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GB/T 43859-2024

Test method for performance of water activity meters

水分活度仪性能测定方法

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Standardization Administration of the PRC

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: Please note that some of the contents of this document may involve patents: The issuing organization of this document does not assume the responsibility for identifying patents: This document was proposed by the Ministry of Science and Technology of the People's Republic of China: This document is under the jurisdiction of the National Technical Committee for Standardization of Instrumental Analysis and Testing (SAC/TC481): This document was drafted by: Guangzhou Institute of Metrology and Testing Technology, China Institute of Metrology, Shenzhen Guanya Moisture Meter Technology Co:, Ltd:, Sun Yat-sen University, Kangbao Zhixin Measurement Technology (Beijing) Co:, Ltd:, and Wuxi Huake Instrument Co:, Ltd: The main drafters of this document are: He Xin, Dai Hong, Li Zhanyuan, Tang Minran, Zhang Mingquan, Luo Xiaojin, Zhang Jungang, Tong Zhongjiang, Liang Zhijian, Tang Xiaojun: Water activity meter performance test method

1 Scope

GB/T 43859-2024 gives the method for testing the performance of water activity meters. Water activity, not water content, is what determines whether a food will support microbial growth, and the regulatory thresholds for shelf-stable products sit at values like 0.85 where a two-hundredth of an activity unit is the difference between compliance and a recall - so the meter's error has to be known, and it is dominated by temperature control, since the measurement is of the equilibrium humidity above the sample. The standard sets the test conditions, covering the environment, the reference standards and supporting equipment and the test reagents, then the determination of the performance indicators: the water activity indication error, the repeatability of the measurement, the temperature indication

error, and the temperature fluctuation and control deviation, followed by the cautions and the test report. It took effect on 25 April 2024.

This document describes a method for determining the performance of a water activity meter: This document is applicable to the determination of performance indicators of various water activity meters with temperature control function: The determination of activity meter performance indicators shall be carried out in accordance with this document:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document:

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 13966 Terminology of analytical instruments

GB/T 32267 Terminology for determination of performance of analytical instruments

3 Terms and definitions

The terms and definitions defined in GB/T 13966, GB/T 32267 and the following apply to this document: 3:

1 Water activity The ratio of the water vapor partial pressure of the sample in a specified space to the saturated vapor pressure of pure water at the same temperature is expressed by formula (1): aw= p0 (1) Where: aw

--- water activity; p

--- the water vapor partial pressure of the sample under test when it reaches equilibrium in a closed container, in Pascals (Pa); p0

--- The saturated vapor pressure of pure water at the same temperature, in Pascals (Pa): [Source: GB/T 34790-2017, 3:1, modified] 3:

2 When the moisture in a material has no exchange with the air or any surrounding substances, the adsorption and desorption of moisture reach equilibrium: Relative humidity value:

4 Overview

Water activity meter (also known as water activity meter, hereinafter referred to as instrument) usually adopts the principle of equilibrium relative humidity method: Equal to

the relative humidity of the closed environment, the water activity of the sample is obtained by measuring the relative humidity in the closed environment: The sample to be tested is placed in a closed container, and water molecules are exchanged between the sample and the environment in the closed space to balance: