



# DRAFT INTERNATIONAL STANDARD ISO/DIS 5459-1

ISO/TC 213

Secretariat: DS

Voting begins on  
2002-08-15

Voting terminates on  
2003-01-15

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

## Geometrical Products Specifications (GPS) — Geometrical tolerancing: Datums and datum systems —

### Part 1:

### General definitions and basic concepts

*Spécification géométrique des produits (GPS) — Tolérancement géométrique: Références spécifiées et systèmes de références spécifiées —*

*Partie 1: Définitions générales et concept de base*

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ICS 01.100.20; 17.040.10

[ISO/DIS 5459-1](#)

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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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

ISO 5459 was prepared by the Technical Committee ISO/TC 213 *Dimensional and geometrical product specifications and verification* and consists of the following parts under the general title *Geometrical Product Specifications (GPS) — Geometrical tolerancing: Datums and datum-systems*:

- Part 1: *Vocabulary*
- Part 2: *Explanations and indication in technical product documentation*
- Part 3: *Association methods*

Together with ISO 5459-2, this part of ISO 5459 cancels and replaces ISO 5459:1981 which has been technically revised.

Annex A is for information only.

## Introduction

This International standard is a Geometrical Product Specification standard and is to be regarded as a General GPS standard (see ISO/TR 14638). It influences all chain links of the chain of standards on datums.

For more detailed information of the relation of this standard to the GPS matrix model see annex A.

This edition of ISO 5459 applies new concepts and terms that have never been used in past ISO GPS standards. These concepts are described in detail in ISO/TR 14638, ISO/TS 17450-1 and 2, therefore, it is recommended to have these standards at hand when using ISO 5459.

# Geometrical Products Specifications (GPS) — Geometrical tolerancing: Datums and datum systems —

## Part 1: General definitions and basic concepts

### 1 Scope

This part of ISO 5459 establishes the terminology for datums and datum-systems for geometrical tolerancing.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 14660-1:1999, *Geometrical Product Specifications (GPS) — Geometrical features — Part 1: General terms and definitions*

ISO/TS 17450-1:—<sup>1)</sup>, *Geometrical Product Specifications (GPS) — General concepts — Part 1: Model for geometrical specification and verification*

### 3 Definitions

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For the purpose of this part of ISO 5459, the terms and definitions given in ISO 14660-1, ISO/TS 17450-1 and the following apply.

#### 3.1

##### situation feature

[3.26 of ISO/TS 17450-1]

#### 3.2

##### datum

situation feature used to define the position and/or orientation of a tolerance zone or to define the position and/or the orientation of the virtual condition (in the case of complementary requirements, e.g maximum material requirement)

#### 3.3

##### single datum

datum established from one surface considered alone

NOTE The possible use of single datums has been reduced significantly since the previous edition of ISO 5459 i.e., the datum established from two parallel planes has now become a common datum.

<sup>1)</sup> To be published

3.4

**common datum**

datum established from two or more surfaces considered simultaneously

NOTE The possible use of common datums has been expanded significantly since the previous edition of ISO 5459.

3.5

**datum-system**

ordered list of two or three datums, which may be single or common

3.6

**datum feature**

feature used for establishing a datum

3.7

**datum target**

portion of an integral feature (surface) which can be a point, a line or an area and which is used for establishing a datum

NOTE The length or area of a datum target is relatively small compared with the complete surface.

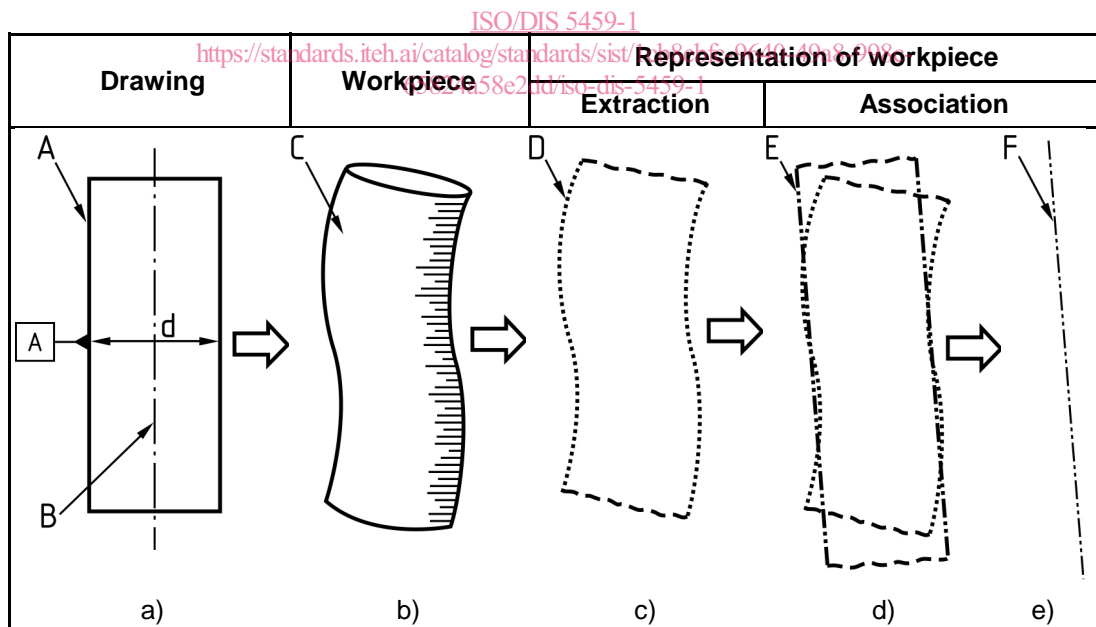
3.8

**collection surface**

surface resulting from the collection of two or more surfaces

4 Basic concept

The interrelationship of the geometrical features is illustrated in Figure 1 (see also ISO 14660-1). The technical drawing identifies those nominal features which will be used for datums and in the shown example of Figure 1, a nominal derived feature is indicated to be a datum. ISO 5459-3 specifies further conventions for the establishment of datums from real features:



**Key**

- |   |  |
|---|--|
| B Nominal integral feature                                      | E Extracted integral feature                             |
| C Nominal derived feature<br>(in this case the indicated datum) | F Associated integral feature                            |
| D Real integral feature   | G Associated derived feature<br>(in this case the datum) |

NOTE 1 The actual datum is an associated derived feature based on a cylindrical integral feature).

NOTE 2 The association of d) do not intend to illustrate a specific criteria of association.

**Figure 1 — Example on the interrelationship of a geometric feature identified as a datum**

## Annex A (informative)

### Relation to the GPS matrix model

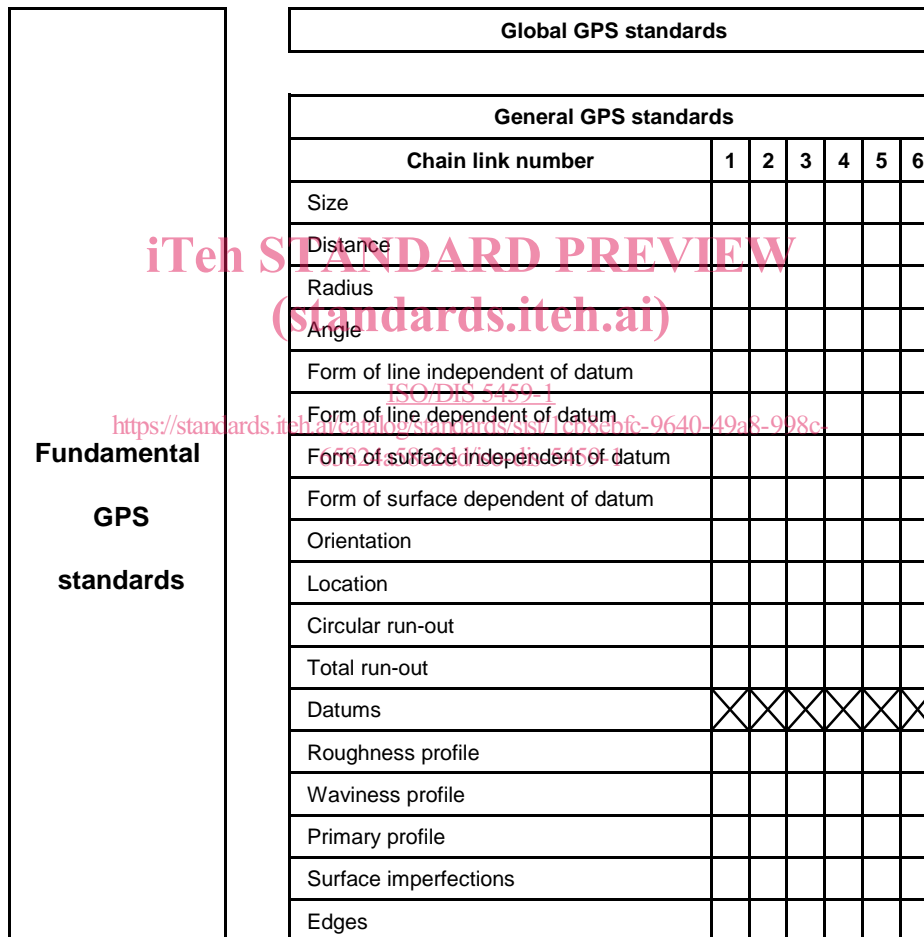
For full details about the GPS matrix model see ISO/TR 14638.

#### A.1 Information about the standard and its use

This part of ISO 5459 establishes the terminology for datums and datum-systems for geometrical tolerancing.

#### A.2 Position in the GPS matrix model

This International standard is a general GPS standard, which influences all chain links of the chain of standards on datums in the General GPS matrix, as graphically illustrated on figure A.1.



#### A.3 Related standards

The related standards are those of the chains of standards indicated in figure A.1.

## Bibliography

- [1] ISO/TR 14638:1995, *Geometrical Product Specifications (GPS) - Masterplan*.
- [2] ISO 14660-2:1999, *Geometrical Product Specifications (GPS) - Geometrical features - Part 2: Extracted median line of a cylinder and a cone; Extracted median surface; Local size of an extracted feature*.
- [3] ISO/TS 17450-2:—<sup>2)</sup>, *Geometrical Product Specifications (GPS) — General concepts — Part 2: Basic tenets, specifications, operators and uncertainties*.
- [4] VIM, *International vocabulary of basic and general terms in metrology*.  
BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML 2. edition 1993

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<sup>2)</sup> To be published