

ICS 71.100.10

YS

**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 492-2021

Element Additive for aluminum and aluminum alloys

铝及铝合金成分添加剂

(English Translation)

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1 Scope

This document stipulates the product classification, quality assurance, requirements, test methods, inspection rules and markings, packaging, transportation, storage, quality certificate and order form (or contract) content of element additives for aluminum and aluminum alloy.

This document applies to additives for formulating or adjusting the chemical composition of aluminum and aluminum alloys (hereinafter referred to as "additives").

2 Normative references

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

GB/T 3199 Wrought aluminium and aluminium alloy products - Packing, marking, transporting and storing

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 7999 Optical emission spectrometric analysis method of aluminum and aluminum

alloys

3 Terms and definitions

There are no terms or definitions to be defined in this document.

4.1 Designation representation method

Additive designations are represented by English letters followed by two digits and element symbols. The English letters represent the type of additive; the two digits represent the nominal content of the main element; the element symbol represents the main element of the additive. Additives are divided into three types, according to flux type.

4.2.1 See Table 1 for the designation, name, category, overall dimensions of the additives.

a Potassium fluoroaluminate in the flux will increase the fluorine content in the aluminum slag.

4.2.2 Typical illustrations of additives are as shown in Figure 1 and Figure 2.

Figure 1 -- Illustration of round cake additives

Figure 2 -- Illustration of special-shaped additives

4.2.3 When the buyer requires other designations, it shall be determined through negotiation between the supplier and the buyer; it shall be specifically noted in the order form (or contract).

5 Quality assurance

See Appendix A for additive quality assurance.

6.1.1 Aluminum type additives

The chemical compositions of aluminum type iron, aluminum type manganese, aluminum type copper, aluminum type chromium, aluminum type titanium, aluminum type nickel additives shall comply with the requirements in Tables 2 ~ 7, respectively.

6.1.2.1 The main element content in the chemical composition of potassium

fluoroaluminate type and mixed type additives shall be controlled within $\pm 3\%$ of the nominal content.

6.2 Moisture

The moisture content of the additive shall not be greater than 0.2%.

6.3 Density

The density of round cake additives shall comply with the requirements in Table 8.

6.5 Anti-fall performance

After the drop test of round cake aluminum type additives, the weight loss shall not exceed 3%.

6.6 Fracture organization

There shall be no particle aggregates and inclusions in the additive fracture organization.

Typical illustrations are as shown in Figures 3 ~ 5.

6.7 Powder content

The content of round cake aluminum type additive powder shall not exceed 1%; it shall not exceed 3% for other types.

7.1 Chemical composition

7.1.1

The analysis method for the main element content of additives shall comply with the provisions of Appendix B ~ Appendix G.

7.1.2

The analysis method for the fluorine content of aluminum additives shall be determined, through negotiation between the supplier and the purchaser. The analysis method for the content of other impurity elements shall comply with the provisions of

Appendix H.

7.1.4

The rounding off comparison method is used to determine the analytical value.

The numerical rounding rules are in accordance with the provisions of GB/T 8170. The rounding digits are consistent with the limit digits in Tables 2 ~ 7 of this document.

7.2 Moisture

The moisture content of additives shall be determined according to the method specified in Appendix I.

7.3 Density

7.3.1

Weigh the mass of the specimen, recorded it as m_a .

7.3.2

Measure the diameter of the specimen, recorded as D . Measure the thickness of the specimen, recorded as T .

7.4.1 Casting yield

The casting yield of additives is measured according to the method specified in Appendix J.

7.4.2 Casting yield curve

The casting yield curve is measured according to the method specified in Appendix K.

7.5 Anti-fall test

7.5.1

Weigh the mass of the specimen, recorded as m_b . Drop it freely to the cement floor at a height of 1.0 m. Select the largest block. Weigh the mass of the largest block, recorded as m_c .

7.5.2

Calculate the mass loss G of the specimen according to formula (2); the value is expressed in %.

7.7 Powder content

7.7.1

Take a specimen. Remove the packaging. Weigh the total mass of the specimen, recorded as m_d . Weigh the mass of the powder, recorded as m_e .

7.7.2

Calculate the powder content A , according to formula (3); the value is expressed in %.