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

GB/T 18779.4-2020

**Geometrical product specifications (GPS)-Inspection by measurement
of workpieces and measuring equipment - Part 4: Background on
functional limits and specification limits in decision rules**

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Foreword

GB/T 18779 "Geometric Technical Specifications for Products (GPS) Measurement Inspection of Workpieces and Measuring Equipment" is divided into 6 parts:

- Part 1: The rules for determining qualified or unqualified inspections according to specifications;
- Part 2: Guidelines for Evaluation of Uncertainty of GPS Measurement in Measuring Equipment Calibration and Product Inspection;
- Part 3: Guidelines on reaching a consensus on the expression of measurement uncertainty;
- Part 4: The basis for determining the functional limits and specification limits in the rules;
- Part 5: Uncertainty of inspection of indicating measuring instrument;
- Part 6: General rules for acceptance/rejection of instruments and workpieces:

This part is Part 4 of GB/T 18779:

This section was drafted in accordance with the rules given in GB/T 1:1-2009:

This part uses the redrafting method to modify and adopt ISO /T S14253-4:2010 "Geometrical Technical Specifications for Products (GPS) Workpieces and Measurements" Measurement and inspection of equipment: Part 4: The basis for determining the functional

limits and specification limits in the rules:"

The technical differences between this part and ISO /T S14253-4:2010 and the reasons are as follows:

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments:

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows:

* Replace ISO 14253-1 (see Chapter 3, 4:2, 4:3, 9:1) with GB/T 18779:1 equivalent to the international standard:

This section has made the following editorial changes:

--- Rewrite Appendix A in accordance with the requirements of GB/T 20308-2020:

This part is proposed and managed by the National Standardization Technical Committee for Product Geometric Technical Specifications (SAC/TC240):

Drafting organizations of this section: China Jiliang University, China National Machinery Productivity Promotion Center, Beijing Times Peak Technology Co., Ltd., China Metrology Science

Research Institute, Hexagon Measurement Technology (Qingdao) Co., Ltd., Zhengzhou University:

Introduction

This part of GB/T 18779 is a geometric product specification (GPS) standard, which will belong to the global GPS standard system (see GB/T 20308):

It affects the parts C, D, E, F, and G in the GPS matrix model:

For more detailed information about the relationship between this part of GB/T 18779 and other standards and GPS matrix models, see Appendix A:

Unless otherwise specified, the determination rules given in GB/T 18779:1 are applicable to ensure that the workpiece and measuring equipment are within the specification range:

And it can avoid disputes over whether the workpiece and measuring equipment are within the scope of the specification:

In order to make the judgment rules operate as designed, it is important to first give a proof of qualification: In other words, the user/buyer of the product

The manufacturer/supplier/seller of the product is always required to provide proof of product conformity:

If the subsequent purchase inspection proves to be unqualified, the uncertainty report can be checked according to GB/T 18779:3 to mutually ensure its validity

Sex: If the conclusion is that both uncertainty reports are valid, then the only conclusion is one of the measurement results or both

It is not representative of the measurement process discussed:

If for some reason, the user of the product does not want the supplier to provide the first evidence, but relies on the purchase inspection, the user should pass

The measurement uncertainty of the incoming inspection is used to reduce the functional limit to reach the agreed contract specification limit, and negotiate with the supplier to reach an agreement:

Another problem is distributors, who buy products from manufacturers and resell them to users: If the distributor asks the product manufacturer to provide

Provide the qualification certificate, and then provide the certificate to the user, then the judgment rules given in GB/T 18779:1 will operate correctly: If the dealer

If it is decided for some reason to independently provide the user with a certificate of conformity, there will be a situation where neither qualification nor disqualification can be proved:

To distributors, neither can return the products according to the original specifications, nor can they resell the products: Therefore, this method is not recommended:

The determination rules in GB/T 18779:1 are also based on some assumptions: When these assumptions are not true, these judgment rules may not be economic

The best: This part of GB/T 18779 outlines these assumptions and discusses why they are theoretically ideal assumptions:

For artifacts, usually only the creator (designer) of the specification knows whether the assumption holds: Therefore, any agreement with GB/T 18779:1

Deviations from prescribed rules can only be proposed and documented by the owner of the specification:

For measuring equipment, the specification can be based on a standard prepared unilaterally by the equipment manufacturer or buyer, or based on a standard prepared by the equipment manufacturer and buyer in cooperation:

quasi: If the specification is based on a national standard, and the standard does not specify other determination rules, the rules of GB/T 18779:1 apply: In other situations

In this case, the determination rules can only be documented by the author of the specification:

It should be realized that both implicit and explicit judgment rules are part of the specification:

It is necessary to further realize that the issues involved in selecting the optimal decision rule set are complex, and simple rules are expected to be applicable to every situation

Is unrealistic: All parties shall ensure that they can obtain sufficient technical resources before deviating from the GB/T 18779:1 determination rule:

In this case, the owner of the specification needs to realize that other judgment rules besides the judgment rules defined in GB/T 18779:1 are

Applicable, and need to prepare the preparation documents of this policy, provide to trading partners (customers and/or suppliers), in the product technical documents

Reference:

Product Geometric Technical Specification (GPS)

Measurement inspection of workpiece and measuring equipment

Part 4: Functional Limits in Judgment Rules

The basis of the norm

1 Scope

This part of GB/T 18779 specifies the main assumptions under the theoretical ideal judgment rule in GB/T 18779:1: Given these

The rule should be the reason for the default rule and the factors that need to be considered before applying different judgment rules:

This part is applicable to all specifications involved in the GPS general standard (see GB/T 20308), that is, the standard compiled by SAC/TC240:

Including workpiece specifications (usually given in the form of specification limits) and measuring equipment specifications (usually given in the form of maximum allowable error):

2 Normative references

The following documents are indispensable for the application of this document: For dated reference documents, only the dated version applies to this article

Pieces: For undated references, the latest version (including all amendments) applies to this document:

GB/T 18779:1 Technical Specification for Product Geometrical Quantity (GPS)

Measurement Inspection of Workpieces and Measuring Equipment Part 1: Inspection

According to Specifications