Irish Standard
I.S. EN ISO 14253-1:2013

Geometrical product specifications (GPS) - Inspection by measurement of workpieces and measuring equipment - Part 1: Decision rules for proving conformity or nonconformity with specification (ISO 14253-1:2013)

I.S. EN ISO 14253-1:2013

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NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie

W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

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English Version

Geometrical product specifications (GPS) - Inspection by measurement of workpieces and measuring equipment - Part 1: Decision rules for proving conformity or nonconformity with specification (ISO 14253-1:2013)

Spécification géométrique des produits (GPS) - Vérification par la mesure des pièces et des équipements de mesure - Partie 1: Règles de décision pour prouver la conformité ou la non-conformité à la spécification (ISO 14253-1:2013)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN ISO 14253-1:2013) has been prepared by Technical Committee ISO/TC 213 "Dimensional and geometrical product specifications and verification" in collaboration with Technical Committee CEN/TC 290 “Dimensional and geometrical product specification and verification” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 14253-1:2013 has been approved by CEN as EN ISO 14253-1:2013 without any modification.

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I.S. EN ISO 14253-1:2013

INTERNATIONAL STANDARD

ISO 14253-1

Second edition
2013-09-01

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

Part 1: Decision rules for proving conformity or nonconformity with specifications

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

Partie 1: Règles de décision pour prouver la conformité ou la non-conformité à la spécification

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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. www.iso.org/directives

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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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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

This second edition cancels and replaces the first edition (ISO 14253-1:1998), which has been technically revised.

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 conformity or nonconformity 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*

— *Part 4: Background on functional limits and specification limits in decision rules* [TS]

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

— *Part 6: Generalized decision rules for the acceptance and rejection of instruments and workpieces* [TR]

Introduction

This part of ISO 14253 is a geometrical product specifications (GPS) standard and is to be regarded as a global GPS standard (see ISO/TR 14638). It influences the chain links 4, 5 and 6 of all chains of general GPS standards.

The ISO/GPS Masterplan given in ISO/TR 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 this document apply in ISO/GPS, unless otherwise indicated.

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

The estimated measurement uncertainty is to be taken into account when providing evidence for conformity or nonconformity with specification.

The problem arises when a measurement result falls close to the upper or lower specification limit. In this case it is not possible to prove conformity or nonconformity with specifications, since the measurement result plus or minus the expanded measurement uncertainty includes one of the specification limits.

Therefore, a supplier/customer agreement should be foreseen in order to solve the problems which could arise. This part of ISO 14253 explains how to handle specification and measurement uncertainty and establishes decision rules for proving conformity or nonconformity with specification.

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

Part 1: Decision rules for proving conformity or nonconformity with specifications

1 Scope

This part of ISO 14253 establishes the rules for determining the conformity or nonconformity with a given tolerance for a characteristic of a workpiece (or a population of workpieces) or limits of maximum permissible errors for a metrological characteristic of a measuring equipment, taking into account the measurement uncertainty.

These rules are different for tolerances to individual workpieces and tolerances to workpiece populations.

It also gives rules on how to deal with cases where a clear decision (conformity or nonconformity with specification) cannot be taken, i.e. when the measurement result falls within the uncertainty range (see 3.23) that exists around the specification limits.

This part of ISO 14253 applies to specifications defined in general GPS standards (see ISO/TR 14638), i.e. standards prepared by ISO/TC 213, including:

— workpiece/population of workpieces specifications (usually given as an upper tolerance limit or a lower tolerance limit or both), and;

— measuring equipment specifications (usually given as maximum permissible errors).

This part of ISO 14253 only applies for characteristics expressed as numerical quantity values.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3534-2:2006, *Statistics — Vocabulary and symbols — Part 2: Applied statistics*

ISO 9000:2005, *Quality management systems — Fundamentals and vocabulary*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3534-2, ISO 9000, ISO/IEC Guide 98-3 and ISO/IEC Guide 99 and the following apply.