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Casting zinc alloys

铸造锌合金

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Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	5
4 Alloy designations and codes.....	5
5 Technical requirements	6
6 Test methods.....	7
7 Inspection rules.....	7
Annex A (informative) Representation methods for casting zinc alloy codes ...	9
Annex B (normative) Mechanical properties specimen and pouring riser system	10

Casting zinc alloys

1 Scope

This Standard specifies the alloy designations and codes, technical requirements, test methods and inspection rules for casting zinc alloys.

This Standard is applicable to the zinc alloys for zinc alloy castings (excluding die castings).

2 Normative references

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

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 8063, *Designation of cast nonferrous metals and their alloys*

GB/T 12689.1, *Methods for chemical analysis of zinc and zinc alloys - Part 1: Determination of aluminum content - Chromazurol S-polyethylene glycol octyl phenylether-cetylpyridine bromine spectrophotometry, Chromeazurol S spectrophotometric method and EDTA titrimetry*

GB/T 12689.3, *The methods for chemical analysis of zinc and zinc alloys - The determination of cadmium content - The flame atomic absorption spectrometric method*

GB/T 12689.4, *The methods for chemical analysis of zinc and zinc alloys - The determination of copper content - The lead diethyldithio-carbamate spectrophotometric method and the flame atomic absorption*

GB/T 12689.5, *The methods for chemical analysis of zinc and zinc alloys - The determination of iron content - The sultosalicylic acid spectrometric method and the flame atomic absorption spectrometric method*

GB/T 12689.6, *The methods for chemical analysis of zinc and alloys - The determination of lead content - The oscillopolarographic method*

GB/T 12689.7, *Methods for chemical analysis of zinc and zinc alloys - Part 7: Determination of magnesium content - Flame atomic absorption spectrometric method*

GB/T 12689.8, *The methods for chemical analysis of zinc and zinc alloys - The determination of silicon content - The molybdenum blue spectrophotometric method*

GB/T 12689.10, *The methods for chemical analysis of zinc and zinc alloys - The determination of tin content - The phenylfluorone-cetyltrimethylammonium bromide spectrophotometric method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

zinc alloys

the alloy containing more than 50% of zinc, and other elements such as aluminum, copper or magnesium.

4 Alloy designations and codes

4.1 Alloy designations

See Table 1 for casting zinc alloy designations. The representation methods for designations shall comply with the provisions of GB/T 8063.

4.2 Alloy codes

See Annex A for the representation methods of alloy codes.

4.3 Technique codes

The technique codes of alloy materials are as follows:

S - Sand casting;

J - Metal casting;

F - Casting state;

T3 – Homogenization;

JF - Metal casting state;

SF - Sand casting state;

then take one after casting (after the furnace). Send two specimens simultaneously for inspection. When the analysis results are in accordance with the requirements of Table 1 (unless special needs, it generally only performs chemical analysis on alloying elements and major impurities), the chemical composition of this furnace (batch) of alloys shall be qualified. Allow double sampling for inspection should any unqualified be found. If the inspection results still fail, the chemical composition of this furnace (batch) of alloys shall be unqualified.

7.2 Mechanical properties

7.2.1 Casting specimen of mechanical properties while casting specimen of chemical composition.

7.2.2 For each furnace (batch) of alloys, send 2 specimens of its casting mechanical properties (1 before furnace, 1 after furnace) at the first time to determine mechanical properties. If the results comply with the provisions of Table 2, the mechanical properties of this furnace (batch) of alloys shall be qualified. Should any unqualified be found, allow double sampling for inspection. If the inspection results still fail, the mechanical properties of this furnace (batch) of alloys shall be unqualified.

7.2.3 When the single casting specimen is found to have casting defects or the inspection result is unqualified due to the failure of the inspection itself, the inspection result shall be invalid.

Annex A

(informative)

Representation methods for casting zinc alloy codes

A.1 Code composition

The alloy code consists of the letters Z, A (they are the first letters of the chemical element symbol for zinc and aluminum) and the subsequent Arabic numerals. The first of ZA or the first, second digits represents the modified integer value of the average percentage of aluminum. The average percentage of copper is rounded off to an integer value and is placed at the end of the code. The aluminum content and copper content is separated with a horizontal line (one byte long).

Example 1: The alloy code of ZZnAl4Cu1Mg is ZA4-1.

Example 2: The alloy code of ZZnAl27Cu2Mg is ZA27-2 (when the average percentage of copper in the alloy is rounded off to an integer value and it only has a kind of 2%, it can be abbreviated as ZA27, and so on for other alloy codes. For example, ZA6-1 is abbreviated as ZA6, ZA8-1 is abbreviated as ZA8, and ZA9-2 is abbreviated as ZA9.)

A.2 Code reading

Alloy code reading is as follows: ZA4-1 is read as zinc aluminum four one, or as ZA four one (Z and A are pronounced according to their English letters). ZA27 is read as zinc aluminum two seven, or as ZA two seven. And so on.

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