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

GB/T 22638.2-2016

Replacing GB/T 22638.2-2008

**Test methods for aluminium and aluminium alloy foils - Part 2:
Determination of pinhole**

铝箔试验方法 第2部分：针孔的检测

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 Principle of the method
- 5 Apparatus and equipment
- 5.1 Observation room and pinhole box
- 6 Test sample
- 7 Determination steps
 - 7.1 Determination of the number of pinholes
 - 7.2 Determination of the diameter of pinhole
- 8 Determination of cube texture content; -- Part
- 9 Determination of hydrophilic property; -- Part

Foreword

GB/T 22638, Test methods for aluminium and aluminium alloy foils, is divided into 10 parts.
-- Part

1 Scope

GB/T 22638.2-2016 is the Chinese national standard on test methods for aluminium and aluminium alloy foils - part 2: determination of pinhole, in the field of metallurgy. 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 13 December 2016 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 November 2017. Classification: ICS 77.040.01, 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.

This Part of GB/T 22638 specifies the test methods for the determination of pinhole in aluminium and aluminium alloy foils. This Part applies to the determination of the number and diameter of pinholes in aluminium and aluminium alloy foils. This Part also applies to

the determination of the roller pit aperture for aluminium and aluminium alloy foils.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

GB/T 26492.4-2011, Defects for wrought aluminium and aluminium alloys ingots and products - Part

3 Terms and definitions

The following terms and definitions, as well as those given in GB/T 26492.4-2011, apply to this document. For convenience, some terms and definitions in GB/T 26492.4- 2011 are repeated below.

3.1 pinhole The irregular small hole - on the surface of aluminium and aluminium alloy foils - visible when held up to the light, with the maximum diameter usually not exceeding

0.2 mm.

Note. GB/T 26492.4-2011, definition 2.24, modified.

4 Principle of the method

By utilizing the light transmittance of pinholes in aluminium and aluminium alloy foils, test the number and diameter of pinholes under specified environmental conditions and light source conditions.

5.1 Observation room and pinhole box

5.1.1 A schematic diagram of the observation room and pinhole box is shown in Figure 1.

5.1.2 The pinhole box should preferably be made of wood. The upper surface of the box shall be a piece of frosted glass with a thickness of 5 mm. A test surface of suitable area should be left on the frosted glass surface, and the area of the test surface should not be less than

0.1 m

2.Light shall not be transmitted from all sides.

5.1.3 The pinhole box shall contain a light source, and the illuminance transmitted through

frosted glass shall be 1 000 lx ~ 1 500 lx, with the light evenly distributed on the test surface.

5.1.4 The ambient illuminance in the observation area above the test surface of the sample shall be 20 lx ~ 50 lx.

5.2 Reading microscope Reading microscope, magnification 10x ~ 20x.

6 Test sample

6.1 After removing the wrinkled part of the outer layer of the aluminium foil roll, cut a full-width test sample from the foil roll.

6.2 The surface of the test sample shall be flat and free from wrinkles or creases.

6.3 For the test of the number of pinholes, the sample size shall be as equal to or greater than the test surface size as possible. If the test sample fails to cover the test surface, the uncovered portion shall be shielded to ensure accurate test results.

6.4 For the test of the diameter of pinholes, the sample shall be larger than the objective lens area of the reading microscope.

7.1 Determination of the number of pinholes

7.1.1 In the observation room, place the aluminium and aluminium alloy foil to be tested on the test surface of the pinhole box and count the visible pinholes, ignoring pinholes with a diameter less than

0.02 mm.

7.1.2 The observation distance shall be approximately

0.5 m, and the observer's visual acuity (or corrected visual acuity) shall not be less than 5.0.

7.1.3 The dark side of the aluminium and aluminium alloy foils shall be the test side.

7.1.4 When testing aluminium and aluminium alloy foils for use as a power capacitor, a test frame with a

25.4 mm (or 100 mm x 100 mm) area cut off in the middle should be used to move on the aluminium and aluminium alloy foils and the pinholes visible in the densest area shall be counted.

7.2 Determination of the diameter of pinhole

7.2.1 Place the aluminium and aluminium alloy foil with pinholes on the pinhole box, with the dark side facing up.

9 Determination of hydrophilic property; -- Part

10. Determination of mass per unit area (surface density) of coatings. This Part is Part 2 of GB/T 22638. This Part was drafted in accordance with the rules given in GB/T 1.1-2009. This Part replaces GB/T 22638.2-2008, Test methods for aluminium and aluminium alloy foils - Part

2. Determination of porosity. Compared with GB/T 22638.2-2008, the major technical changes of this Part are as follows: -- Modify the English terminology for "pinhole" in the standard name; -- Modify the description of the Scope; -- Add Normative references; -- Give the definition of pinhole; -- Modify the descriptions of observation room and pinhole box, changing the test surface area to "suitable area" and specifying that it "should not be less than

0.1 m²"; -- Change the illuminance transmitted through frosted glass to "1 000 lx ~ 1 500 lx", and add requirements for the test location of ambient illuminance; Test methods for aluminium and aluminium alloy foils - Part