is a geometrical product specification (GPS) document and is to be regarded as a global GPS document (see ISO/TR 14638). It influences all chain links of the chains of standards.

For more detailed information on the relationship of this part of ISO/TS 17450 to other standards and to the GPS matrix model, see annex C.

This part of ISO/TS 17450 covers several fundamental issues common to all the GPS standards developed by ISO/TC 213 and, by presenting GPS's basic tenets and specification and verification processes, explains some of the underlying ideas and indicates the starting point for the standards developed by this technical committee.

It must be pointed out that these ideas — and, for that matter, all the other ideas and concepts applied by ISO/TC 213 — are subject to development and refinement, as the TC's recognition and understanding of them further evolves during its ongoing standards work.

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# Geometrical product specifications (GPS) — General concepts —

## Part 2:

## Basic tenets, specifications, operators and uncertainties

### 1 Scope

This part of ISO/TS 17450 defines terms related to specifications, operators (and operations) and uncertainties used in geometrical product specifications (GPS) standards, presents the basic tenets of the GPS philosophy while discussing the impact of uncertainty on those tenets, and examines the processes of specification and verification as they apply to GPS.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/TS 17450. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/TS 17450 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/TS 14253-2:1999, *Geometrical Product Specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 2: Guide to the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*

ISO 14660-1:1999, *Geometrical Product Specifications (GPS) — Geometrical features — Part 1: General terms and definitions*

ISO 14978:—<sup>1)</sup>, *Geometrical Product Specifications (GPS) — General concepts and requirements for GPS measurement equipment*

ISO/TS 17450-1:2001, *Geometrical product specifications (GPS) — General concepts — Part 2: Model for geometric specification and verification*

*Guide to the Expression of Uncertainty in Measurement (GUM)*. BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, 1st edition, 1993, corrected and reprinted, 1995

*International Vocabulary of Basic and General Terms in Metrology (VIM)*. BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, 2nd edition, 1993

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1) To be published.