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

GB/T 20020-2025

Replacing GB/T 20020-2013

Fumed silica

气相二氧化硅

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Table of Contents

Foreword

Appendix A , Appendix B, Appendix D, Appendix E, and Appendix G of the 2012 edition);

1 Scope

2 Normative references

3 Terms and Definitions

3.1

4 Categories

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.

This document replaces GB/T 20020-2013 "Fumed Silica". Compared with GB/T 20020-2013, except for the structural adjustment and editing In addition to the functional changes, the main technical changes are as follows.

- Changed the scope (see Chapter 1, Chapter 1 of the 2013 edition);
- Changed the classification of fumed silica (see 4.1, 3.2 of the 2013 edition);
- Changed the technical indicators of suspension pH value and tap density (see Table 2, Table 2 of the 2013 edition);
- Added the requirements for sampling during the production process (see 6.5.2);
- Changed the product packaging requirements (see 9.1, 9.2, 9.4, 7.1, 7.2, 7.4 of the 2013 edition);
- Deleted sulfuric acid solution (see A.1, A.3.2, A.6.3 of the 2013 edition);
- Changed the requirements for adding hydrofluoric acid (see A.6.4, A.6.3 of the 2013 edition);
- Deleted the heating residue until no white smoke is generated (see A.6.4 of the 2013 edition);
- Changed the calculation formulas for loss on ignition and silicon dioxide content [see formula (A.1), formula (A.2), 2013 edition of the Formula (A.1), Formula (A.2)];
- Changed the sample weight (see B.4.2.2, B.4.2.2 of the 2013 edition);

- Changed the expression of mass concentration and loss on ignition [see formula (B.1), formula (B.2), formula (D.1), 2013 edition of the Formula (B.1), Formula (B.2), Formula (D.1)];
- Changed the density unit, liquid and container volume unit representation (see Appendix A, Appendix B, Appendix D, Appendix E, Appendix G, 2013

Appendix A , Appendix B, Appendix D, Appendix E, and Appendix G of the 2012 edition);

- Added "If the result is abnormal, other spectral lines with less interference can be used for testing" (see B.5.3.2);
- Changed the test results of aluminum oxide, titanium dioxide and ferric oxide to approximately 1 mg/kg according to GB/T 8170 (see B.6.2, B.6.2 of the 2013 edition);
- Changed the principle of carbon content determination (see C.1, C.1 of the 2013 edition);
- Changed the weighing of reference substances and samples (see C.5.3, C.5.4.1, C.5.2, C.5.3.1 of the 2013 edition);
- Changed the formula for calculating carbon content [see formula (C.1), formula (C.1) of the 2013 edition];
- Changed the reported average of the two determination results of chlorine content to 1 mg/kg in accordance with GB/T 8170 (see D.7, D.7 of the 2013 edition);
- Changed "Glass container, conical flask, $\geq 50\text{mL}$ (100mL recommended)" (see E.3.2, E.3.2 of the 2013 edition);
- Changed "If a wetting agent is used, the volume of ethanol should be reduced" (see E.5.6, E.5.4 of the 2013 edition);
- Deleted reproducibility (see E.7.2 of the 2013 edition);
- Changed the specifications of the weighing bottle (see F.2.2, F.2.2 of the 2013 edition);
- The calculation formula of volatile matter at 105°C has been changed [see formula (F.1), formula (F.1) of the 2013 edition];
- Changed Principle B Method --- Instrumental Method (see F.8, F.8 of the 2013 edition);
- Change the vibration frequency to "250 $\pm$ 15 times/min" (see G.1.1.3, G.1.1.3 of the 2013 edition);
- Changed the precision of tapped volume and tapped density (see G.5, G.5 of the 2013 edition);
- Change the sample mass to 50g (see H.5.2, H.5.1 of the 2013 edition);

- Changed the precision of 45µm sieve residue (see H.7, H.7 of the 2013 edition).

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 China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Rubber and Rubber Products of Standardization (SAC/TC35).

This document was drafted by: Guangzhou Huifu Research Institute Co., Ltd., Zhonghao Heiyuan Chemical Research and Design Institute Co., Ltd., Sichuan University of Science and Technology, Xinxing High-Tech Nano New Materials (Xuzhou) Co., Ltd., Jiangxi Bluestar Spark Silicone Co., Ltd., Jiangxi Hongbai New Materials Co., Ltd., Wacker Chemical Fumed Silica (Zhangjiagang) Co., Ltd., Emeishan Changqing New Materials Co., Ltd., Tangshan Sanfu Silicon Industry Co., Ltd., Zhengzhou Gesi Technology Development Co., Ltd. and Zhejiang Kaihua Synthetic Materials Co., Ltd.

The main drafters of this document are: Wang Yuelin, Liu Jian, Li Chunyang, Wei Qiang, Ouyang Wenwu, Wu Guoming, Zeng Meiqi, Shi Lisong, Qin Zaixing, Zhang Hongjun, Cheng Jiahui.

The previous versions of this document and the documents it replaces are as follows.

- First published as GB/T 20020-2005 in 2005 and first revised in 2013;
- This is the second revision. Fumed silica Warning. Personnel using this document should have practical experience in regular laboratory work. This document does not address all possible safety issues.

The user is responsible for taking appropriate safety and health measures and ensuring that the conditions stipulated by relevant national laws and regulations are met.

1 Scope

This document defines the terms and definitions of fumed silica, specifies product technical requirements, describes sampling and testing methods, and establishes It specifies the rules for sample inspection, stipulates the contents of marking, packaging, storage and transportation, and gives the product classification for the convenience of technical regulations.

This document applies to the production, testing and acceptance of fumed silica.

2 Normative references

GB/T 6003.1

GB/T 6682

GB/T 8170

GB/T 9724

GB/T 10722

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

Amorphous silicon dioxide and its surface-modified products generated by the hydrolysis of halogenated silanes in a high-temperature flame.

4 Categories

4.1 Fumed silica is generally divided into two categories. Type A and Type B. Type A fumed silica is not surface modified; Type B fumed silica is Silicon oxide is made from type A products through surface modification.

4.2 The product name of fumed silica is composed of the type code (A/B) and the typical nitrogen adsorption specific surface area (NSA).

See Table 1. Manufacturers can refer to the typical classification names to name newly developed fumed silica products.