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

GB/T 44900-2024

**Technical specification for the reengineering of fluorination
process flows intensified by high gravity**

超重力强化氟化反应流程再造技术规范

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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 is proposed and coordinated by the National Technical Committee for Hazardous Chemicals Management Standardization (TC251). This document was drafted by: Beijing University of Chemical Technology, Zhejiang Quhua Fluorine Chemical Co., Ltd., Shenyang Chemical Research Institute Co., Ltd., Zhejiang Zhongxin Fluorine Materials Co., Ltd., China Petroleum and Chemical Industry Federation. The main drafters of this document are. Chu Guangwen, He Yong, Cheng Chunsheng, Zhang Liangliang, Xiong Xianyun, Chen Jianfeng, Xiang Yang, Ma Xiaohua, Yuan Qiliang, Cao Mengran, Chen Yiwen and Hao Yuan. Technical Specifications for Process Reengineering of Ultra-Gravity Enhanced Fluorination Reaction

1 Scope

GB/T 44900-2024 is the Chinese technical specification for reengineering fluorination processes using high gravity intensification. High gravity technology, the rotating packed bed, is a Chinese speciality in process intensification: spinning the contacting zone at high acceleration breaks the liquid into a fine film and shortens the mass transfer path, so a reaction that needed a large column can be run in a much smaller machine. Applying it to fluorination is attractive and demanding at once, because hydrogen fluoride chemistry is fast, highly exothermic and extremely corrosive, and the conventional plant is large mainly to control those things. The standard sets out the technical requirements for the reengineering: the applicability and the process selection, the design of the high gravity reactor and of the associated equipment, the materials and the corrosion protection, the process parameters and their control, the safety requirements arising from the fluorination chemistry, the requirements on the retrofit of an existing plant, and the evaluation of the result. For a fluorochemical producer or an engineering contractor in China, this is the

governing text.

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 latest version (including all amendments) applies to this document. This document.

GB/T 150.2 Pressure Vessels Part

GB/T 5267.4 Surface treatment of fasteners - Passivation treatment of corrosion-resistant stainless steel

GB/T 14211 Mechanical seal test methods

GB/T 17505 General technical requirements for delivery of steel and steel products

GB 19815 Safety requirements for centrifuges

GB/T 32292 General technical requirements for magnetic fluid dynamic seals for vacuum technology

GB 36894 Risk benchmark for hazardous chemical production plants and storage facilities

GB/T 37243 Method for determining external safety protection distances for hazardous chemical production plants and storage facilities

GB/T 42300 Specification for safety risk assessment of fine chemical reactions

GB/T 50046 Industrial Building Anti-corrosion Design Standard

GB 50058 Code for Design of Electrical Installations for Explosive Atmospheres

GB/T 50493 Design standard for flammable and toxic gas detection and alarm systems in the petrochemical industry HG20231 Chemical Industry Construction Project Commissioning Specifications

JB/T 11244 Supergravity Device

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 High gravity reactor The centrifugal force generated by the rotor rotation creates a supergravity field inside the reactor to enhance gas-liquid, liquid-liquid, liquid-solid and other mass transfer, mixing and reaction. Process equipment.

Note. The high gravity reactor is referred to as reactor hereafter.

3.2 drum Thin-walled cylinder with large flow area for holding packing.

4 Manufacturing, inspection and acceptance

GB/T 3836.1 Explosive atmospheres Part

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