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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12967.4-2022

Replacing GB/T 12967.4-2014

Test methods for anodic oxidation coatings and organic polymer coatings on aluminium and aluminium alloys - Part 4: Determination of ultraviolet light and heat resistance

铝及铝合金阳极氧化膜及有机聚合物膜检测方法 第4部分：耐光热性能的测定

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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 of Standardization Documents" drafted. This document is part 4 of GB/T 12967 "Testing Methods for Anodic Oxidation Films and Organic Polymer Films of Aluminum and Aluminum Alloys". GB/T 12967 The following sections have been published.

1.Determination of abrasion resistance;

3.Salt spray test;

4.Determination of light and heat resistance;

5.Determination of rupture resistance;

6.Color difference and appearance quality. This document replaces GB/T 12967.4-2014 "Test methods for anodic oxide films of aluminum and aluminum alloys - Part

4.Colored anodic oxide films Determination of Ultraviolet Light Resistance", compared with GB/T 12967.4-2014, except for structural adjustment and editorial modification, the main technical changes as follows:

--- Changed the applicable object of "scope", adding aluminum and aluminum alloy anodized composite films and organic polymer films (see Chapter 1, Chapter 1 of the.2014 edition);

--- Added "normative references" (see Chapter 2);

--- Added "Terms and Definitions" (see Chapter 3);

--- Added the principle of weather resistance test and heat resistance test in "Method Overview" (see Chapter 4, Chapter 2 of the.2014 edition);

--- Added the content of fluorescent ultraviolet and xenon light sources in "Instrument and

Equipment" (see Chapter 5, Appendix A, Chapter 3 of the.2014 edition);

--- Added "sample" (see Chapter 6);

1 Scope

GB/T 12967.4-2022 is the Chinese national standard on test methods for anodic oxidation coatings and organic polymer coatings on aluminium and aluminium alloys - part 4: determination of ultraviolet light and heat resistance, in the field of manufacturing engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 9 March 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2022. Classification: ICS 25.220.20, CCS H20. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

2.Mass loss method, GB/T 8014.3 "Measurement method of thickness of anodic oxide film of aluminum and aluminum alloy Part

3.Spectral beam microscopy, GB/T 8752 "Continuity test method for anodized thin anodic oxide films of aluminum and aluminum alloys" Acid copper method", GB/T 8753.1 "Evaluation method for sealing quality of anodized oxide films of aluminum and aluminum alloys - Part

1.Acid etching weight loss Law", GB/T 8753.3 "Assessment Method for Sealing Quality of Anodized Oxidation Films of Aluminum and Aluminum Alloys Part

3.Admittance Method", GB/T 8753.4 "Assessment Method for Sealing Quality of Anodized Oxidation Films of Aluminum and Aluminum Alloys Part

4.Staining Spots After Acid Treatment Law", GB/T 8754 "Determination of Insulation Properties of Anodized Films of Aluminum and Aluminum Alloys and Organic Polymer Films", GB/T 20503 "Aluminum and Aluminum Alloys" Determination of Specular Reflectance and Specular Gloss of Anodized Anodized Films", GB/T 20504 "Aluminium and Aluminum Alloy Anodic Oxidation Standard method for the determination of image clarity of chemical film", GB/T 20505 "Determination of surface reflection characteristics of anodized anodic oxide film of aluminum and aluminum alloys" The Definite Integrating Sphere Method together constitutes the standard system of detection methods for aluminum and aluminum alloy anodic oxide films and organic polymer films. GB/T 12967 consists of five parts.

1.Determination of abrasion resistance. The purpose is to establish the wear resistance

evaluation method of anodic oxide film and organic polymer film layer;

3.Salt spray test. The purpose is to establish the evaluation method of salt spray resistance of anodic oxide film and organic polymer film layer;

4.Determination of light and heat resistance. The purpose is to establish the weather resistance and resistance of the anodic oxide film and the organic polymer film layer. Thermal performance evaluation method;

5.Determination of rupture resistance. The purpose is to establish the evaluation of crack resistance of anodic oxide film and organic polymer film layer method;

6.Color difference and appearance quality. The purpose is to establish the color difference and appearance quality of the anodized film and organic polymer film layer Evaluation method. In.1991, my country identically adopted ISO 6581.1980 "Measurement of UV resistance of anodized and colored anodic oxide films of aluminum and aluminum alloys". For the first time, GB/T 12967.4-1991 "Determination of Ultraviolet Light Resistance of Anodized Colored Anodized Films of Aluminum and Aluminum Alloys" was formulated. In.2014, my country revised and adopted ISO 6581.2010 "Determination of UV resistance of anodized and colored anodic oxide films of aluminum and aluminum alloys", Published GB/T 12967.4-2014 "Testing methods for anodized films of aluminum and aluminum alloys - Part

4.Colored anodic oxide films are resistant to ultraviolet light Determination of Performance". GB/T 12967.4-2014 replaces GB/T 12967.4-1991, increasing the scope of application, control samples and tests reporting requirements. In recent years, anodized films or organic polymer texture films made of various surface film preparation techniques and texture processing methods The application of aluminum alloy products is more and more extensive, and the development prospect is broad. The existing standards cannot meet the weather resistance and heat resistance of different types of films. Therefore, it is necessary to specify in GB/T 12967.4 the light and heat resistance test and evaluation methods applicable to different types of films, so as to be suitable for It should meet the performance testing and evaluation requirements of different film layers. This document focuses on supplementing the natural exposure test of anodized composite film, organic polymer film, fluorescent UV weather resistance test, xenon lamp plus Rapid weather resistance test and heat resistance test and evaluation method of anodized films and organic polymer films. Aluminum and aluminum alloy anodized films and organic polymer films Test methods - Part

2 Normative references

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

GB/T 250 Textile color fastness test gray sample card for evaluating discoloration

GB/T 1766 Paint and varnish coating aging rating method

GB/T 4957 Non-conductive coating layer thickness measurement on non-magnetic base metal by eddy current method

GB/T 6461 Rating of Specimens and Specimens After Corrosion Tests of Metal and Other Inorganic Coatings on Metal Substrates

GB/T 8005.3 Terms of Aluminum and Aluminum Alloys Part

3 Surface Treatment

GB/T 9276 Coating natural weather exposure test method

GB/T 9754 Paints and varnishes Determination of 20°, 60° and 85° specular gloss of paint films without metallic pigments

GB/T 9761 Visual Colorimetry of Paints and Clearcoats

GB/T 11186.3 Measurement method for color of coating film Part

4 Method overview

When the product is affected by solar radiation, thermal radiation and water erosion, aging phenomena such as discoloration, loss of light, chalking, corrosion and cracking will occur. for To determine the effects of light, heat and water on the properties of the product film, conduct natural exposure tests according to the following methods, or in controlled laboratory environmental conditions Accelerated weather resistance test and heat resistance test are carried out under the following conditions. According to the aging of the samples after the test, evaluate the light and heat resistance of the product in different environments

6 Color difference and appearance quality

GB/T 16422.1 Plastic Laboratory Light Source Exposure Test Method Part