TECHNICAL REPORT

# ISO/TR 23605

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# Technical product specification (TPS) — Application guidance — International model for national implementation

*Spécification technique de produits (TPS) — Lignes directrices d'application — Modèle international pour mises en oeuvre nationales*

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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.

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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, 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.

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

This second edition cancels and replaces the first edition (ISO/TR 23605:2009), which has been technically revised.

The main changes to the previous edition are as follows:

— a general update in line with the revised ISO GPS matrix, ISO 14638:2015;

— the category of 'global' standards has been removed, as per ISO 14638:2015, with standards now categorized as 'fundamental' or 'general' ISO GPS standards;

— new, amended and/or revised standards have been added or updated throughout the document, including in Annex A, which lists all cross-referenced standards;

— a new Annex B, 'Withdrawn standards', provides a list of all previously current ISO/TC 213 standards referred to in this document.

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# Introduction

Industry in all developed countries worldwide is showing an increasing tendency to focus on design and assembly activity and to contract out the manufacture of its components, and such procedures are unlikely to be constrained by national borders. Alongside this, many companies are extending their dependence on computerized systems and thereby reducing the opportunity for human intervention in manufacturing processes.

One effect of these parallel trends is the exposure of the limitations of some traditional specification processes, which highlights the urgent need for enhanced detail and accuracy in specifying the manufacture of technical products. This is coupled with the requirement to reduce ambiguity and the opportunity for interpretation at both manufacturing and verification stages.

This document is drafted with the sole objective of facilitating this improvement in technical product specification (TPS) through the application of established International Standards and International Standards under development.

A primary objective of the responsible ISO committees is to ensure that the necessary tools to enable the preparation of detailed, accurate specifications are available. Their activity covers seven complementary generic subject areas:

— methodology for design implementation;

— geometrical product specification;

— graphical representation (engineering drawings/diagrams and 3-D modelling);

— verification (metrology and precision measurement);

— technical documentation;

— electronic formats and controls;

— related tools and equipment.

There are two ISO Technical Committees responsible for identifying and evaluating requirements for International Standards relating to the preparation, presentation and validation of technical specifications in the field of mechanical engineering and for the drafting of any such standards for which a genuine need is established. Their combined work programmes address the requirements for standardization in such technical specifications at all stages from the preparation of design concepts for physical realization to the validation of finished products.

Technical product documentation (TPD) is the province of ISO/TC 10, with the scope to develop, co-ordinate and maintain International Standards for TPD, “including technical drawings, manually produced or computer based for technical purposes throughout the product life cycle, to facilitate preparation, management, storage, retrieval, reproduction, exchange and use”.

Although this committee is founded on the more traditional discipline of engineering drawing, its remit extends to include the presentation of all forms of specification for technical products, whatever the media selected to carry that specification. In particular, this includes the graphical representation and annotation of the output of 3-D modelling programmes. The work of ISO/TC 10 is closely linked to that of ISO/TC 213 (see below) and the closest practicable liaisons are maintained, both at the policy-making level and between the working groups.

ISO/TC 213 is the Technical Committee responsible for the development of standards for geometrical product specifications (GPS). Its primary objective is the development and promotion of an integrated system for specification and verification of workpiece geometry that can function as an enhanced engineering tool for product development and manufacturing. Such a system is essential as companies move ahead rapidly with new technologies, new manufacturing processes, new materials and technically advanced products, in the environment previously known as international outsourcing.

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This document sets out the format and overall content of a specification for the preparation of all forms of TPS. It is designed to facilitate the development of national standards for the definition, specification and graphical representation of technical products and includes cross-references to a range of International Standards (the core range) judged to be essential to the achievement of international compatibility between such national standards (see Annex A and see Annex B for a list of withdrawn ISO/TC 213 standards). This core range of cross-referenced standards incorporates those prepared not only by ISO/TC 213 but also by other relevant ISO Technical committees, principally ISO/TC 10. It is intended that this model be adopted, in its entirety, by national standards bodies as the basis for their national standards in the field of mechanical engineering specification. Attention is drawn to the fact that its structure provides for the addition of supplementary information by way of commentary and recommendation where national requirements make such addition appropriate, provided that any such additions are not in conflict with the published International Standards.

The relationship between the cross-referenced standards is formally structured within this document. Additionally, an overview of the international standardization of geometrical product specification, explaining the concept and providing a matrix of the relevant standards, can be found in ISO 14638.

Standards developed in the field of GPS form an interrelated standards structure providing fundamental rules for geometrical specification (see Annex C).

In this document, the GPS standards are applied in conjunction with the presentational TPD standards to construct a comprehensive system for TPS.

It is appropriate to apply TPS principles throughout the development of a product, i.e. in design, manufacturing, metrology and verification, and it will be found that consistent application will lead to reduced ambiguity and misunderstanding, which in turn will provide faster, more controlled “release-to-market” times, with significantly fewer restarts and reduced requirement for corrective action.

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# Technical product specification (TPS) — Application guidance — International model for national implementation

## 1 Scope

This document provides a list of all ISO geometrical product specification (GPS) and technical product documentation (TPD) standards for technical product specifications (TPS) in the mechanical engineering field. The document operates as an index to the many ISO standards applicable to a TPS by means of cross-reference, and, where appropriate, the subject references are supplemented by commentary and recommendations considered to be of significance but which are not otherwise covered.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 10209:2012, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209:2012 and the following 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 http://www.electropedia.org/

**3.1**
**technical product documentation**
**TPD**
means of conveying all or part of a design definition or specification of a product

**3.2**
**technical product specification**
**TPS**
technical product documentation comprising the complete design definition and specification of a product for manufacturing and verification purposes

Note 1 to entry: A TPS, which can contain drawings, 3-D models, parts lists or other documents forming an integral part of the specification, in whatever format they are presented, can consist of one or more TPDs.

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