
**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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Contents

Page

Foreword	v
Introduction.....	vi
1 Scope.....	1
2 Normative references	1
3 Terms and definitions	1
4 Global Standards underpinning ISO/TR 23605	2
4.1 The GPS Matrix.....	2
4.2 Standard reference temperature.....	2
5 Expression of the concept	2
6 Types of documentation.....	3
6.1 General	3
6.2 Commentary and recommendations	3
6.2.1 Combined drawing	3
6.2.2 Document list (drawing list)	3
7 Relationship between design definition and interpretation.....	3
7.1 Targeting of a TPD.....	3
7.2 Uncertainty of specification	3
8 Presentation media	4
9 Scales	4
10 Lines, arrows and terminators	4
10.1 Lines	4
10.2 Arrows and terminators	4
11 Lettering	4
12 Projections	5
13 Views.....	5
14 Sections.....	5
15 Part references	5
16 Graphical representation (abbreviations and symbols).....	6
16.1 Abbreviations.....	6
16.2 Symbols used for physical quantities.....	6
16.3 General symbols.....	6
16.4 Textual equivalents	7
16.5 Representation of processes	7
17 Representation of features	8
18 Representation of components	8
19 Dimensioning and tolerancing	9
19.1 General	9
19.2 Decimal marker.....	9
20 Geometrical tolerancing	10
21 Surface texture indication	10
22 Security	11

22.1 Introduction11

22.2 General security.....11

23 Storage and retrieval11

24 Protection notices.....11

Annex A (normative) Cross-referenced standards.....12

Annex B (informative) Geometrical product specification (GPS) — The standards matrix18

Bibliography20

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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 exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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/TR 23605 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

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.

ISO/TR 23605 is drafted with the sole objective of facilitating this improvement in technical product specification 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 brief “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 in order 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 Specification (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 previously referred to environment of “international outsourcing”.

This ISO Technical Report sets out the format and overall content of a specification for the preparation of all forms of technical product specification (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. This core range of cross-referenced standards incorporates not only those prepared by ISO/TC 213 but also by other relevant ISO Technical committees, principally by 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 Technical Report. Additionally, an overview of the international standardization of geometrical product specification, explaining the concept and providing a matrix of the relevant standards, may be found in ISO/TR 14638.

Standards developed in the field of GPS form an interrelated standards structure providing fundamental rules for geometrical specification (see Annex B, Figure B.1).

In ISO/TR 23605 the Geometrical Product Specification (GPS) standards are applied in conjunction with the presentational Technical Product Documentation (TPD) standards to construct a comprehensive system for “Technical Product Specification (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 re-starts and reduced requirement for corrective action.

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

1 Scope

This Technical Report provides guidance for the preparation of all technical product specifications 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 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 10209-1, *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawings*

ISO 10209-2, *Technical product documentation — Vocabulary — Part 2: Terms relating to projection methods*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209-1, ISO 10209-2, ISO 14660-1 and the following apply.

NOTE Access to a list GPS terms (in English) providing reference to the ISO document in which the term is defined or used (if not defined) is available via the ISO/TC 213 homepage at <http://isotc213.org.dk>.

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 A TPS, which may contain drawings, 3-D models, parts lists or other documents forming an integral part of the specification, in whatever format they may be presented, may consist of one or more TPDs.

NOTE 2 Attention is drawn to the fact that although the application of ISO/TR 23605 is voluntary, any TPS referred to within contractual obligations will itself become a legal document.