
**Geometrical product specifications
(GPS) — Features utilized in specification
and verification**

*Spécification géométrique des produits (GPS) — Éléments utilisés en
spécification et vérification*



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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 22432 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

Introduction

This International Standard is a Geometrical Product Specifications (GPS) standard and is to be regarded as a global GPS standard (see ISO/TR 14638). It influences all chain links in all chains of standards in the general GPS matrix.

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.

Geometrical features exist in three “worlds”:

- the world of nominal definition, where an ideal representation of the workpiece is defined by the designer;
- the world of specification, where the designer has in mind several representations of the workpiece;
- the world of verification, where one (or more) representation(s) of a given workpiece is (are) identified in the application of measuring procedure(s).

In the world of verification, mathematical operations can be distinguished from physical operations. The physical operations are the operations based on physical procedures; they are generally mechanical, optical or electromagnetic. The mathematical operations are mathematical treatments of the sampling of the workpiece. This treatment is generally achieved by computing or electronic treatment.

It is important to understand the relationship between these three worlds. This International Standard defines standardized terminology for geometrical features principally in the world of specification and the world of verification, to be used in communication between each world.

The features defined in this International Standard are well suited for the specification of rigid parts and assemblies, and may also be applied to non-rigid parts and assemblies by specifying allowable variation according to rigid solids.

Geometrical product specifications (GPS) — Features utilized in specification and verification

1 Scope

This International Standard defines general terms and types of features for geometrical features of specifications for workpieces. These definitions are based on concepts developed in ISO/TS 17450-1.

This International Standard aims to serve as the “road map” mapping out the interrelationship between geometrical features, thus enabling future standardization for industry and software makers in a consistent manner.

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

ISO/TS 17450-1:2005, *Geometrical product specifications (GPS) — General concepts — Part 1: Model for geometrical specification and verification*

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

3 Terms and definitions

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

3.1

surface model

model representing the set of features limiting the virtual or the real workpiece

NOTE 1 All closed surfaces (see Figures 1 and A.1) are included.

NOTE 2 The surface model allows the definition of single features, sets of features, and/or portions of features. The total product is modelled by a set of surface models corresponding to each workpiece.

EXAMPLE Case of a hollow surface.