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

GB/T 6379.3-2012

**Accuracy (trueness and precision) of measurement methods
and results -- Part 3: Intermediate measures of the precision of
a standard measurement method**

测量方法与结果的准确度(正确度与精密度) 第3部分：标准测量方法精密度的中
间度量

(English Translation)

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Foreword

GB/T 6379 "measurement methods and results of Accuracy (trueness and precision)" is divided into the following sections, which correspond to the expected structure and International standards.

--- Part 1. General principles and definitions (ISO 5725-1:1994, IDT)

--- Part 2. Determine the standard methods of measurement repeatability and

reproducibility of the basic method (ISO 5725-2:1994, IDT)

--- Part 3. Standard Methods of measurement precision intermediate measurement (ISO 5725-3:1994, IDT)

--- Part 4. method of determining basic accuracy of a standard measurement method (ISO 5725-4:1994, IDT) Alternative method to determine a standard measurement method precision. --- Part 5 (ISO 5725-5:1998, IDT)

--- Part 6. practice of accuracy values (ISO 5725-6:1994, IDT) this is Part 3 GB/T 6379's.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section identical with the international standard ISO 5725-3. "measurement methods and results of Accuracy (trueness and precision) of Part 3 1994 1994 edition of ISO 5725-3 technology to modify the standard methods of measurement precision intermediate measure "and in ISO 2001-10-15 released. minutes single. To ISO 5725-3:1994 error made the following changes and corrections.

--- Revised 9.4 on the design based on a complete set of test standard deviation of repeatability, reproducibility and intermediate precision standard deviation standard deviation Estimates are not accurate account.

--- The Table D.5 in Appendix D sl (T) value of the first 6 levels by 9.545×10^{-3} corrected to 8.020×10^{-3} .

GB/T 6379 Part 1 to Part 6 as a whole instead of GB/T 6379-1986 and GB/T 11792-1989. Mark Registration precision of the original concept to be expanded, increasing the accuracy of the concept, referred to as accuracy; except repeatability conditions and reproducibility conditions, the increase the intermediate precision conditions.

This part of the application by the National Standardization Technical Committee on statistical methods (SAC/TC21) and focal points.

This section drafted by. China National Institute of Standardization, Academy of Mathematics and Systems Science, Shenzhen City, measuring Detection Co.

Secretary of Hainan Province Product Quality Supervision and Inspection, Wuxi City Product Quality Supervision, Inspection, Guangzhou Exit Inspection and Quarantine.

Introduction

0.1 GB/T 6379 with two terms "trueness" and "precision" to describe the accuracy of measuring methods. Accuracy refers to the large number of tests (Arithmetic) average of the results and the true value or accept the degree of consistency between the reference value; while precision refers to the degree of consistency between test results.

0.2 GB/T 6379.1 various amounts given in the above general considerations in this section will not be repeated. It must be emphasized that, GB/T 6379.1 should be GB/T 6379 all other parts (including this section) combine to read, because the GB/T 6379.1 gives the group the definitions and general provisions.

0.3 Many different factors (in addition to the difference between the assumed identical samples outside) can lead to variation in measurement results, these factors include.

- a) the operator;
- b) the use of the device;
- c) calibration equipment;
- d) the environment (temperature, humidity, air pollution, etc.);
- e) the batch of reagents;

Interval f) different measurements.

Often much in a short time by the same operator using a phase measurements made by the different operators and measurements carried out on different devices with equipment to measure produced great variation.

0.4 precision two conditions, namely repeatability conditions and reproducibility conditions are necessary, and in many practical situations, to describe the measurement side Variation law useful. Under repeatability conditions, the factors listed in 0.3 a) ~ f) are kept constant, no variation in reproducibility Under conditions which are changes that can cause variation of the test results. Therefore, the repeatability and reproducibility condition precision the two extreme cases. The former describes the smallest variation in the test results, which describe the maximum variation in test results. In both extreme conditions of One or more intermediate between the conditions also exist, i.e., factor a) ~ f) being changed, they can be used in certain circumstances.

Precision is usually standard deviation.

0.5 intermediate section discusses a measure of precision measurement. Since the values of these metrics in the two kinds of measurement electrode Between the end of metric precision (repeatability standard deviation and reproducibility standard deviation), said intermediate precision.

To the necessity of these intermediate precision measure of illustration, consider the current and a workshop related to the operation of the laboratory, in the real Mortem indoor three shifts working system, measured by different operators performed on different devices. Thus operators and equipment that can cause the test results of some of the factors of variation. In assessing the precision of the method must be considered.

Intermediate precision measures defined in section 0.6 first applied to the following

scenario. In order to measure the internal laboratory methods to improve, standard Registration and control, the need for intermediate precision estimates; between a specially designed laboratory studies also estimate the need for intermediate precision meter. However, due to the 1.3 and 9.1 of the reasons, the interpretation and application of these measures should be cautious.

0.7 four factors most likely to influence the measurement precision of the method are.

- a) Time. Continuity measurement time interval is large or small.
- b) Calibration. between successive sets of measuring whether the same device after recalibration.
- c) Operator. continuous measurement is completed by the same operator.
- d) Equipment. whether to use the same device in the measurement (or the same group of agents).

0.8 below, before the introduction of the M factor different intermediate precision condition (M = 1,2,3, or 4), to take account of the laboratory measurement conditions (when Room, calibration, operator and equipment) change.

- a) M = 1. only one of four different factors;
- b) M = 2. There are two different four factors;
- c) M = 3. three different four factors;
- d) M = 4. all four factors are different.

Different intermediate precision conditions produce different intermediate precision standard deviation, denoted by $sl(\cdot)$, corresponding to the specific conditions in parentheses Clearly marked, for example, $sl(TO)$ represents a different time, a different operator intermediate precision standard deviation.

0.9 For measurements under intermediate precision conditions, 0.7 listed factors have one or more different under repeatability conditions, those who S_u is assumed to be constant.

The standard deviation of test results obtained under repeatability conditions, generally less than the difference between the standard test results obtained under intermediate precision conditions.

Under normal circumstances, in chemical analysis, standard deviation under intermediate precision conditions will be standard deviation under repeatability conditions 2 to 3 times. Of course, it it should not be greater than the reproducibility standard deviation.

For example, in a total of 35 laboratories to determine the copper ore copper content involved in collaborative trials, found that both the use of gravity electrolysis Assay or by $Na_2S_2O_3$ titration method, a factor (different time but the same operator and equipment) of