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**Specifikacije geometrijskih veličin izdelka (GPS) - Standardna referenčna temperatura za specifikacijo geometrijskih in dimenzijskih lastnosti (ISO/DIS 1:2021)**

Geometrical product specifications (GPS) - Standard reference temperature for the specification of geometrical and dimensional properties (ISO/DIS 1:2021)

Geometrische Produktspezifikation (GPS) - Standardreferenztemperatur für die Spezifikation der geometrischen und maßlichen Eigenschaften (ISO/DIS 1:2021)

Spécification géométrique des produits (GPS) - Température normale de référence pour la spécification des propriétés géométriques et dimensionnelles (ISO/DIS 1:2021)

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**ICS:**

17.040.40	Specifikacija geometrijskih veličin izdelka (GPS)	Geometrical Product Specification (GPS)
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## ISO/DIS 1

ISO/TC 213

Secretariat: BSI

Voting begins on:  
2021-05-13Voting terminates on:  
2021-08-05

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## Geometrical product specifications (GPS) — Standard reference temperature for the specification of geometrical and dimensional properties

*Spécification géométrique des produits (GPS) — Température normale de référence pour la spécification des propriétés géométriques et dimensionnelles*

ICS: 17.040.01

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Published in Switzerland

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## ISO/DIS 1:2021(E)

### 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

This fourth edition cancels and replaces the third edition (ISO 1:2016), which has been technically revised. Specifically, the following points have changed:

- clarification that the standard reference temperature value of 20 °C is of the International Celsius Scale according to the ITS-90, International Temperature Scale of 1990, which does not imply any change in the value;
- addition of the informative [Annex B](#) to introduce the International Celsius Temperature according to the ITS-90 and to illustrate the implications of the current edition compared to the previous edition.

## Introduction

This document is a geometrical product specification (GPS) standard and is to be regarded as a fundamental GPS Standard (see ISO 14638:2015<sup>[1]</sup>). For more detailed information on the relationship of this document to other standards and the GPS matrix model, see [Annex C](#).

The definitions of the units, including those of length and temperature, are adopted by the General Conference of Weights and Measures (CGPM) under the authority of the Convention of the Metre. These definitions are maintained in the SI brochure<sup>[5]</sup>.

The unit of length, the metre, is independent of temperature. The current definition of the metre is based on the distance light travels in vacuum during a unit of time. However, a physical object is subject to thermal expansion and consequently, its geometrical and dimensional properties are dependent on its temperature. Specifying a reference temperature allows the geometrical and dimensional properties of a physical object to be unambiguously stated.

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# Geometrical product specifications (GPS) — Standard reference temperature for the specification of geometrical and dimensional properties

## 1 Scope

This document defines the concepts of a reference temperature and of the standard reference temperature, and specifies the standard reference temperature value for the specification of geometrical and dimensional properties of an object. Some examples of geometrical and dimensional properties include size, location, orientation (including angle), form and surface texture of a workpiece.

This document is also applicable to the definition of the measurand used in verification or calibration.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### reference temperature

temperature of an object, having a uniform temperature, specified as part of the definition of a geometrical or dimensional property

Note 1 to entry: The specification of a geometrical or dimensional property is typically given in technical product documentation, e.g., on an engineering drawing or in a CAD file, or in the specification of the measurand (the quantity intended to be measured).

### 3.2

#### standard reference temperature

internationally agreed-upon reference temperature

Note 1 to entry: In prior editions of this document, the term “standard reference temperature” was defined as its assigned numerical value, i.e. 20 °C. In this and in the previous edition, the definition of the *reference temperature* (3.1) and the assignment of a standardized value to this temperature are separately addressed (Clause 3).

## 4 Standard reference temperature value for the specification of geometrical and dimensional properties

The standard reference temperature value for the specification of geometrical and dimensional properties shall be fixed at  $t_{90} = 20$  °C. Unless otherwise explicitly specified, the reference temperature for geometrical and dimensional properties of workpieces shall be the standard reference temperature. See Annex A for information on the use of the reference temperature specification.

NOTE 1  $t_{90}$  is the International Celsius Temperature according to the ITS-90, the International Temperature Scale of 1990. See Annex B for more information.

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NOTE 2 There is only one standard reference temperature value and it is fixed at  $t_{90} = 20$  °C. However, this does not prevent a different (non-standard) reference temperature from being specified for all geometrical and dimensional properties of a workpiece or for a specific geometrical or dimensional property on a workpiece, provided it is explicitly stated as part of the specification.

NOTE 3 The specification of a non-standard reference temperature may increase the measurement uncertainty during verification because most dimensional measuring equipment and gauges are calibrated with their measurand defined at the standard reference temperature.

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