
**Geometrical product specifications
(GPS) — Surface texture: Profile —**

**Part 1:
Indication of surface texture**

*Spécification géométrique des produits (GPS) — État de surface:
Méthode du profil —*

Partie 1: Indication des états de surface



This document is a preview generated by EUS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Tolerance acceptance rules	1
4.1 General	1
4.2 Maximum tolerance acceptance rule	2
4.3 16 % tolerance acceptance rule	2
4.4 Median tolerance acceptance rule	2
5 Specification elements for indication of profile surface texture specifications	3
5.1 General	3
5.2 Mandatory indication to be explicitly specified	3
5.3 Optional indications to specify non-default or further requirements	3
6 Indication of profile surface texture	4
6.1 General	4
6.2 Graphical symbols	4
6.3 Minimal indication	5
6.3.1 General	5
6.3.2 Minimal indication for parameters with defined defaults	5
6.3.3 Minimal indication for parameters without defined defaults	5
6.4 Complete indication	6
6.4.1 General	6
6.4.2 Complete indication for evaluation length R-parameters	7
6.4.3 Complete indication for section length R-parameters	8
6.4.4 Complete indication for evaluation length P-parameters and W-parameters	9
6.4.5 Complete indication for section length P-parameters and W-parameters	10
7 Rules for indication of profile surface texture specifications	10
7.1 General	10
7.2 Graphical symbol for the indication of profile surface texture specifications	11
7.3 Profile surface texture parameter	11
7.4 Tolerance limit value of the profile surface texture parameter	11
7.5 Tolerance types	11
7.6 Tolerance acceptance rule	11
7.7 Profile S-filter type	11
7.8 Profile S-filter nesting index	11
7.9 Profile L-filter type (for R-parameter) or profile S-filter type (for W-parameter)	12
7.10 Profile L-filter nesting index (for R-parameter) or profile S-filter nesting index (for W-parameter)	12
7.11 Evaluation length	12
7.12 Section length	12
7.13 Number of sections	12
7.14 Profile F-operator association method and element	12
7.15 Profile F-operator nesting index	12
7.16 Method of profile extraction	13
7.17 Other requirements, OR(<i>n</i>)	13
7.18 Manufacturing process	13
7.19 Surface lay and direction of lay	13
7.20 Profile direction	13
7.21 Setting class, <i>Scn</i>	13
8 Position on technical product documentation	14

8.1	General.....	14
8.2	Position and orientation of the graphical symbol.....	14
9	Simplified and additional indications.....	17
9.1	Simplified indications.....	17
9.1.1	General.....	17
9.1.2	General tolerances.....	17
9.1.3	Indication by the graphical symbol combined with a letter.....	18
9.2	Restrictive specifications.....	19
9.3	Indication of identical specifications for a number of feature elements.....	20
9.4	Indication of surface lay and direction of lay.....	20
9.4.1	General.....	20
9.4.2	Indication of surface lay without a reference.....	21
9.4.3	Indication of surface lay and direction of lay relative to a workpiece feature.....	22
9.5	Indication of the profile direction.....	22
9.5.1	General.....	22
9.5.2	Indication of the profile direction relative to the predominant direction of the surface lay.....	23
9.5.3	Indication of the profile direction relative to a workpiece feature.....	23
9.6	Indication of bilateral surface profile tolerances.....	24
9.7	Indication of different requirements for several additional processes on one surface feature.....	24
	Annex A (normative) Proportions and dimensions of graphical symbols.....	26
	Annex B (normative) Filter symbols for profile surface texture.....	28
	Annex C (normative) Symbols for association methods and association elements.....	29
	Annex D (informative) Indications for unambiguous surface profile specification.....	30
	Annex E (normative) Inspection procedure for the 16 % tolerance acceptance rule.....	43
	Annex F (informative) Criteria for the use of the maximum tolerance acceptance rule as the default.....	44
	Annex G (informative) New issues and changes to previous documents.....	45
	Annex H (informative) Overview of profile and areal standards in the GPS matrix model.....	47
	Annex I (informative) Relation to the GPS matrix model.....	48
	Bibliography.....	49

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 290, *Dimensional and geometrical product specification and verification*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This document cancels and replaces ISO 1302:2002, which has been technically revised. In addition to the change of number, the main changes to ISO 1302:2002 are as follows:

- New specification elements for indication are defined.
- The maximum tolerance acceptance rule is the default tolerance acceptance rule.

A list of all parts in the ISO 21920 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences chain link A of the chains of standards on profile surface texture.

The ISO GPS matrix model 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 the specifications made in accordance with this document, unless otherwise indicated.

For more detailed information of the relation of this document to other standards and the GPS matrix model, see [Annex H](#), [Table H.1](#), and [Annex I](#).

This document covers the indication of profile surface texture.

Geometrical product specifications (GPS) — Surface texture: Profile —

Part 1: Indication of surface texture

1 Scope

This document specifies the rules for indication of surface texture by profile methods in technical product documentation by means of graphical symbols.

This document does not cover population requirements.

NOTE See ISO 18391 for population (batch) specifications.

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 21920-2, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*

ISO 21920-3, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 3: Specification operators*

ISO 81714-1, *Design of graphical symbols for use in the technical documentation of products — Part 1: Basic rules*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21920-2 and ISO 21920-3 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/>

4 Tolerance acceptance rules

4.1 General

Tolerance acceptance rules define how the tolerance limits are applied to the measured parameter values. For profile surface texture, three tolerance acceptance rules can be indicated. See ISO 21920-3:2021, Table 1 for the position of the measurements.