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

**GB/T 5156-2022**

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**Magnesium and magnesium alloy extruded profiles**

镁及镁合金热挤压型材

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### 1 Scope

China's national standard for hot extruded magnesium and magnesium alloy profiles. Profiles are where magnesium's weight advantage pays off best, because a shaped section puts the metal where the stiffness is needed and a magnesium section can be made thicker than an aluminium one for the same weight - and stiffness rises with the cube of thickness, so the lighter metal wins outright. That is why magnesium extrusions appear in seat frames, instrument panel beams, luggage systems and portable equipment. Extruding them is more demanding than aluminium: the working temperature window is narrow, the speeds are lower, and the surface tears if the die or the temperature is wrong, which limits how intricate a section can be. The standard specifies the classification, quality assurance, requirements, test methods, inspection rules, marking, packaging, transport, storage, quality certificates and order contents for hot extruded magnesium alloy profiles.

This Document specifies the classification, quality assurance, requirements, test methods, inspection rules and marking, packaging, transportation, storage, quality certificates and purchase orders (or contracts) of magnesium and magnesium alloy hot extruded profiles. This Document applies to magnesium and magnesium alloy hot extruded profiles (hereinafter referred to as profiles)

### 2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. 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 Document.

GB/T 230.1 Metallic Materials - Rockwell Hardness Test - Part 1: Test Method

GB/T 231.1 Metallic Materials - Brinell Hardness Test - Part 1: Test Method

GB/T 3499 Magnesium Ingots

GB/T 4297 Inspection Method for Macrostructure of Wrought Magnesium Alloy Products

GB/T 4340.1 Metallic Materials - Vickers Hardness Test - Part 1: Test Method

GB/T 5153 Designation and Composition of Wrought Magnesium and Magnesium Alloys

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

GB/T 13748 (all parts) Chemical Analysis Methods of Magnesium and Magnesium Alloys

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

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

GB/T 32792 Packaging, Marking, Transportation and Storage of Magnesium Alloy Processing Products out according to the method specified in

GB/T 4340.1, and shall be indicated in the purchase order (or contract).

7.5 Macrostructure The macrostructure inspection shall be carried out according to the method specified in GB/T 4297.

## 8.1 Inspection and acceptance

8.1.1 The profiles shall be inspected by the supplier to ensure that the product quality conforms to the provisions of this Document and the purchase order (or contract), and the quality certificate shall be filled in.

8.1.2 The purchaser shall re-inspect the received products according to the provisions of this Document. If the re-inspection results are inconsistent with the provisions of this Document and the purchase order (or contract), it shall be submitted to the supplier in written and resolved through negotiation between the supplier and the purchaser. The objection belonging to the appearance quality and size deviation shall be raised within one month from the date of receipt of the product; and the objection belonging to other properties shall be raised within three months from the date of receipt of the product. If

arbitration is required, both the supplier and the purchaser shall jointly conduct arbitration sampling on the purchaser side.

8.2 Batch Profiles shall be submitted for acceptance in batches, each batch shall be composed of the profiles with the same alloy designation, state and specification, and the batch weight is not limited.

8.3 Inspection items Each batch of profiles shall be carried out exit-factory inspection; and the inspection items shall include chemical compositions, dimensional deviation, tensile mechanical properties at room temperature, hardness, macrostructure and appearance quality.

8.4 Sampling Sampling of profiles shall comply with the provisions of Table 6. the following principles:

a) If due to the metallurgical defects such as cracks, bright grains and inclusions are unqualified, the batch of profiles shall be judged as unqualified. After negotiation between the supplier and the purchaser, the supplier can inspect the profiles piece by piece, and determine it one by one;

b) If due to layering, tail shrinking and coarse grain ring are unqualified, a section shall be cut from the extruded end of the profiles to repeat the test until it is qualified, then other profiles in this batch shall be cut tail according to the maximum length of the above-mentioned defect distribution of the inspected profile; inspect profiles piece by piece, and determine it one by one.

8.5.6 When the appearance quality of any product is unqualified, the profile is judged to be unqualified.

## 9.1 Marking

9.1.1 The following marks (or signboards with the following marks) shall be made on the front end of the qualified profiles:

- a) Inspection seal from the supplier's technical supervision department;
- c) Qualified designation;
- d) Supply state.

9.1.2 For profiles with a width of plane less than 40mm, whose shapes are inconvenient to print, two labels shall be attached to the front end of each batch (or each box). The alloy designation, supply state, batch No. and the inspection seal of the supplier's technical supervision department shall be marked on the label.

9.1.3 The packaging box marking of profiles shall be implemented in accordance with the provisions of GB/T 32792.

## **9.2 Packaging, transportation and storage**

9.2.1 Profiles shall be oiled and packaged. If there are special requirements, they shall be determined through negotiation between the supplier and the purchaser, and indicated in the purchase order (or contract).

9.2.2 Other requirements for the packaging, transportation and storage of profiles shall be implemented in accordance with the provisions of GB/T 32792.

9.3 Quality certificate Each batch of profiles shall be accompanied by a product quality certificate, which states:

- a) the name of the supplier;
- b) product name;
- e) dimension and specification;
- f) product batch No.;
- g) net weight and number of pieces;
- h) the results of each analysis and test;
- i) inspection seal by the quality inspection department of the supplier;
- j) this Document No.;
- k) Packaging date (or exit-factory date).

## **10 Contents of Purchase Order (or Contract)**

A purchase order (or contract) for the products listed in this Document shall include the following:

- a) product name;
- d) dimension and specification;
- e) weight (or number of pieces);
- f) special requirements of the purchaser: