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

GB/T 43763-2024

**Space functional coatings - Metallic coatings on special
non-metallic materials**

航天功能镀覆层 特种非金属材料金属镀层

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is provided by the National Technical Committee on Aerospace Technology and Its Applications (SAC/TC425), the National Technical Committee on Metal and Non-metal Coverings It was proposed and coordinated by the Standardization Technical Committee (SAC/TC57). This document was drafted by: Beijing Satellite Manufacturing Co., Ltd., China Aerospace Standardization Institute, China Machinery Engineering Academy Group Wuhan Materials Protection Research Institute Co., Ltd., Beijing Xingchi Hengdong Technology Development Co., Ltd., China Electronics Technology Group Corporation 29th Institute, China The 38th Institute of Electronic Technology Group Corporation, the Institute of Aerospace Materials and Technology, Xi'an Aerospace Engine Co., Ltd., Chengdu Tiger Aerospace Tianhang Aviation Technology Co., Ltd. The main drafters of this document are. Liu Lixia, Chen Xuecheng, Wang Nan, Zhang Jiaqiang, Han Jianchao, Cheng De, Gu Xuhan, Zhang Dezhong, Zhao Changxi, Zhang Ligong, Liu Jingbo, Lu Haiyan, Li Junfeng, Yang Zhanzhan, Hui Tianli, Wang Tiantian, Jiang Mingxia, Bai Jie, Yi Juan, Yang Xin. Aerospace functional coating Special non-metallic material metal coating

1 Scope

GB/T 43763-2024 specifies the metallic coatings applied to special non-metallic materials for spaceflight. Spacecraft structures are increasingly made of composites, ceramics and engineering plastics chosen for stiffness and mass, and each of those choices removes a

property the designer still needs: electrical conductivity for grounding and EMI shielding, a surface that can be soldered, and a defined thermo-optical behaviour. A plated metal layer restores them, but it has to adhere to a substrate that expands differently, and survive thermal cycling in vacuum without blistering or shedding. The standard sets the technical requirements and test methods, the inspection rules, the marking and accompanying documents, and the packaging, transport and storage provisions, with normative annexes giving the test method for the conductivity of the coating and the test method for its high temperature resistance. It took effect on 1 July 2024.

This document specifies polyetheretherketone (PEEK), polyphenylene sulfide (PPS), polyimide (PI), liquid crystal polymer (LCP) and their composites Technical requirements, test methods, inspection rules, standards and other requirements for functional metal coatings on the surface of special non-metallic materials (hereinafter referred to as special non-metallic materials) Identification and accompanying documents, packaging, transportation and storage. This document is applicable to the surface of special non-metallic materials for aerospace use, nickel-gold plating, nickel-silver plating prepared by electroplating or chemical plating Inspection and acceptance of metal platings that achieve conductive and welding functions, such as copper-nickel-gold plating, copper-nickel-silver plating, and nickel plating, and other special It is used as a reference for the inspection and acceptance of metal coatings on various non-metallic materials.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 2828.1 Sampling procedures for inspection by attributes Part

3 Terms and definitions

The terms and definitions defined in GB/T 3138 apply to this document.

4 Technical requirements

4.1 Pre-treatment before plating Before surface electroplating or chemical plating, special non-metallic materials used for plating should be treated with acetone, ethyl acetate or other methods. The surface release agent is removed before plating.

4.2 Coating structure The metal coating of special non-metallic materials generally consists of a base coating, an intermediate coating and a surface coating, and the requirements are as follows:

- a) The bottom plating layer should be chemical copper plating or chemical nickel plating;

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