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Zinc alloy die castings

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Zinc alloy die castings

1 Scope

This document specifies the classification and grading, technical requirements, test methods, inspection rules, delivery, marking, packaging, transportation, and storage of zinc alloy die castings.

This document applies to the manufacturing and quality inspection of zinc alloy die castings.

2 Normative references

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

GB/T 228.1 Metallic materials - Tensile testing - Part 1: Method of test at room temperature

GB/T 231.1 Metallic materials - Brinell hardness test - Part 1: Test method

GB/T 1182 Geometrical product specifications (GPS) - Geometrical tolerancing - Tolerances of form, orientation, location and run-out

GB/T 1958 Geometrical Product Specifications (GPS) - Geometrical tolerance - Verification

GB/T 2828.1 Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 2829 Sampling procedures and tables for periodic inspection by attributes (apply to inspection of process stability)

GB/T 3177 Geometrical product specifications (GPS) - Inspection of plain workpiece sizes

GB/T 5611 Foundry terminology

GB/T 5678 Sampling methods of spectrochemical analysis for cast alloys

GB/T 6414 Castings - Dimensional tolerances and geometrical tolerances and

5.5.1 The surface roughness of zinc alloy die castings shall comply with the drawings or the requirements of the demand side.

5.5.2 Zinc alloy die castings shall not have cracks, under-casting, and any penetrating defects.

5.5.3 Zinc alloy die castings are allowed to have defects such as holes, cold shuts, surface defects, and imperfections. Refer to Appendix B for defect classification requirements. Other defects in zinc alloy die castings shall comply with the requirements of the drawings.

5.5.4 If there are no special provisions in the drawings, for the settings related to the die casting process, such as the position of ejector pin, the position of parting line, and the position of gate and overflow port; and for the positions that shall be removed by machining and other methods in the subsequent process AND those that cannot be removed by machining and other methods; it shall be agreed upon by both the supply and the demand sides.

5.5.5 The machined surface quality and non-machined surface quality of zinc alloy die castings shall meet the requirements of the demand side.

5.6 Internal quality

5.6.1 Internal defects such as pores, inclusions, shrinkage cavities, and porosity in zinc alloy die castings shall comply with the requirements of the drawings. If the requirements for use can be met, defects such as pores and shrinkage cavities in the die castings shall not be used as a basis for scrapping.

5.6.2 Under the condition of not affecting the use of die castings, with the consent of the demand side, the supply side can perform infiltration, repair, and deformation correction treatment on zinc alloy die castings.

6 Test methods

6.1 Chemical composition

6.1.1 The inspection methods for the chemical composition of zinc alloy die castings shall be in accordance with GB/T 12689.1, GB/T 12689.3, GB/T 12689.4, GB/T 12689.5, GB/T 12689.6, GB/T 12689.7, GB/T 12689.10, GB/T 12689.12, or GB/T 26042.

6.1.2 When there is a dispute over the analysis results, arbitration shall be conducted in accordance with GB/T 12689.1, GB/T 12689.3, GB/T 12689.4, GB/T 12689.5, GB/T 12689.6, GB/T 12689.7, and GB/T 12689.10.

6.2 Mechanical properties

6.2.1 The tensile test of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 228.1.

6.2.2 The hardness test of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 231.1.

6.2.3 When zinc alloy die castings require body inspection, the sampling location, specimen size, and test method shall be agreed upon by both the supply and the demand sides.

6.3 Dimensions

6.3.1 The geometrical dimension inspection of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 3177 and GB/T 34634.

6.3.2 The geometrical tolerance inspection of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 1958.

6.3.3 It shall use general or special measuring tools that meet the accuracy for inspection.

6.4 Mass

The mass inspection of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 11351.

6.5 Surface quality

6.5.1 The roughness rating of the non-machined surface of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 15056.

6.5.2 The inspection method for surface roughness of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 10610.

6.5.3 The surface quality of zinc alloy die castings shall be tested visually or by other appropriate methods.

6.6 Internal quality

The internal quality inspection of zinc alloy die castings shall be carried out in accordance with the provisions of GB/T 35388, GB/T 36589, or GB/T 39638.

7 Inspection rules

7.1 Inspection items

7.4.2 During the inspection of mechanical properties, there are 3 specimens for each group. If 2 of the 3 specimens tested fail to meet the mechanical properties, the lot will be determined as nonconformity. It is allowed to double the number of specimens for the second inspection. If 2 specimens fail in the second inspection, but the overall average value is qualified, the lot will be determined as conformity. If there are more than 2 nonconformity specimens, the lot will be determined as nonconformity.

7.4.3 If the dimensions of any product under sampling inspection fail, the lot will be determined as nonconformity.

7.4.4 If the mass of any product under sampling inspection fails, the lot will be determined as nonconformity.

7.4.5 If the surface quality of any product under sampling inspection fails, the lot will be determined as nonconformity.

7.4.6 If the internal quality of any product under sampling inspection fails, the lot will be determined as nonconformity.

8 Delivery, marking, packaging, transportation, and storage

8.1 Delivery

8.1.1 When required in the contract or agreement, the supply side shall submit the inspection report to the demand side.

8.1.2 Zinc alloy die castings shall be delivered with an inspection certificate.

8.2 Marking

8.2.1 Product marking

Zinc alloy die castings shall at least have the following marks cast or engraved on the non-machined surface:

- a) Raw material's designation;
- b) Part number;
- c) Mold number;
- d) Supply side's information, such as trademark or symbol;
- e) Date of production.

8.2.2 Packaging marking

The outer packaging of zinc alloy die castings shall at least have the following markings:

- a) Part number;
- b) Product code or special traceability information;
- c) Packaging quantity;
- d) Supply side's information, such as trademark or symbol;
- e) Date of production;
- f) This document's number;
- g) Seal of inspection conformity.

8.3 Packaging

The packaging of zinc alloy die castings shall be firm and reliable. During transportation and handling, there shall be no damage or breakage.

8.4 Transportation

During transportation, zinc alloy die castings shall comply with stacking requirements. It is strictly prohibited to be exposed to rain, moisture, throwing, and violent collision.

8.5 Storage

Zinc alloy die castings shall be stored in a dry and well-ventilated warehouse without harmful gases. It shall not be stored together with acids, alkalis, or other corrosive chemicals.

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