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

GB/T 32993-2016

Determination of volume resistivity of carbon fibre

碳纤维体积电阻率的测定

(English Translation)

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the re-drafting method to modify the measurement of carbon fiber volume resistivity using ISO 13931.:2013.

This standard has a structural adjustment compared to ISO 13931.:2013, which is listed in Appendix A and ISO 13931.:2013 A comparison of the numbers.

The technical differences between this and ISO 13931.:2013 are as follows.

--- on the normative reference documents, this standard has made a technical differences in the adjustment to meet China's technical conditions, adjust the situation the situation is reflected in Chapter 2, "Normative references", as follows.

- replace ISO 1889 with equivalent GB/T 7690.1 with international standard;

Replace GB 10548 with GB/T 29761 with international standard modification;

- GB/T 29762 with international standard GB 11567;

- GB/T 30019 instead of ISO 10119 with modified international standard;

- In order to make the steps in the method more explicit, the steps in the "monofilament" sample connected to the resistance meter (see 4.3.2) are added;

- Increased number of samples and calculations of results (see 4.3.5 and 5.3.5).

This standard is proposed by the China Building Materials Federation.

This standard is the national glass fiber standardization technical committee (SAC/TC245) centralized.

The drafting of this standard. Nanjing Glass Fiber Research and Design Institute Co., Ltd.,

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1 Scope

This standard specifies the carbon fiber volume resistivity determination method, A. monofilament method and method B. yarn bundle method.

This standard applies to carbon fiber tow, carbon fiber yarn and so on.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 7690.1 Reinforcements - Test methods for yarns - Part 1. Determination of linear density (GB/T 7690.1..2013, ISO 1889.:2009, IDT) GB/T 29761 Determination of carbon fiber sizing agent content (GB/T 29761..2013, ISO 10548.:2002, MOD) GB/T 29762 Determination of Diameter and Cross Section of Carbon Fiber (GB/T 29762; 2013, ISO 11567.:1995, MOD) GB/T 30019 Determination of carbon fiber density (GB/T 30019..2013, ISO 10119.:2002, MOD)

3 Principle

The volume resistivity is calculated from the resistance of the specimen, the length of the specimen, and the cross-sectional area. The resistance and sample length are measured by the test. method A specifies the method for the determination of the volume resistivity of carbon fiber monofilaments, the cross-sectional area of which is calculated from the diameter of the monofilament. Method B specifies the carbon fiber the method of measuring the volume resistivity of the yarn bundle is calculated based on the density and the linear density of the sample.

4.1 Instruments and materials

4.1.1

Length measuring tool with an accuracy of 0.1mm.

4.1.2

DC resistance tester, the accuracy of not less than 0.5%.

4.1.3

Specimen box, with a thickness of about 0.3 mm, with a length of 25 ± 0.5 mm.

4.2 Samples

4.2.1

cut from the sample length of 40mm ~ 50mm of the yarn segment, and root separation into monofilaments.

4.2.2

Take a monofilament straight along the center line of the specimen frame (5.1.3) (see 1 in Figure 1) and bond it to the ends of the specimen frame with a conductive adhesive (See Figure 3, 3), the formation of two nodes, at each node and then with a conductive adhesive bonding a copper wire (see Figure 1 2), so that Connected to fiber monofilament, copper wire is used to connect DC resistance tester. Prepare at least 3 samples.

4.2.3

Place the prepared sample at a temperature of $(23 \pm 2) ^\circ \text{C}$ and a relative humidity of $(50 \pm 10)\%$ for at least 2 h, the organic solvent in the agent is fully evaporated.