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Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment —

Part 6:

Generalized decision rules for the acceptance and rejection of instruments and workpieces

*Spécification géométrique des produits (GPS) — Vérification par la
mesure des pièces et des équipements de mesure —*

*Partie 6: Règles de décision générales pour l'acceptation ou le rejet
d'instruments et de pièces*



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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is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.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 14253-6 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

ISO 14253 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment*:

- *Part 1: Decision rules for proving conformance or non-conformance with specifications*
- *Part 2: Guidance for the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*
- *Part 3: Guidelines for achieving agreements on measurement uncertainty statements* [Technical Specification]
- *Part 4: Background on functional limits and specification limits in decision rules* [Technical Specification]
- *Part 6: Generalized decision rules for the acceptance and rejection of instruments and workpieces* [Technical Report]

The following part is under preparation:

- *Part 5: Uncertainty in testing indicating measuring instruments*

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Introduction

This part of ISO 14253 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences the measurement, measurement equipment and calibration chain links of the chains of standards in the general GPS matrix.

The ISO/GPS Masterplan given in ISO 14638 gives an overview of the ISO/GPS system of which this document is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this document and the default decision rules given in ISO 14253-1 apply to specifications made in accordance with this document, unless otherwise indicated.

For more detailed information on the relation of this part of ISO 14253 to other standards and to the GPS matrix model, see Annex A.

This document is based on the ISO 14253-1 concept of a decision rule, and expands the terminology beyond the default rule (stringent acceptance with a 100 % expanded uncertainty guard band) to allow the communication of other possible rules that can be adapted for different industrial needs.

This document follows the guidance provided in ISO/IEC Guide 98-4. Decision rules determine where the gauging limits are set and do not affect the workpiece tolerance; they address the (always present) uncertainty in measurement and explicitly state how this uncertainty will impact acceptance or rejection decisions.

The selection of the decision rule typically involves the designer, who can provide information on the function relative to the dimensional specification, the metrologist, who can provide information on the accuracy of the dimensional measurements, and management, who can provide information on the economic consequences of various acceptance or rejection scenarios.

The selection of a decision rule is only one element of a manufacturing effort, other activities that also affect the number of conforming (or nonconforming) workpieces include the specification of tolerances, the selection of the manufacturing process, and the selection of the measurement process; all of these issues are interconnected and should be considered together.

Both parties (the manufacturer and the customer) should discuss and agree on the decision rule as it affects the economics of the product.