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GB/T 43128-2023

General technology specification for aerospace thermoplastic polyurethane elastomer intermediate film

航空航天热塑性聚氨酯弹性体中间膜通用技术规范

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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 be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed and coordinated by the National Aircraft Standardization Technical Committee (SAC/TC435). This document was drafted by: Shengding High-tech Materials Co., Ltd., China Aviation Industry Corporation Xi'an Aircraft Design Institute, China Aviation Development Beijing Aeronautical Materials Research Institute, Fangding Technology Co., Ltd., Aviation Industry Corporation of China Chengdu Aircraft Design Institute, Shenyang Aircraft Industry (Group) Co., Ltd., China Aviation Industry Corporation Luoyang Electro-Optical Equipment Research Institute, Institute of Chemistry, Chinese Academy of Sciences, China Building Materials General Research Institute Co., Ltd., Qinhuangdao Glass Industry Research and Design Institute Co., Ltd., Nanjing Forestry University, Chengdu Jufeng Glass Co., Ltd., Shanghai Yaopi Glass Group Co., Ltd., Zhejiang Meidun Protection Technology Co., Ltd., Qinhuangdao Yaohua Industrial Technology Glass Co., Ltd., Beijing Jinghang Glass New Material Technology Co., Ltd. The main drafters of this document. Wang Chao, Wang Junhe, Han Liquan, Zhang Xiaowen, Zhao Zhiguo, Ren Xiujun, Liu Zhanping, Yan Fengwen, Zhang Min, Zhang Zeliang, Liu Tao, Zhang Hui, Chen Weisai, Sun Chuntian, Luo Zhenyang, Luo Yanlong, Zhou Linlin, Liu Zheng, Shen Xinhai, Chen Hairong, Wang Zhonghui, Ou Yingchun, Zhu Zhiguo, Wang Li, Liu Buyao. Aerospace thermoplastic polyurethane elastomer interlayer film General technical specifications

1 Scope

GB/T 43128-2023 is the general technical specification for the thermoplastic polyurethane interlayer film used in aerospace transparencies. It is the material that bonds the plies of a cockpit windshield or a cabin window and holds them together after an impact: it must stay optically clear, keep its adhesion through decades of thermal cycling between ground heat and stratospheric cold, and not yellow under ultraviolet at altitude. The standard sets the performance levels and then the technical requirements: appearance quality, dimensions, tensile and tear properties, bonding strength, indentation hardness, glass transition temperature, haze, transmittance, heat resistance, moisture resistance and resistance to ultraviolet radiation, together with the corresponding test methods and inspection rules. It took effect on 1 April 2024.

This document specifies the general technical requirements for thermoplastic polyurethane elastomer interlayer films for aerospace use and describes the corresponding test methods. This document is applicable to the design, manufacturing and inspection of thermoplastic polyurethane elastomer interlayer films (hereinafter referred to as "TPU films") for aerospace applications. Acceptance, transportation and storage.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 191 Packaging, storage and transportation pictorial mark

GB/T 528-2009 Determination of tensile stress and strain properties of vulcanized rubber or thermoplastic rubber

GB/T 529-2008 Determination of tear strength of vulcanized rubber or thermoplastic rubber (trouser-shaped, right-angled and crescent-shaped specimens)

GB/T 531.1-2008 Test method for indentation hardness of vulcanized rubber or thermoplastic rubber Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 bubblebubble Round, oval, linear or dot-shaped transparent bubbles formed by gas inclusions inside the TPU film.

3.2 tensile strengthtensilestrength The maximum tensile stress during which the specimen is stretched to rupture. [Source: GB/T 528-2008,3.3]

3.3 elongation at break The percent elongation of the specimen at break. [Source: GB/T 528-2008,3.5]

3.4 Apply an external force along the length of the specimen to the specified right-angled specimen, and divide the maximum force required to tear the specimen by the test thickness. [Source: GB/T 529-2008,3.2]