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**Nanotechnologies-Nanofiber media for air filtration-Technical
requirements**

纳米技术 空气过滤用纳米纤维滤材 技术要求

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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.

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This document was drafted by: National Center for Nanoscience and Technology, Shijiazhuang Chentai Filter Paper Co., Ltd., Beijing Nafit Technology Co., Ltd., Boyu Fiber Wei Technology (Suzhou) Co., Ltd., Wuxi Yili Environmental Protection Technology Co., Ltd., Jiangsu Nayi Environmental Protection Technology Co., Ltd., Meiyi (China) Environmental Science and Technology Co., Ltd.

Technology Co., Ltd., Shandong Blue Time New Materials Co., Ltd., Foshan Shunde Apollo Environmental Protection Equipment Co., Ltd., Shanxi Hua Ruina Mi New Material Technology Co., Ltd., Zhejiang Jiahai New Material Co., Ltd., Guangxi Huayuan Filtration System Co., Ltd., Suzhou Metrology and Testing Institute of Technology, Guangzhou Inspection and Certification Group Co., Ltd., Institute of Process Engineering, Chinese Academy of Sciences, Pingyuan Filter Co., Ltd., Shanghai Applied Technology University, Jiaxing Furuibang New Material Technology Co., Ltd., and Beijing Senhai Oxygen Source

Technology Co., Ltd.

The main drafters of this document are: Zhang Donghui, Ge Guanglu, Li Pan, Gao Qiong, Xu Weihong, Huang Xin, Chen Jiangzhong, Zhu Lei, Gao Dongmei, Wang Ji, Zhao Xinglei, Xia Jianhua, Yu Tian, Fang Dan, Zhu Ruidian, Liu Xiangmin, Li Lei, Zhang Xian'an, Shen Xin, Li Caiyun, Wang Qi, Zhu Baoyi, Lin Lin, Tian Guolan, Jiang Pan, Wu Baichuan.

Introduction

Nanofiber materials have unique advantages such as small diameter and large specific surface area, and are widely used in the field of air filtration and purification, with a large market size.

Used for engine intake system air purification, industrial environment dust removal and purification, indoor air purification, respiratory protection, etc.

The unique physical and chemical properties of nanofibers make them exhibit excellent performance when used in air filtration, such as the small size effect that makes dust and other solids. When filtering, particles will collide with nanofibers more frequently due to inertia; the unique slip flow effect of nanofibers can reduce air resistance;

The surface physical interception properties of the fiber give it good recovery; some nanofiber filter materials can maintain the filtration efficiency and resistance basically after disinfection. constant.

Nanofibers are usually deposited directly on the substrate to form nanofiber filter materials for air filtration. The size and morphology of nanofibers affect the The specific surface area, pore size and porosity of the fiber filter material affect the filtration efficiency, dust holding capacity and other performances; the backwash recovery of the nanofiber filter material affects The service life of the product in industrial dust removal and engine air intake filtration is affected by its tolerance to temperature, humidity and alcohol.

The use and service life of the nanofiber layer; the bonding strength between the nanofiber layer and the substrate will affect its reliability.

At present, there is still a lack of technical requirements for nanofiber filter materials for air filtration based on the current industrial situation in China. This document can be used as a reference for product development and quality control.

It can also provide a basis for quality control, guide the mutual recognition of data between upstream and downstream of the industry chain and third-party testing institutions, and provide a reference for regulatory technology for regulatory authorities.

China's nanofiber filter material industry has good guiding significance and is conducive to the benign upgrading and healthy development of the industry.

Nanofiber filter media for nanotechnology air filtration Technical requirements

1 Scope

This document defines the terms and definitions of nanofiber filter materials for air filtration and specifies the technical requirements.

This document applies to the production, use and transportation of air filtration materials with an average fiber diameter less than or equal to 300nm.

2 Normative references

GB 8624

GB/T 19977

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Nanofiber

The outer dimensions of two dimensions are similar and are in the nanometer scale, and the outer dimension of the remaining dimension is significantly larger than the other two dimensions. Meter object.

Note 1. Nanofibers can be flexible or rigid.

Note 2. For two dimensions of similar size, the difference between their external dimensions is less than 3 times, and the longest external dimension is more than 3 times larger than the other two dimensions.

Note 3. The longest external dimension is not on the nanometer scale.

[Source. GB/T 32269-2015, 4.3, with modifications]

3.2 air filtration

The process of separating solid or liquid particles from an air stream.

[Source. ISO /T S21237 2020, 3.1]

3.3 [Source. ISO /T S21237 2020, 3.2, with modifications]

A porous material used to capture or deposit filtrate when filtering air.

Note. The filter material consists of a nanofiber layer and a substrate.

3.4 substrate

A base layer of nanofibers is deposited on the surface.

[Source. ISO /T S21237 2020, 3.7]

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