ICS 03.120.30
CCS A 41

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33260.2-2018

Capability of detection -- Part 2: Methodology in the linear calibration case

Issued on: June 7, 2018 **Implemented on: January 1, 2019**

Issued by: State Administration for Market Regulation, China National Standardization Administration

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Foreword

GB/T 33260 "Checkout Capacity" is currently divided into the following sections.

--- Part 1. Terms and definitions;

--- Part 2. Method for determining the detection limit of linear calibration;

--- Part 3. Method for determining the critical value of the response variable of the situation without calibration data;

--- Part 4. Comparison between the minimum detectable value and the given value;

--- Part 5. Determination of detection limits for non-linear calibration situations.

This part is part 2 of GB/T 33260.

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

This section uses the redrafted method to modify the use of ISO 11843-2.2000 "detection capacity of the second part. the linear calibration of the detection limit

Determine the method. Compared with ISO 11843-2.2000, the main technical changes are as follows.

--- With regard to normative references, this section has made adjustments with technical differences to apply our country's technical conditions and adjust the situation.

The focus is reflected in Chapter 2, "Normative References," and the specific adjustments are as follows.

* Replaced ISO 3534-1 with GB/T 3358.1-2009 equivalent to international documents;

* Replaced ISO 3534-2 with GB/T 3358.2-2009 equivalent to international documents;

* Replaced ISO 11095.1996 with GB/T 22554-2010 which modifies international documents;

* Replaced ISO 11843-1.1997 with GB/T 33260.1-2016 that modifies international documents;

* Replaced ISO Guide with non-equivalent GB/T 15000.2-1994 in correspondence with international documents.

30.1992.

--- Correct the "delta=(nu;alpha;beta)" in the first paragraph of 5.2.4 to "delta=delta(nu;alpha;beta)";

--- Correct 5.3.2 (16) "^sigmaq, i = ^ cq ^ dqxi" is corrected to "^ sigmaq 1, i = ^ cq 1 ^ dq 1xi", and according to the Chinese word order adjustment formula (17), formula

(18) and (19) positions;

--- In the first paragraph of paragraph 5.3.3 "T4 = Jsum

i=1

j=1

Wi??yij " "T5 = Jsum

i=1

j=1

Wixi??yij "" Corrected as "T4 =

i=1

j=1

Wi??yij ""T5=sum

i=1

j=1

Wixi??yij ";

This section made the following editorial changes.

--- Incorporating the content of ISO 11843-2.2000/Cor.1.2007;

--- Added Figure C.1 in Appendix C.

This part is proposed and managed by the National Statistical Methods Application Standardization Technical Committee (SAC/TC21).

This section was drafted by. Beijing University of Technology, China Testing & Certification Group Co., Ltd., China National Institute of Standardization, Xiamen Optimization Section

Technology Co., Ltd., Liaoning Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China, Qingdao University, CITIC Daycare Co., Ltd.

Introduction

The ideal requirement for the detection capability of a selected state variable is that the actual state of the system under test can be very accurately distinguished as the basis

State or non-basic state. However, due to systematic and random distortions (impacts), this ideal requirement cannot be satisfied because.

--- In fact, the state variable values of all reference states including the basic state are unknown. Therefore, all states can only

Through the difference with the basic state, the net state variable, to be exactly described.

In actual work, the state variable value of the reference state is often assumed to be known. For example, in the basic state, set the state variable

The value of 0 is 0; for example, in analytical chemistry, assume that the concentration or content of the analyte in the blank sample is 0. Under this assumption, the substance to be analyzed is

The measured concentration or content is reported as the value of the net or net content. Especially in chemical trace analysis, only the available gaps can be estimated

The difference of the sample concentration or content. Therefore, in order to prevent making wrong decisions, it is generally recommended to report only the difference from the basic state, ie, net

The value of the state variable.

Note. In GB/T 15000.2-1994 and GB/T 22554-2010, there is no distinction between state variables and net state variables. Therefore, none of these two documents

Illustratively, the state variables of the reference state are known.

--- Calibration and sampling and sample preparation process will give random error to the measurement results.

This section is based on the following considerations.

--- When the system is in the basic state, the probability of (incorrectly) determining that the system is not in the basic state is alpha;

--- When the value of the net state variable is equal to the minimum detectable value xd, the probability of (incorrectly) not judging that the system is not in the basic state

It is beta.

Checkout capabilities Part 2.

Method for determining detection limit of linear calibration

1 Scope

This part of GB/T 33260 specifies.

--- Experiments for estimating the critical value of the net state variable, the critical value of the response variable, and the minimum detectable value of the net state variable

design.

--- If the calibration function is linear and the standard deviation is a constant or it is linear with the net state variable, the experimental data obtained is used.

The above three feature quantities are estimated.

The method described in this section can be applied to various situations, such as checking the presence of a specific substance in a material, and the sample or device

There is no energy release, or there is a geometric deformation of the static system under the action of torsion.

The critical value can be derived from the actual measurement sequence to evaluate the unknown state of the system represented by the measurement sequence, and the minimum of the net state variable

The detectable value is used as a feature of the measurement method to select the appropriate measurement process. In order to characterize a measurement process, a laboratory

Or the detection capability of a measurement method, if every relevant level (ie a measurement sequence, measurement process, laboratory or measurement method)

For the appropriate measurement data, determine the minimum detectable value. Minimal detectability of different measurement sequences, measurement processes, laboratories or measurement methods

The value is different.

GB/T 33260 is suitable for quantitative measurements at continuous scales and is applicable to the acquisition of detection capabilities of measurement processes and various measuring devices.

The functional relationship between the expected value of the response variable of the measuring device and the state variable value can be described by the calibration function. If the response variable or state variable

Is a vector value, this part can be applied to the vector component or component function.