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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 1031-2009

Replacing GB/T 1031-1995

**Geometrical product specifications(GPS) - Surface texture:
Profile method - Surface roughness parameters and their
values**

产品几何技术规范 (GPS) 表面结构 轮廓法 表面粗糙度参数及其数值

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Foreword

This standard replaces GB/T 1031-1995 "Surface roughness parameters and their values". As compared with GB/T 1031-1995, the main changes are as follows: - ADD the foreword of the standard; - ADD the factor "Geometric product specification (GPS)" to the product name, in order to in line with the new standard system; - In accordance with the provisions of GB/T 3505 on the surface roughness parameters and the definition, CHANGE the parameter code "Ry" of the "profile maximum height" of the original standard into "Rz"; CHANGE the parameter code "Sm" of the "mean spacing of profile micro-unevenness" of the original standard into "Rsm"; - In accordance with the provisions of GB/T 3505 on the "sampling length", CHANGE the sampling length code "l" of the original standard into "lr". Appendix A and B of this Standard are informative. The location of this standard in the GPS system is described in Appendix B. This standard was proposed by AND shall be under the jurisdiction of the National Technical Committee for Standardization of Product Dimensions and Geometrical Specifications (SAC/TC 240). The drafting organizations of this standard. China Productivity Center for Machinery, Harbin Measuring Tool & Cutting Tool Group Co., Ltd., China Institute of Metrology, Times Group Corporation, Beijing Institute of Metrology and Testing. The main drafters of this standard. Wang Xinling, Lang Yanmei, Gao Sitian, Wang Zhongbin, Chen Jingyu. This Standard replaces the standard previously issued as follows: - GB/T 1031-1983, GB/T 1031-1995. Geometrical product specifications (GPS) - Surface structure. Profile method - Surface roughness parameters and their values

1 Scope

GB/T 1031-2009 is the Chinese national standard on geometrical product specifications(gps) - surface texture: profile method - surface roughness parameters and their values, in the field of metrology and measurement. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a

contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 16 March 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 November 2009. Classification: ICS 17.040.10, CCS J04. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the general rules for the evaluation of surface roughness parameters and their value series AND for the definition of surface roughness. This standard applies to the evaluation of the surface roughness of industrial products.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 131-2006 Geometrical product specifications (GPS) - Indication of surface texture in technical product documentation (ISO 1302.2002, IDT)

GB/T 3505-2009 Geometrical product specifications (GPS) - Surface texture. Profile methods - Terms, definitions and surface texture parameters (ISO 4287.1997, IDT)

GB/T 10610-2009 Geometrical product specifications (GPS) - Surface texture. Profile method - Rules and procedures for assessment of surface structures (ISO 4288.1996, IDT)

3 Terms and definitions

This standard uses the relevant terms and definitions of GB/T 3505.

4 Surface structure evaluation parameters and their

4.1 This standard uses the centerline system (profile method) to evaluate the surface roughness.

4.2 Surface roughness parameters are selected from the following two items.

4.3 Within the common parameter range (range $0.025\ \mu\text{m}$ ~ $6.3\ \mu\text{m}$, R_z is $0.1\ \mu\text{m}$ ~ $25\ \mu\text{m}$) of the amplitude parameters (peak and valley), it is recommended to give priority to R_a .

4.4 The arithmetic mean deviation R_a of the profile is defined in Table 1. Table

5 Classification and surface roughness parameters

5.1 The sampling length (l_r) is selected from the series given in Table 5. Table

6 General rules for surface roughness requirements

6.1 When specifying the surface roughness requirements, it shall define the two basic requirements. the surface roughness parameter value and the sampling length at the time of measurement.

6.2 The indication method of surface roughness shall comply with the provisions of GB/T 131; AND the default evaluated length shall comply with the provisions of GB/T 10610.

6.3 In order to ensure the surface quality of products, it may follow the functional requirements to specify the surface roughness parameter values. Otherwise, it may neither specify the parameter values nor conduct inspection.

6.5 As for the surface defects to which the surface roughness requirements do not apply, in the evaluation process, it shall not include the surface defects (such as grooves, pores, scratches, etc.). If necessary, it shall separately specify the requirements for surface defects.

APPENDIX A

(Informative) Supplementary series of values for surface roughness parameters evaluation

A.1 The additional series of values for each parameter is given in Table A.1, Table A.2, and Table A.3.