SLOVENSKI STANDARD
SIST-TS CEN ISO/TS 17450-1:2008

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Specifikacija geometrijskih veliļ in izdelka - Osnove - 1. del: Model za geometrijsko specifikacijo in preskuġanje (ISO/TS 17450-1:2005)

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

Geometrische Produktspezifikation (GPS) - Grundlagen - Teil 1: Modell für die geometrische Spezifikation und Prüfung (ISO/TS 17450-1:2005)

Spécification géométrique des produits (GPS) - Concepts généraux - Partie 1: Modele pour la spécification et la vérification géométriques (ISO/TS 17450-1:2005)

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ICS:

17.040.01	Linearne in kotne meritve na splošno	Linear and angular measurements in general

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CEN ISO/TS 17450-1

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English Version

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

Spécification géométrique des produits (GPS) - Concepts généraux - Partie 1: Modèle pour la spécification et la vérification géométriques (ISO/TS 17450-1:2005)

Geometrische Produktspezifikation (GPS) - Grundlagen - Teil 1: Modell für die geometrische Spezifikation und Prüfung (ISO/TS 17450-1:2005)

This Technical Specification (CEN/TS) was approved by CEN on 8 October 2007 for provisional application.

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Foreword

The text of ISO/TS 17450-1:2005 has been prepared by Technical Committee ISO/TC 213 “Dimensional and geometrical product specifications and verification” of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 17450-1:2007 by Technical Committee CEN/TC 290 “Dimensional and geometrical product specification and verification” the secretariat of which is held by AFNOR.

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Endorsement notice

The text of ISO/TS 17450-1:2005 has been approved by CEN as a CEN ISO/TS 17450-1:2007 without any modification.

TECHNICAL SPECIFICATION

ISO/TS 17450-1

First edition
2005-02-01

Geometrical product specifications (GPS) — General concepts —

Part 1: Model for geometrical specification and verification

Spécification géométrique des produits (GPS) — Concepts généraux —
Partie 1: Modèle pour la spécification et la vérification géométriques

Reference number
ISOTS 17450-1:2005(E)

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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.

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.

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ISO/TS 17450-1 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 geometrical specification and verification*

— *Part 2: Basic tenets, specifications, operators and uncertainties*

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 E.

In a market environment of increased globalization, the exchange of technical product information is of high importance and the need to express unambiguously the geometry of mechanical workpieces of vital urgency. Consequently, codification associated with the macro- and micro-geometry of workpiece specifications must be unambiguous and complete if the functional geometrical variation of parts is to be limited; in addition, the language ought to be applicable to CAX systems.

The aim of ISO/TC 213 is to provide the tools for a global and “top-down” approach to GPS. These tools are the basis of new standards for a common language for geometrical definition, able to be used by design (assemblies and individual workpieces), manufacturing and inspection, including for description of the measurement procedure, regardless of the media (e.g. paper drawing, numerical drawing or exchange file) used. These tools are based on the characteristics of features, as well as on the constraints between the features and on feature operations, used for the creation of different geometrical features.

Geometrical product specifications (GPS) — General concepts —

Part 1: Model for geometrical specification and verification

1 Scope

This part of ISO/TS 17450 provides a model for geometrical specification and verification and defines the corresponding concepts. It also explains the mathematical basis of the concepts associated with the model.

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*

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

3 Terms and definitions

For the purposes of the present document, the terms and definitions given in ISO 14660-1 and VIM, and the following apply.

3.1
associated feature
ideal feature established from a non-ideal surface model (skin model) or from a real surface through an association operation

NOTE The relationship between this term and ISO 14660-1 is given in Figure 1.

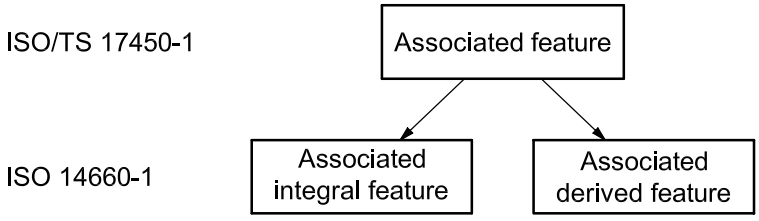

Figure 1 — Relationships of the term associated feature

3.2
association
operation used to fit ideal feature(s) to non-ideal feature(s) according to a criterion

NOTE See 8.1.5.

3.3
bounded feature
feature contained within a sphere of finite radius

3.4
characteristic
single property of one or more feature(s) expressed in linear or angular units

NOTE See annex D.

3.5
collection
operation used to identify more than one feature together, in accordance with the function of the workpiece

NOTE See 8.1.6.

3.6
construction
operation used to build ideal feature(s) from other ideal features, within constraints

NOTE See 8.1.7.

3.7
deviation
difference between the value of a characteristic obtained from the non-ideal surface model (skin model) and the corresponding nominal value

3.8
evaluation
operation used to identify either the value of a characteristic, or its nominal value and its limit(s)

NOTE See 8.2.

3.9
extraction
operation used to identify specific points from a non-ideal feature

NOTE See 8.1.3.

3.10
feature
geometric feature
point, line or surface

[ISO 14660-1]

3.11
feature operation
specific tool required for obtaining features

3.12
filtration
operation used to create a non-ideal feature by reducing the level of information of a non-ideal feature

NOTE See 8.1.4.

3.13
ideal feature
feature defined by a parametrized equation

NOTE The expression of the parametrized equation depends on the type of ideal feature and on the intrinsic characteristics.

3.14
intrinsic characteristic
characteristic of an ideal feature

NOTE 1 See 7.2.

NOTE 2 Ideal features have only dimensional characteristics as intrinsic characteristics.

NOTE 3 The intrinsic characteristics are the parameters of the parametrized equation of the ideal feature.

3.15
invariance class
a group of ideal features defined by the same invariance degree

3.16
invariance degree of an ideal feature
displacement(s) of the ideal feature for which the feature is kept identical in the space

NOTE It corresponds to the degree of freedom used in kinematics.

3.17
nominal feature
ideal feature independent of the non-ideal surface model (skin model)

NOTE The relationship between this term and ISO 14660-1 is given in Figure 2.

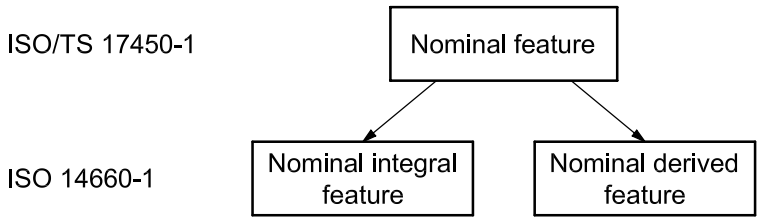

Figure 2 — Relationships of the term nominal feature

3.18
nominal model
model of the workpiece of perfect shape defined by the designer (design intent)

3.19
non-ideal feature
imperfect feature fully dependent on the non-ideal surface model (skin model)

3.20
operation
specific tool required to obtain features or values of characteristics, their nominal value and their limit(s)