

STN	Geometrické špecifikácie výrobkov (GPS) Charakter povrchu: Profil Časť 2: Termíny, definície a parametre charakteru povrchu (ISO 21920-2: 2021)	STN EN ISO 21920-2
		01 4445

Geometrical product specifications (GPS) - Surface texture: Profile - Part 2: Terms, definitions and surface texture parameters (ISO 21920-2:2021)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/22

Obsahuje: EN ISO 21920-2:2022, ISO 21920-2:2021

Oznámením tejto normy sa ruší
STN EN ISO 12085 (01 4452) z novembra 2000

STN EN ISO 13565-2 (01 4446) z novembra 2000

STN EN ISO 13565-3 (01 4446) z augusta 2003

STN EN ISO 4287 (01 4450) z decembra 1999

134734

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 21920-2

January 2022

ICS 01.040.17; 17.040.40

Supersedes EN ISO 12085:1997, EN ISO 4287:1998,
 EN ISO 13565-2:1997, EN ISO 13565-3:2000, EN ISO
 4287:1998/A1:2009, EN ISO 4287:1998/AC:2008, EN
 ISO 12085:1997/AC:2008

English Version

**Geometrical product specifications (GPS) - Surface texture:
 Profile - Part 2: Terms, definitions and surface texture
 parameters (ISO 21920-2:2021)**

Spécification géométrique des produits (GPS) - État de
 surface: Méthode du profil - Partie 2: Termes,
 définitions et paramètres d'état de surface (ISO 21920-
 2:2021)

Geometrische Produktspezifikation (GPS) -
 Oberflächenbeschaffenheit: Profile - Teil 2: Begriffe
 und Parameter für die Oberflächenbeschaffenheit (ISO
 21920-2:2021)

This European Standard was approved by CEN on 27 November 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 21920-2:2022 (E)**Contents**

	Page
European foreword.....	3

European foreword

This document (EN ISO 21920-2:2022) 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 July 2022, and conflicting national standards shall be withdrawn at the latest by July 2022.

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

This document supersedes EN ISO 12085:1997, EN ISO 4287:1998, EN ISO 13565-2:1997 and EN ISO 13565-3:2000.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 21920-2:2021 has been approved by CEN as EN ISO 21920-2:2022 without any modification.

INTERNATIONAL
STANDARD

ISO
21920-2

First edition
2021-12

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

**Part 2:
Terms, definitions and surface texture
parameters**

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

Partie 2: Termes, définitions et paramètres d'état de surface



Reference number
ISO 21920-2:2021(E)

© ISO 2021

ISO 21920-2:2021(E)**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
3.1 General terms	1
3.2 Geometrical parameter terms	10
3.3 Geometrical feature terms	14
4 Field parameters	22
4.1 General	22
4.2 Height parameters	22
4.2.1 General	22
4.2.2 Arithmetic mean height	22
4.2.3 Root mean square height	22
4.2.4 Skewness	22
4.2.5 Kurtosis	22
4.2.6 Total height	23
4.2.7 Maximum height per section	23
4.3 Spatial parameters	24
4.3.1 General	24
4.3.2 Autocorrelation length	24
4.3.3 Dominant spatial wavelength	24
4.4 Hybrid parameters	25
4.4.1 General	25
4.4.2 Root mean square gradient	25
4.4.3 Arithmetic mean of absolute gradient	25
4.4.4 Maximum absolute gradient	25
4.4.5 Developed length	25
4.4.6 Developed length ratio	26
4.5 Material ratio functions and related parameters	26
4.5.1 Material ratio functions	26
4.5.2 Material ratio parameters	31
4.5.3 Parameters for stratified surfaces using the material ratio curve	33
4.5.4 Parameters for stratified surfaces using the material probability curve	35
4.5.5 Volume parameters	36
5 Feature parameters	38
5.1 Parameters based on peak heights and pit depths	38
5.1.1 General	38
5.1.2 Maximum peak height	39
5.1.3 Mean peak height	39
5.1.4 Maximum pit depth	39
5.1.5 Mean pit depth	40
5.1.6 Maximum height	40
5.2 Parameters based on profile elements	40
5.2.1 General	40
5.2.2 Mean profile element spacing	42
5.2.3 Maximum profile element spacing	42
5.2.4 Standard deviation of profile element spacings	42
5.2.5 Mean profile element height	42
5.2.6 Maximum profile element height	42
5.2.7 Standard deviation of profile element heights	42
5.2.8 Peak count parameter	43

ISO 21920-2:2021(E)

5.3	Parameters based on feature characterization.....	43
5.3.1	General	43
5.3.2	Named feature parameters.....	43
Annex A (informative) Determination of the first and second derivative	45	
Annex B (informative) Determination of the local curvature	48	
Annex C (normative) Determination of the material ratio curve	49	
Annex D (normative) Determination of profile parameters for stratified surfaces	50	
Annex E (normative) Crossing-the-line segmentation to determine profile elements	59	
Annex F (normative) Feature characterization	65	
Annex G (informative) Summary of profile surface texture parameters and functions	69	
Annex H (informative) Specification analysis workflow	72	
Annex I (informative) Changes to previous ISO profile documents	74	
Annex J (informative) Overview of profile and areal standards in the GPS matrix model	75	
Annex K (informative) Relation to the GPS matrix model	76	
Bibliography	77	

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 first edition of ISO 21920-2 cancels and replaces ISO 4287:1997, ISO 12085:1996, ISO 13565-2:1996 and ISO 13565-3:1998, which have been technically revised.

It also incorporates the Amendment ISO 4287:1997/Amd 1:2009 and the Technical Corrigenda ISO 4287:1997/Cor 1:1998, ISO 4287:1997/Cor 2:2005, ISO 12085:1996/Cor 1:1998 and ISO 13565-2:1996/Cor 1:1998.

The main changes are related to ISO 4287 and are as follows:

- all field parameters are now related to the evaluation length;
- unambiguous evaluation of profile elements;
- definition of new parameters, in particular parameters based on the watershed transformation.

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.

ISO 21920-2:2021(E)

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 B 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 K](#).

This document develops the terminology, concepts and parameters for profile surface texture.

Throughout this document, parameters are written as abbreviated terms with lower-case suffixes (as in R_q) when used in a sentence, and are written as symbols with subscripts (as in R_{q_1}) when used in formulae, to avoid misinterpretations of compound letters as an indication of multiplication between quantities in formulae. The parameters with lower-case suffixes are used in product documentation, drawings and data sheets.

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

Part 2: Terms, definitions and surface texture parameters

1 Scope

This document specifies terms, definitions and parameters for the determination of surface texture by profile methods.

NOTE 1 The main changes to previous ISO profile documents are described in [Annex I](#).

NOTE 2 An overview of profile and areal standards in the GPS matrix model is given in [Annex J](#).

NOTE 3 The relation of this document to the GPS matrix model is given in [Annex K](#).

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 16610-1:2015, *Geometrical product specifications (GPS) — Filtration — Part 1: Overview and basic concepts*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN