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

GB/T 3198-2020

Aluminium and aluminium alloy foils

铝及铝合金箔

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1 Scope

China's national product standard for aluminium and aluminium alloy foil, and the current edition of GB/T 3198, replacing the 2010 edition. It specifies the requirements, the test methods, the inspection rules, the marking, packaging, transport and storage, the quality certificate and the content of the order or contract for these foils. Foil is aluminium rolled thinner than 0.2 mm, and at that thickness the material becomes a different product from sheet in almost every respect that matters commercially. It is made by rolling two layers together in the final pass - which is why household foil has one bright side and one matt side, and why the standard classifies foil as single-sided glossy or double-sided glossy and requires the purchaser to state which is wanted. It cannot be handled without support, so it is supplied as coil on a core and its winding, edge condition and core dimensions are as much part of the specification as its thickness. And its defects are of a kind that only exist at this thickness: pinholes, which are through-holes that make the foil permeable, and thickness variation across the width, which shows immediately as slack or tight edges when the coil is unwound. The uses divide into packaging, where a barrier without pinholes is the

whole requirement, and technical applications - heat exchanger fin stock, electrolytic capacitor foil, cable shielding, lithium battery current collector - where the mechanical and electrical properties dominate. Two informative annexes support the latter: the DC resistance of 1145 and 1235 foils, and the densities of common aluminium alloys. Issued on 31 March 2020 and in force since 1 February 2021.

This Standard stipulates the requirements, test methods, inspection rules, marking, packaging, transportation, storage, quality certificate and order form (or contract) content of aluminum and aluminum alloy foils. This Standard is applicable to aluminum and aluminum alloy foils (hereinafter referred to as aluminum foils).

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 454 Paper - Determination of Bursting Strength

GB/T 3190 Chemical Composition of Wrought Aluminum and Aluminum Alloys

GB/T 3199 Wrought Aluminum and Aluminum Alloy Products - Packing, Marking, Transporting and Storing

GB/T 7999 Optical Emission Spectrometric Analysis Method of Aluminum and Aluminum Alloys

GB/T 8170 Rules of Rounding-off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 16865 Test Pieces for Tensile Test for Wrought Aluminum and Magnesium Alloy Products

GB/T 17432 Methods for Sampling for Analyzing the Chemical Composition of Wrought Aluminum and Aluminum Alloys

GB/T 20975 (all parts) Methods for Chemical Analysis of Aluminum and Aluminum Alloys

3.1 Product Classification

3.1.1 The designations, states and dimensions of aluminum foils are shown in Table 1. When the demand-side demands other designations, states and dimensions, the demand-side and the supply-side shall negotiate and determine them; indicate them in the order form (or contract). of Coil

3.1.2 Aluminum foils are classified into single-sided glossy aluminum foils and double-

sided glossy aluminum foils. The demand-side shall indicate in the order form (or contract) the delivery by single-sided glossy aluminum foils or double-sided glossy aluminum foils. Single-sided glossy aluminum foils shall be rolled out with the bright side facing out for delivery. When they are required to be delivered with the dark side facing out, it shall be negotiated and determined by the demand-side and the supply-side; indicated in the order form (or contract).

3.2 Chemical Composition The chemical composition of aluminum foils shall comply with the stipulations of GB/T 3190. When there are special requirements for chemical composition, the demand-side and the supply-side shall negotiate and determine them; indicate them in the order form (or contract).

4.2 Dimensional Deviation

4.2.1 Dimensional rounding-off Inner Diameter of Core Allowable Deviation of Inner Diameter Rounding-off is not allowed in the measured value of dimensions. The determination method of limit values shall comply with the stipulations of GB/T 8170.

4.2.2 Local thickness The local thickness of aluminum foils shall be measured by an instrument that can ensure the accuracy of inspection. The thickness determination method of aluminum foils whose thickness is less than 0.1000 mm shall comply with the stipulations of GB/T 22638.1.

4.2.3 Average thickness Average thickness shall be calculated in accordance with Formula (1).

4.2.4 Other dimensions Other dimensions of aluminum foil shall be measured by tools or instruments that can ensure corresponding accuracy.

4.3 Room-temperature Tensile Mechanical Properties The room-temperature tensile mechanical property test of aluminum foils shall be conducted in accordance with the methods stipulated in GB/T 16865.

4.4 Pinhole Pinholes of aluminum foils shall be inspected in accordance with the methods stipulated in GB/T 22638.2. The test method of online pinhole inspection shall be negotiated and determined by the demand-side and the supply-side; indicated in the order form (or contract).

4.5 Stickiness The stickiness of aluminum foils shall be inspected in accordance with the methods stipulated in GB/T 22638.3. The arbitration inspection method shall comply with the overall inspection method stipulated in GB/T 22638.3.

4.6 Surface Wetting Tension The surface wetting tension of aluminum foils shall be determined in accordance with the methods stipulated in GB/T 22638.4. The arbitration inspection method shall comply with the wiping method stipulated in GB/T 22638.4.

4.7 Wettability The wettability of aluminum foils shall be inspected in accordance with the

methods stipulated in GB/T 22638.5. The arbitration inspection method shall comply with the wiping method stipulated in GB/T 22638.5.

4.8 DC Resistance The DC resistance of aluminum foils shall be determined in accordance with the methods stipulated in GB/T 22638.6. In terms of the DC resistance of aluminum foils, the supply-side may adopt a blank (the surface of the sample shall be clean and free of oil marks) with a specified thickness (generally,

0.25 mm ~

0.36 mm) to test the DC resistance as the test result of the aluminum foils.

4.9 Heat Seal Strength The heat seal strength of aluminum foils shall be determined in accordance with the methods stipulated in GB/T 22638.7.

4.10 Bursting Strength The bursting strength of aluminum foils shall take the stipulations of GB/T 454 as a reference.

5.1 Inspection and Acceptance Inspection

5.1.1 The products shall be inspected by the supply-side, which shall ensure that product quality complies with the stipulations of this Standard and the order form (or contract). In addition, a quality certificate shall be filled out.

5.2 Group Batch Products shall be submitted for acceptance inspection in batches. Each batch shall be constituted of products of the same designation, state and dimensions. The batch weight is unlimited.

5.3 Weighting Products shall be inspected and actually weighed (unless it is otherwise agreed by the supply-side and the demand-side).

5.4 Inspection Items and Process Assurance Items Exit-factory inspection items, periodic inspection items and process assurance items shall comply with the stipulations in Table

12. The supply-side shall conduct periodic inspection at least once a year.

5.5 Sampling Product sampling shall comply with the stipulations in Table 13.

5.6 Determination of Inspection Result

5.6.1 When the chemical composition of any sample is disqualified, and the melting times can be distinguished from the products, then, the melting times represented by the sample shall be determined as disqualified; the remaining melting times shall be successively inspected, and the qualified ones shall be delivered. When the melting times cannot be distinguished, then, this batch of products shall be determined as disqualified.

5.6.2 When the dimensional deviation of any product is disqualified, then, this coil of product shall be determined as disqualified.