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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 33893-2017

Determination of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in separation membranes - Liquid chromatography-tandem mass spectrometry method

分离膜中全氟辛烷磺酰基化合物（PFOS）和全氟辛酸（PFOA）的测定 液相色谱-串联质谱法

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Standardization Administration of the PRC

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed by the National Separation Membrane Standardization Technical Committee (SAC/TC382). The drafting of this standard. Shandong Dongyue Polymer Materials Co., Ltd., Beijing Green Water Film Technology Co., Ltd., Tianjin University of Technology, the state Seafood and brackish water use product quality supervision and inspection center, State Key Laboratory of Fluorine Functional Membrane Materials, Tianjin Membrane Membrane Engineering Technology Co., Ltd. the company. The main drafters of this standard. Wang Xuejun, Xia Jun, Li Xintao, Tang Junke, Wang Jie, Zhao Jianchao, Fan Yunxie, Wei Gang, Yang Yiquan, Ma Lanyun The perfluorooctane sulfonyl compound (PFOS) And perfluorooctanoic acid (PFOA) Liquid chromatography - tandem mass spectrometry

1 Scope

China's national method for finding PFOS and PFOA in separation membrane products by liquid chromatography with tandem mass spectrometry. It specifies the method and applies to the identification and quantification of perfluorooctane sulfonate compounds and perfluorooctanoic acid in membranes. The two substances are among the best known of the per- and polyfluoroalkyl chemicals, the compounds now generally called PFAS: extremely stable, extremely mobile in water, and effectively permanent in the environment, which is where the popular name forever chemicals comes from. They are restricted internationally under the Stockholm Convention. Their presence in a separation membrane is not incidental. Fluoropolymers are among the best membrane materials there are, because the same chemical inertness that makes them persistent also makes them resistant to the solvents, oxidants and cleaning chemicals a membrane meets, and PFOS and PFOA have been used as processing aids in making them. So a membrane intended to purify water can carry a residue of exactly the class of contaminant that water treatment is meant to remove, and this is the method that establishes whether it does.

This standard specifies the liquid chromatography of PFOS and perfluorooctanoic acid

(PFOA) in the separation membrane product - in series Mass spectrometry method. This standard is applicable to the characterization and quantification of perfluorooctane sulfonyl compounds (PFOS) and perfluorooctanoic acid (PFOA) in separation membrane products Determination.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods Representation and Judgment of Numerical Correction Rule and Limit Value of GB/T 8170

3 Principle

The perfluorooctane sulfonyl compounds (PFOS) and perfluorooctanoic acid (PFOA) in the membrane were separated by solvent extraction under ultrasonic conditions, Centrifugal separation, the supernatant concentration, filtration, constant volume, the injection of high performance liquid chromatography - tandem mass spectrometry (HPLC-MS/MS) for analysis, External standard method.

4 Reagent

4.1 methanol. pure chromatography.

4.2 Potassium perfluorooctane sulfonate standard substance (PFOS-K, CAS number. 2795-39-3), purity greater than or equal to 98% (mass fraction).

4.3 perfluorooctanoic acid standard substance (PFOA, CAS number. 335-67-1), purity greater than or equal to 99% (mass fraction).

4.4 potassium perfluorooctane sulfonate standard stock solution (200mg/L). accurately weighed potassium perfluorooctane sulfonate (4.2) 0.0200g, dissolved in methanol Solution, and constant volume to 100mL. Stored at 0 °C ~ 4 °C, valid for 1 year.

4.5 perfluorooctanoic acid standard stock solution (200mg/L). accurately weighed perfluorooctanoic acid (4.3) 0.0200g, dissolved in methanol, and constant capacity to 100mL. Stored at 0 °C ~ 4 °C, valid for 1 year.

4.6 potassium perfluorooctane sulfonate standard solution (2mg/L). accurate removal of 1mL potassium perfluorooctane sulfonate standard stock solution (4.4), methanol Constant volume to 100mL. Stored at 0 °C ~ 4 °C, valid for 3 months.

4.7 perfluorooctanoic acid standard solution (2mg/L). accurate removal of 1mL perfluorooctanoic acid standard stock solution (4.5), the volume of methanol to 100mL.

Stored at 0 °C ~ 4 °C, valid for 3 months.

4.8 ammonium acetate solution (2mmol/L). accurately weighed 0.1540g ammonium acetate, dissolved in water and volume to 1000mL, shake.

4.9 Unless otherwise stated, the reagents used are analytical grade and water is a primary water specified in GB/T 6682.