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

GB/T 6683.4-2026

**Petroleum and related products - Precision of measurement methods and results
- Part 4: Use of statistical control charts to validate "in-statistical-control" status
for the execution of a test method standard in a single laboratory**

石油及相关产品 测量方法与结果精密度 第4部分：使用统计控制图确认单个实验室执行试验方法标准处于“统计受控状态”

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 4 of GB/T 6683, "Measurement Methods and Precision of Results for Petroleum and Related Products". GB/T 6683 has been...

The following sections were published.

- Part 1: Determination of Precision Data for Experimental Methods;
- Part 2: Interpretation and Application of Precision Data for Experimental Methods;
- Part 3: Monitoring and Validation of Published Precision Data for the Test Methods;
- Part 4: Using statistical control charts to confirm that individual laboratories are in "statistically controlled" status in implementing test method standards.

This document is modified to adopt ISO 4259-4:2021 "Measurement methods and results of petroleum and related products - Precision 4. Use of statistical methods".

The statistical control chart confirms that the standard test methods performed by individual laboratories are in "statistical control".

This document has undergone significant structural adjustments compared to ISO 4259-4:2021. A comparison of the structural numbering changes between the two documents is provided below.

See Appendix A for the table.

The technical differences between this document and ISO 4259-4:2021, and the reasons therefor, are as follows.

- The term "variation" and its definition (see 3.1) have been added for ease of understanding and use.

The following editorial changes have been made to this document.

- To harmonize with existing standards, the standard title has been changed to "Measurement Methods and Precision of Results for Petroleum and Related Products Part 4."

Use statistical control charts to confirm that the implementation of test method standards by individual laboratories is in "statistical control".

- Added usage and sources for the term "general cause," and removed the note;
- Additional information for the term "variation due to common causes" is provided in the form of a note;
- The references mentioned in section 4.4.3 have been removed;
- The restated text in Annex A of ISO 4259-4:2021 has been deleted;
- The explanation of symbols in the formula has been adjusted to section 4.1;
- Change the symbol "MR" to "M", "df" to "v", and the symbol subscript "achived" to "a" and "chart" to "c" for "stage1".

Change "s,1", "known" to "k", "new" to "n", and "pool" to "p" (see 4.1, 3.2 of ISO 4259-4:2021).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Petroleum Products and Lubricants (SAC/TC280).

Introduction

In today's global business environment, the "credibility" of measurement data is a key business driver and a hidden concern for both customers and regulators.

Sexual expectations. Data credibility means that the data quality meets expectations and is "suitable." Only data that has been proven stable and is affected by variation only from general causes.

The data generated by the measurement system is considered reliable.

This document describes the application of specific types of control charts selected from statistical control charts widely used in manufacturing, aiming to monitor and demonstrate the actual situation.

The laboratory executes testing methods and standards to obtain reliable data that is statistically controlled.

GB/T 6683, "Measurement Methods and Precision of Petroleum and Related Products," aims to specify the measurement methods and results for petroleum and related products.

Precision is proposed to consist of five parts.

---Part 1: Determination of Experimental Method Precision Data. The aim is to establish the methodology for designing interlaboratory studies (ILS) and the use of...

This study is used to estimate the calculation method for the precision of the experimental

method.

---Part 2: Interpretation and Application of Precision Data for Test Methods. The aim is to establish the precision of data when properties are determined by a specific test method.

A method for setting property specifications based on the precision of experimental methods, and a method for ensuring specification conformity when the supplier and the recipient obtain inconsistent results.

Sexual judgment.

---Part 3: Monitoring and Validation of Published Precision Data for Test Methods. The aim is to establish the accuracy achieved by routine monitoring test methods.

The method for comparing the precision with the precision published in the test method standard.

---Part 4: Using statistical control charts to confirm that individual laboratories are in statistical control of the implementation of test method standards. The purpose is to...

To establish a method for using statistical control charts to confirm that individual laboratories are in statistical control when performing test method standards.

---Part 5: Statistical evaluation between two different measurement methods for determining the same property. The aim is to establish a statistical evaluation method for two...

Statistical research methods for relative deviations between methods, and determination of the functional relationship between relative deviations.

In GB/T 6683.2, the assessment requirement for product quality conformity to the specification is understood as follows. the test results of each laboratory are derived from the results obtained in a precise manner.

Test methods that are statistically controlled in terms of density and bias, and which must be verified by internal statistical quality control (SQC) charts or other equivalent statistical methods.

The technology confirms this. Although many laboratories use in-house techniques for quality assurance of testing methods, standardization of statistically controlled states is crucial.

Ensuring consistency with GB/T 6683.2 is crucial.

Measurement methods and results for petroleum and related products Precision Part 4: Using Statistical Control Charts Confirm that individual laboratories implement test method standards Under "statistically controlled status"