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Test method for the volume resistivity of carbon fibre reinforced composites

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Carbon Fiber Standardization (SAC/TC572). This document was drafted by: Sinoma Science & Technology Wind Turbine Blade Co., Ltd., Goldwind Science & Technology Co., Ltd., and Anhui Teloma Technology Co., Ltd. The company, Sinoma Science & Technology Co., Ltd., Zhejiang Xinghui New Material Technology Co., Ltd., Nanjing Glass Fiber Research & Design Institute Co., Ltd. Beijing Fiberglass Research Institute Testing Center Co., Ltd., Xi'an Aibang Electromagnetic Technology Co., Ltd., Zhongfu Carbon Core Cable Technology Co., Ltd., Changzhou Da James Testing Technology Co., Ltd., China National Building Materials (Shanghai) Aviation Technology Co., Ltd., China Agricultural University, China Coal Research Institute Co., Ltd. Sinopec Shanghai Petrochemical Co., Ltd., Zhongfu Shenying Carbon Fiber Co., Ltd., CRRC Qingdao Sifang Co., Ltd. The company, Shandong Yongcheng New Materials Co., Ltd., and the Yangtze River Delta Carbon Fiber and Composite Materials Technology Innovation Center. The main drafters of this document are. Wu Weiwei, Yao Nana, Lu Xiaofeng, Wang Xiangdong, Li Chengliang, Hao Zhuang, He Yanxia, Yang Jun, Chen Cui, Chen Shuang, and Ma Dan. Song Nan, Yang Jiebiao, Han Qi, Liu Meng, Liu Chuanrui, Chen Yun, Xie Haojun, Jiang Yue, Luo Bingcheng, Gao Qichen, Zhang Yifan, Yang Xin, Li Yijing, Lian Feng, Yang Tingzhi Kan Xiaoyang, Zhang Xinwei, Mou Shuxiang, Ge Jian, Ma Ningning, Chen Chaozhong. Test method for volume resistivity of carbon fiber reinforced composites

1 Scope

GB/T 47406-2026 is the Chinese national standard covering the electrical resistivity of a

carbon composite - conductive along the fibres and much less so across them, which matters for lightning protection on an aircraft, for shielding and for the grounding of a composite structure. First edition, in force since 1 October 2026, one of five carbon fibre composite standards published together. It was issued on 31 March 2026 and takes effect on 1 October 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the principle, test materials and equipment, specimens, and testing methods for measuring the volume resistivity of carbon fiber reinforced composite materials. Conditions, experimental procedures, result calculations, and experimental reports, etc. This document applies to the determination of volume resistivity of continuous carbon fiber reinforced polymer matrix composites.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 10610 Product Geometric Specification (GPS) - Rules and methods for evaluating surface structure using the surface structure profile method GB/T 22523 Feeler gauge

GB/T 40724 Terminology for Carbon Fibers and Their Composites

3 Terms and Definitions

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

3.1 volume resistance The ratio of the DC voltage applied between the two opposing end-face electrodes of the sample to the current between the two electrodes (excluding the current along the surface).

3.2 volume resistivity The ratio of the DC electric field strength to the current density parallel to the current direction in the sample.

Note. The unit is milliohm-millimeter (mOmega·mm).

4.Principles A specified pressure is applied to two end faces of the sample in a specific direction, and the volume resistivity of the two end faces is measured using a digital micro-ohmmeter. Based on the measured values... The volume resistivity in this direction is

calculated based on the sample's volume resistivity and geometric dimensions.

5.1 Measurement System

5.1.1 General Requirements The measurement system, as shown in Figure 1, mainly consists of a pressure device, a digital micro-ohmmeter, copper foil, and an insulating plate. Measurements are taken along the slender direction of the sample.