ICS 83.080.20
CCS G 31

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 5758-2023

Determination of particle size, effective size and uniformity coefficient of ion exchange resins

离子交换树脂粒度、有效粒径和均一系数的测定方法

Issued on: August 6, 2023 **Implemented on: March 1, 2024**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

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 replaces GB/T 5758-2001 "Method for determination of particle size, effective particle size and uniformity coefficient of ion exchange resin" and is consistent with Compared with GB/T 5758-2001, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

---Added the definition, testing and calculation methods of average particle size (see 3.5, 4.4.6 and 4.6.4);

---Changed the screening method to Method 1 (see Chapter 4, Chapter 4 of the.2001 edition);

---Changed the schematic diagram of the pretreatment column and the schematic diagram of the screening funnel (see Figure 1, Figure 1 of the.2001 version);

--- Added method two, laser diffraction method (see Chapter 5);

---Changed Appendix A to the calculation of particle size (sieving method) results. Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying these patents. This document is proposed by China Petroleum and Chemical Industry Federation. This document is under the jurisdiction of the National Plastics Standardization Technical Committee (SAC/TC15). This document was drafted by: Jiangsu Suqing Water Treatment Engineering Group Co., Ltd., Xi'an Thermal Engineering Research Institute Co., Ltd., Xi'an Lanxiao Technology New Materials Co., Ltd., Ningbo Zhengguang Resin Co., Ltd., Zhonglan Chenguang Chengdu Testing Technology Co., Ltd., Shandong Dechuan Chemical Technology Co., Ltd. Responsible company, Dandong Mingzhu Special Resin Co., Ltd., Purote (China) Co., Ltd., Hebei Lijiang Biotechnology Co., Ltd., Xi'an Lanshen New Materials Technology Co., Ltd., Chongqing Kejufu New Materials Co., Ltd., Jilin Provincial Product Quality Supervision and Inspection Institute, China Petrochemical Corporation Co., Ltd. Beijing Beihua Institute

Yanshan Branch. The main drafters of this document. Qian Ping, Peng Zhanghua, Wang Mengjiao, Zhang Li, An Guanglu, Liu Yucheng, Hu Jinqiang, Meng Kun, Zhai Jinghua, Zhang Wei, Huang Yi, Chen Minjian, Mao Jiang, Feng Zhijun, Liu Xiaolin, Gui Zhongming, Li Shangyu, Wang Hanbing. It was first published in 1986, revised for the first time in.2001, and this is the second revision. Ion exchange resin particle size, effective particle size and How to measure uniformity coefficient

1 Scope

China's national method for determining the particle size, effective size and uniformity coefficient of ion exchange resins. Bead size governs the trade every resin bed makes. Small beads have more surface area and shorter diffusion paths, so they exchange faster and give a sharper separation; but a bed of small beads resists flow far more, and the pressure drop rises steeply as the size falls. The uniformity coefficient describes how wide the size distribution is, and a narrow one is worth paying for: in a mixed bed the fines block the flow and the largest beads do most of the exchanging, so a uniform resin outperforms a spread one of the same mean size. The standard describes the determination of range, upper and lower limit, effective and average particle size and the uniformity coefficient, by wet sieving for spherical resins denser than 1 g/mL, by dry sieving for those at or below it, and by a second method for powdered and granular resins from 0.1 to 3000 micrometres.

This document describes the determination of range particle size, upper limit particle size, lower limit particle size, effective particle size, average particle size and uniformity coefficient of ion exchange resins method. The wet sieving method in Method 1 is suitable for the range particle size, upper limit particle size, and lower particle size of spherical ion exchange resin with a wet true density greater than 1g/mL. Determination of limited particle size, effective particle size, average particle size and uniformity coefficient; dry sieving method is suitable for spherical particles with wet true density less than or equal to 1g/mL Determination of range particle size, upper limit particle size and lower limit particle size of ion exchange resin. Method 2 is suitable for powdery or granular ion exchange resins with particle sizes ranging from 0.1 μm to 3000 μm. The range particle size, upper limit particle size, Determination of lower limit particle size, effective particle size, average particle size and uniformity coefficient.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 5475 Ion exchange resin sampling method

GB/T 5476 Ion exchange resin pretreatment method

GB/T 6003.1 Technical requirements and inspection of test sieves Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Range granularityparticlesizerange The volume fraction of sample particles in the range from the upper limit particle size to the lower limit particle size in all sample particles.

Note. Expressed in percentage (%).

3.2 The volume fraction of sample particles smaller than the lower limit particle size of all sample particles.

Note. Expressed in percentage (%).

3.3 The volume fraction of sample particles larger than the upper limit of the particle size of all sample particles.