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

GB/T 6892-2023

**Wrought aluminium and aluminium alloy extruded profiles for
general engineering**

一般工业用铝及铝合金挤压型材

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Table of Contents

1 Scope
2 Normative references
3 Terms and definitions
4 Product classification
4.4 Marking and examples
5 Technical requirements
6 Test methods
7 Inspection rules
7.1 Inspection and acceptance
7.6 Judgment of inspection results
8 Marking, packaging, transportation, storage, quality
8.1 Marking
9 Contents of order form (or contract)

1 Scope

China's national standard for wrought aluminium and aluminium alloy extruded profiles for general engineering. This is the companion to the architectural series and covers everything that is not a window or a curtain wall: the sections that go into rail vehicles and truck bodies, machine frames and enclosures, heat sinks, ladders, solar mounting systems, and the modular framing that fills every factory. The engineering demands differ from the architectural ones in an important way. An architectural profile is judged mainly on its finish and its dimensional fit; a general engineering profile is a structural member whose mechanical properties, temper and dimensional consistency have to be relied upon in calculation, and which is often welded, bolted or machined afterwards - operations that an anodised architectural section never sees. The standard specifies the product classification, technical requirements, test methods, inspection rules, marking, packaging, transport, storage, quality certificates and order contents for aluminium and aluminium alloy profiles for general engineering use.

This document specifies the product classification, technical requirements, test methods, inspection rules, signs, packaging, transportation, storage, quality certificates and order forms (or contracts) of wrought aluminum and aluminum alloys extruded profiles for general engineering. This document is suitable for aluminum and aluminum alloy profiles for general engineering (hereinafter referred to as profiles).

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 231.1 Metallic materials - Brinell hardness test - Part

3 Terms and definitions

The terms and definitions, which are defined in GB/T 8005.1 and GB/T 26492.5, are applicable to this document.

4 Product classification

4.1 Composition category The profile is divided into category I and II, according to the composition, as shown in Table 1.

4.2 Designation, state, size specifications The designation, state, size specifications of the profile shall meet the requirements of Table

2. When the purchaser needs other designations, state, size specifications, the supplier and purchaser shall determine it through negotiation, with reference to the "State and performance registration form wrought aluminum and aluminum alloy products", meanwhile indicate in the order form (or contract).

4.4 Marking and examples

4.4.1 The profile mark which is not subject to surface treatment is represented in the order of product names, this document number, designation, state, cross-section code, fixed length. The marking examples are as follows: Example. The profile which has a designation 6063, T5 state, cross-section code YST01100001, length 4000 mm, is marked as follows: Profile GB/T 6892-6063T5-YST01100001 x 4000

4.4.2 The profile mark which is subject to surface treatment is represented in the order of product name and color (or color code), film code, this document number, designation, state, cross-section code, fixed length. The marking examples are as follows: Example 1. The silver white profile which has a film code AA20, designation 6063, T5 state, cross-section code YST01100001, length 4000 mm, is marked as follows:

5 Technical requirements

The technical requirements of the profile shall meet the requirements of Table

4. When the purchaser has special requirements, the supplier and purchaser shall determine it, through negotiation with reference to the "Registration form of state and performance of wrought aluminum and aluminum alloy product"; meanwhile indicate it in the profile drawing and order form (or contract).

6 Test methods

The test methods for profiles shall comply with the requirements in Table

10. If the purchaser has special requirements for the test method, it shall be determined through negotiation between the supplier and the purchaser, meanwhile noted in the order form (or contract).

7.1 Inspection and acceptance

7.1.1 The product shall be inspected by the supplier, to ensure that the product quality complies with the provisions of this document and the order form (or contract), meanwhile a quality certificate shall be filled out.

7.1.2 The purchaser shall inspect the received products, in accordance with the provisions of this document. If the inspection results are inconsistent with the provisions of this document and the order form (or contract), it shall be submitted to the supplier in writing, to be resolved through negotiation between the supplier and the buyer. Objections related to surface quality and dimensional deviation shall be raised, within 1 month from the date of receipt of the product. Objections to other performance shall be raised, within 3 months from the date of receipt of the product. If arbitration is needed, it can be entrusted to an organization, as recognized by both the supplier and the buyer; sampling can be done jointly at the buyer's premises.

7.2 Group-batching Products shall be submitted for acceptance in batches. Each batch shall be composed of products of the same designation, status, size specifications, film layer code, surface treatment process. When the purchaser requires group-batching according to melting number and heat treatment furnaces, this shall be noted in the order form (or contract).

7.3 Weighting Products shall be checked by weight.

7.4 Inspection items and process assurance items Where there are no special requirements specified in the order form (or contract), the product exit-factory inspection items, periodic inspection items, process assurance items shall comply with the provisions of Table 12.

7.5 Sampling The sampling of profiles shall comply with the requirements in Table 13.

7.6 Judgment of inspection results

7.6.1 Chemical composition When the chemical composition of any specimen fails, if the melting order of the profile can be distinguished, the melting order profile represented by the specimen will be judged to be unqualified; other melting order profiles will be inspected in sequence, the qualified ones will be delivered. If the melting order cannot be distinguished, the batch of profiles is deemed to be unqualified.

7.6.2 Size deviation If the size deviation of any specimen fails, the batch of profiles will be deemed unqualified. However, suppliers are allowed to inspect one by one; those that pass the standard will be delivered.

7.6.3 Tensile mechanical properties at room temperature, compression properties, bending properties, shear properties, fatigue properties, pin-type support, stress corrosion resistance, spalling corrosion resistance, intergranular corrosion sensitivity, salt spray corrosion resistance, welding performance

7.6.3.1 If any specimen fails, the batch (or heat treatment furnace number) of profiles will be deemed to be unqualified OR shall be implemented in accordance with 7.6.3.2.

7.6.3.2 If the heat treatment furnace number can be distinguished for the profile, it shall take double quantity of specimens from the heat treatment furnace number, which is represented by the specimen, to conduct repeated tests on the unqualified item. If the heat treatment furnace number cannot be distinguished, it shall take double quantity of specimens from the batch of profiles again, to repeat the test on the unqualified item (including the profile represented by the unqualified specimen taken for the first time). If all repeated test results are qualified, the batch (or heat treatment furnace number) of profiles will be deemed qualified. If there are still unqualified samples in the repeated test results, the batch (or heat treatment furnace number) of profiles will be deemed unqualified. After agreement between the supplier and the buyer, the supplier is allowed to inspect one by one; those that pass the test will be delivered or implemented in accordance with 7.6.3.3.

7.6.3.3 After repeated heat treatment, the supplier shall inspect all exit-factory inspection items listed in Table 12 according to the furnace number, except chemical composition, size deviation, film layer performance, appearance quality. The sampling quantity shall be as per Table

14. When all inspection results are qualified, the batch of profiles is deemed to be qualified; otherwise, the batch of profiles is deemed to be unqualified.

7.6.4 Plane strain fracture toughness If the plane strain fracture toughness K_{Ic} value or "batch release KQ " value of any specimen fails, the batch (or heat treatment furnace number) of the profile will be judged to be unqualified or shall be implemented in accordance with 7.6.3.2.

7.6.5 Conductivity If the conductivity of any specimen fails, follow 7.6.3.2.

7.6.6 Matching relationship between electrical conductivity and mechanical properties If the