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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 46539-2025

Geosynthetics - Test for UV ageing resistance - Fluorescent UV lamp method

土工合成材料 抗紫外老化性能试验 荧光紫外灯法

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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. 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 National Textile and Apparel Council. This document is under the jurisdiction of the National Technical Committee on Standardization of Industrial Textiles (SAC/TC606). The main drafting units of this document are. Shanghai Survey and Design Institute Co., Ltd., Three Gorges (Shanghai) Engineering Testing Co., Ltd., and China Textile Standard Inspection Co., Ltd. Certification Co., Ltd., Highway Research Institute of the Ministry of Transport, Sinopec (Beijing) Chemical Research Institute Co., Ltd., Hohai University, Donghua University School, China Communications Construction Tianjin Port Engineering Research Institute Co., Ltd., Three Gorges University, Shanxi Provincial Transportation Construction Engineering Quality Testing Center (Co., Ltd.), Shanghai Shanghai Municipal Transportation Construction Engineering Management Center, Xinjiang Agricultural University, Ametek Trading (Shanghai) Co., Ltd., and Copano Laboratory Equipment Company (USA) Haikou Representative Office, Tianjin Meters Testing Machine Factory, Wenzhou Jigao Testing Instruments Co., Ltd., Shandong Jingchuang New Material Technology Co., Ltd., Shanghai Tong Ji Testing Technology Co., Ltd., Xinjiang Transportation Planning Survey and Design Institute Co., Ltd., Yunnan Zhanpeng Geotechnical Materials Manufacturing Co., Ltd., and Oute Mining (Jilin) Co., Ltd., Shandong Dongkai Engineering Materials Co., Ltd., Luzhou Shengyang New Materials Co., Ltd., Qingdao Xuyu Geotechnical Materials Co., Ltd. Limited Liability Company, Zhejiang Weimei Environmental Protection Engineering Technology Co., Ltd., Jiangsu Jinba Environmental Technology Co., Ltd., and Maokang Materials Technology (Changshu) Co., Ltd. Limited Liability Company, Haobo (Shandong) New Material Technology Co., Ltd. The main drafters of this document are. Zhang Pengcheng, Fang Yuanyuan, Zheng Yiming, Liu Ying, Ding Jinhai, Wu Haimin, Huang Chen, Zheng Airong, Gu Jin, and Ding Jinhua. Tan Yunzhi, Zhang Jun, Deng Huafeng, Sun Zhijie, Zhang Tianxiang, Cao Lingling, Sun Xinglei, Zang Xiangli, Wu Jianguo, Feng Zhongchao, Lian Ping, Liu Jie, Lü Jiansong, Fu Quanyang, Niu

Likai, He Wanlong, Zheng Hong, Hu Yicheng, Chen Ximing, Tang Sheng, Li Wei, Wang Xiaohaobo. Geosynthetics resist UV aging Performance testing using fluorescent ultraviolet lamp method

1 Scope

GB/T 46539-2025 is the Chinese national standard covering ageing a geotextile or geomembrane under fluorescent UV lamps - the lamp type and irradiance, the cycles of light and condensation, the exposure durations, and the retained strength that decides how long the material may lie exposed before it is covered. First edition, under the China National Textile and Apparel Council. In force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026.

6.Oxidation Induction Time (Isothermal OIT) and Oxidation Induction Temperature (Dynamic OIT) Measurement

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 3923.1 Textiles - Tensile properties of fabrics - Part

GB/T 13760 Sampling and Specimen Preparation of Geosynthetics

GB/T 15788 Geosynthetics - Tensile Testing Method for Wide Strips

GB/T 17689 Geosynthetics - Plastic Geogrids

GB/T 19466.6 Differential Scanning Calorimetry (DSC) for Plastics - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 irradiance Irradiance flux per unit area within a specified wavelength range.

Note. The unit is watts per square meter (W/m2).

3.2 The phenomenon of materials undergoing structural changes and gradual performance degradation when exposed to laboratory aging equipment.

4.Principles Exposure tests were conducted on samples in an artificially accelerated aging device with a controlled environment to simulate ultraviolet radiation, heat, and humidity under natural conditions. The aging effect of water on materials. This is achieved by

measuring relevant properties (such as tensile strength, elongation, etc.) of the samples before and after artificially accelerated aging and calculating... Its performance retention rate is used to characterize the material's resistance to ultraviolet aging.