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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 43760-2024

Continuous silicon carbide fiber with low oxygen and high carbon

低氧高碳型连续碳化硅纤维

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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 was prepared by the National Technical Committee on Standardization of Aerospace Technology and Its Applications (SAC/TC425) and the National Technical Committee on Standardization of Carbon Fibers It was jointly proposed and coordinated by the Committee (SAC/TC572). This document was drafted by: Fujian Liya New Materials Co., Ltd., Ningbo Zhongxing New Materials Technology Co., Ltd., Fujian Liya Chemical Co., Ltd., Hunan Ze Rui New Materials Co., Ltd., Aerospace Materials and Technology Research Institute, Aviation Industry Shenyang Aircraft Design and Research Institute, China Aviation Manufacturing Technology Research Institute, China Aerospace Standardization Institute, China Academy of Launch Vehicle Technology Material Center, Xiamen University, National University of Defense Technology, China Aerospace Shenyang Liming Aero-Engine Co., Ltd., Jiaxing Ruixin Innovation Materials Co., Ltd., Shanghai Torch Electronic Technology Group Co., Ltd. Co., Ltd., Fujian Junxiang Composite Materials Technology Co., Ltd. The main drafters of this document are. Zheng Hua, Huang Xiangxian, Yang Xiaofeng, Zhang Andong, Wang Hao, Lian Shujuan, Cai Wuji, He Weidong, Huang Xiaozhong, Feng Zhihai, Bi Shiquan, Qiu Haipeng, Li Junping, Xu Ping, Wang Ling, Jin Enze, Sun Wenting, Lin Haibo, Fu Yangmei, Zhang Yanzhen, Xu Hongci, Su Yanqing, Zhao Yunji, Wang Tiantian, Li Dongdong, Wang Yaling, Lan Lin, Li Siwei, Gou Yanzi, Wang Hanhuan, Chen Weina, Wang Zhen, Wu Bin, Xie Xianbin, Gu Xuhan. Low oxygen high carbon continuous silicon carbide

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fiber

1 Scope

GB/T 43760-2024 is the Chinese standard for low-oxygen high-carbon continuous silicon carbide fibre, the second generation SiC fibre used as the reinforcement in ceramic matrix composites for turbine hot sections and for thermal protection. The chemistry in the title is the whole point: the oxygen introduced by the curing route in first generation fibre forms an oxycarbide phase that decomposes above about 1200 degrees, and removing it, at the cost of excess carbon, is what buys the fibre its high-temperature strength retention. The standard sets the classification and designation, the requirements on chemical composition, on linear density, filament diameter, tensile strength and modulus, on the sizing and on the appearance, together with the test methods, the inspection rules, the marks, labels and accompanying documents, and the packaging, transport and storage. It applies to 0.5 K and 1 K tows and serves as a reference for others. It takes effect on 1 July 2024.

This document specifies the classification and marking, requirements, inspection methods, and inspection of low-oxygen high-carbon continuous silicon carbide fibers (hereinafter referred to as "fibers"). Rules, signs, labels and accompanying documents, packaging, transportation and storage. This document is applicable to the inspection and delivery of low-oxygen high-carbon continuous silicon carbide fibers with tow specifications of 0.5K and 1K. For reference in inspection and delivery of dimensions.

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 version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 191 Pictorial markings for packaging, storage and transportation

GB/T 16555 Chemical analysis methods for refractories containing carbon, silicon carbide and nitride

GB/T 21114 X-ray fluorescence spectrochemical analysis of refractory materials - Fused glass disc method

GB/T 26202 Paper tube paperboard

GB/T 34520.1 Test methods for continuous silicon carbide fibers Part

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3 Terms and definitions

The terms and definitions defined in GB/T 40724 and the following apply to this document.

3.1 Continuous silicon carbide fibers with an oxygen content of less than 1% and a carbon-to-silicon atomic ratio of not less than 1.3.

4 Tensile properties of bundled fibers

GB/T 34520.5 Test methods for continuous silicon carbide fibers Part

4.1 Classification

4.1.1 Classification of tow specifications The tow specification classification is represented by a number and the letter K. The number is the ratio of the number of single fibers in each tow to 1000, such as. 500 single fibers

5 Tensile properties of single fibers

GB/T 34520.7 Test methods for continuous silicon carbide fibers Part

7 High temperature strength retention

GB/T 34520.8 Test methods for continuous silicon carbide fibers Part

8 Oxygen content

GB/T 34520.9 Test methods for continuous silicon carbide fibers Part

9 Carbon content

GB/T 40724 Terminology of carbon fiber and its composite materials

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