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

GB/T 8924-2026

Replacing GB/T 8924-2005

**Test method for the flammability characteristics of fibre
reinforced plastics - Oxygen index method**

纤维增强塑料燃烧性能试验方法 氧指数法

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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. This document

replaces GB/T 8924-2005 "Test Method for Combustion Performance of Fiber Reinforced Plastics - Oxygen Index Method", and is consistent with GB/T 8924- Compared to.2005, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope of applicable materials has been changed (see Chapter 1, Chapter 1 of the.2005 edition);
- b) The requirements for gas control and measurement devices have been changed (see 5.4, 5.1.3 of the.2005 edition);
- c) The sample quantity requirements have been changed (see 6.3,.2005 version 6.3);
- d) Requirements for markings and burning distances have been added (see
- e) The method for obtaining results has been changed (see 7.10, 7.7.1 of the.2005 edition, and Appendix A);
- f) The step size requirements have been changed (see 7.10.2.3 and 7.10.2.4, A.2.13.2 and A.2.13.3 of the.2005 edition);
- g) The calculation of the oxygen index has been changed (see Chapter 8, Chapter 8 in the.2005 edition);
- h) The representation of the test results has been changed (see Chapter 9, Chapter 9 of the.2005 edition). 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 by the China Building Materials Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Fiber Reinforced Plastics (SAC/TC39). This document was drafted by: Luoyang Shipbuilding Materials Research Institute (725th Research Institute of China Shipbuilding Group Corporation) and China Classification Society Shanghai Branch. Standards Research Institute, Shandong Non-metallic Materials Research Institute, Sichuan Fire Research Institute of the Ministry of Emergency Management, and Taistek (Suzhou) Testing Instruments Technology Co., Ltd. The company, Modis Combustion Technology (Suzhou) Co., Ltd., and Beijing Fiberglass Research and Design Institute Co., Ltd. The main drafters of this document are. Li Xiang, Wang Fangling, Yao Haiying, Wang Qianqian, Zhu Jian, Wang Wei, Chen Junhui, Wang Zhandong, Ji Bing, and Hu Changfei. Wu Yanpeng, Sun Yan, Li Xili, Zhang Xiaomei, Fan Yuting, Wang Haiyang. This document was first published in 1988, revised for the first time in.2005, and this is the second revision. Test methods for the combustion performance of fiber-reinforced plastics Oxygen Index Method

1.Scope This document specifies the principle, test apparatus, specimen, test procedure, result calculation, and test results for the oxygen index test of fiber-reinforced plastics. Test

report. This document applies to the determination of the oxygen index of fiber-reinforced plastics, but not to the evaluation of materials that exhibit high shrinkage rates after heating.

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 1446 General Rules for Test Methods of Properties of Fiber Reinforced Plastics

GB/T 3863 Industrial Oxygen

GB/T 3864 Industrial Nitrogen

3. Terms and Definitions The following terms and definitions apply to this document.

3.1 oxygen index The minimum oxygen concentration required to maintain material combustion in a nitrogen and oxygen mixture at $(23 \pm 2)^{\circ}\text{C}$, expressed as a volume fraction.

4. Principles The sample is vertically fixed in the combustion chamber. An oxygen-nitrogen mixture flows upwards through the sample, igniting the top of the sample. Timing and observation of the combustion process are performed simultaneously. The burning length was compared with the prescribed criteria. A group of samples were tested in different oxygen concentrations, and the maximum burning length at which the sample could just maintain stable combustion was determined. The oxygen concentration is expressed as the volume fraction of oxygen in the gas mixture.

5 Experimental Apparatus

5.1 General Rules A schematic diagram of an oxygen index meter is shown in Figure 1, and it should include at least the components specified in

5.2 Combustion Tube Heat-resistant glass with an inner diameter of 75mm~100mm, a height of 450mm~500mm, and an inner diameter of 40mm at the outlet of the top flow restrictor cover. The tube is vertically fixed to a base through which oxygen and nitrogen mixed gas flows. The bottom is filled with glass beads with a diameter of 3mm to 5mm, to a height of The diameter is 80mm to 100mm. A metal mesh is placed above the glass beads to prevent falling combustion debris from blocking the gas inlet and gas distribution passage.

5.3 Sample holder A component capable of being fixed at the center of the combustion cylinder shaft and vertically clamping the sample. The contours of the sample clamp and its support should be smooth to facilitate the application of the sample. Minimize the

turbulence of the incoming gas.

5.4 Gas control and measurement devices

5.4.1 Gas Control Device The volume fraction of oxygen in the gas mixture entering the combustion chamber is controlled with a resolution of 0.1%. The gas flow rate is (40 ± 2) mm/s. At that time, the oxygen concentration adjustment accuracy shall not be less than $\pm 0.2\%$.

5.4.2 Gas Measuring Device The volume fraction of oxygen in the gas mixture entering the combustion chamber is measured with an accuracy of $\pm 0.1\%$.

5.5 Gas Supply System The gas supply system consists of oxygen and nitrogen cylinders and a pressure regulating device. Oxygen should conform to

GB/T 3863, and nitrogen should conform to... According to

GB/T 3864, the operating pressure of the gas should not be lower than 1 MPa.

5.6 Igniter Made of a metal tube with a nozzle at the tip (2 ± 1) mm inner diameter, the flame length is adjustable and can ignite the test flame above the combustion chamber. Similarly, when the nozzle is pointing vertically downwards, the flame length is (16 ± 4) mm. The fuel gas is propane, butane, natural gas, etc. During arbitration testing, propane without air should be used as the ignition gas.

5.7 Smoke Exhaust System It can remove smoke and ash particles produced by combustion, but should not affect the flow rate and temperature of the gas in the combustion chamber.

5.8 Other

5.8.1 Stopwatch Accuracy ± 0.5 s.

5.8.2 Vernier calipers Accuracy 0.01mm.

6 Samples

6.1 Sample Preparation Prepare the test specimens according to the relevant provisions of GB/T 1446.

6.2 Sample Size The sample length is 70mm~150mm, the width is (6.5 ± 0.5) mm, and the thickness is (3.00 ± 0.25) mm. Samples of other thicknesses are also available. Experiments can be conducted, but the results can only be compared at the same thickness.

6.3 Number of Samples Each group of samples shall contain no fewer than 15 specimens.

6.4 Appearance Requirements The appearance of the test specimen shall comply with the relevant provisions of GB/T 1446.