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

YS/T 1004-2014

**Molten aluminum and aluminum alloys
(English Translation)**

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1 Scope

This Standard specifies the requirements, production process control, test methods, inspection rules, as well as marking, packaging, transportation, storage, quality certificate and order sheet (or contract) content of molten aluminum and aluminum alloys.

This Standard is applicable to molten aluminum and aluminum alloys (hereinafter referred to as molten aluminum) produced by the electrolysis method or remelting method.

2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 1196 Unalloyed Aluminum Ingots for Remelting

GB/T 3190 Chemical Composition of Wrought Aluminum and Aluminum Alloys

GB/T 7999 Optical Emission Spectrometric Analysis Method of Aluminum and Aluminum Alloys

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

GB/T 8733 Aluminum Alloy Ingots for Casting

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

GB/T 20975 (all parts) Methods for Chemical Analysis of Aluminum and Aluminum Alloys

GB/T 27677 Aluminum Hardeners

YS/T 244 (all parts) Chemical Analysis Methods of High Purity Aluminum

YS/T 275 High Purity Aluminum

YS/T 665 Refined Aluminum Ingot for Remelting

When the molten aluminum arrives at the demand-side's site, the temperature should not be lower than 760 °C. When the demand-side has special requirements, they shall be specified in the order sheet (or contract) after being determined through negotiation between the demand- side and the supply-side.

3.4 Slag Inclusion

The molten aluminum produced by the remelting method shall be tested for slag inclusion. The limited content of slag inclusion shall be specified in the order sheet (or contract) after being determined through negotiation between the demand-side and the supply-side.

4.1 Molten Aluminum Produced by the Electrolysis Method

4.1.1

The various electrolysis process parameters shall be reasonably controlled.

4.1.2

Tool protection shall be strengthened, and the operation time of iron tools in the electrolyte shall be shortened as much as possible, so as to avoid excessive melting of impurity elements into the molten aluminum in the electrolytic tank during operation.

4.1.3

The contents of Fe and Si elements in the molten aluminum in the electrolytic tank shall be regularly tested.

4.2 Molten Aluminum and Aluminum Alloys Produced by the Remelting Method

4.2.1

After the aluminum melt is refined and slagged-off, there shall be no visible scum on the surface.

4.2.2

When the raw materials used contain elements, such as: rare earth, Cd, Hg, Pb and Cr⁶⁺, it shall be indicated in the accompanying documents.

4.2.3

The melting furnace shall be regularly cleaned.

4.2.4

The raw materials shall be corrosion-free, and shall not be mixed with ice, snow, rain, greasy dirt, mud and other debris, etc.

5.1 Chemical Composition

5.1.1 The chemical composition analysis method shall comply with the stipulations of GB/T 20975 or GB/T 7999. The arbitration analysis shall adopt the method specified in GB/T 20975.

5.1.2

The determination of analytical values shall adopt the rounding-off comparison method.

The numerical value rounding-off rules shall be conducted in accordance with the relevant stipulations of GB/T 8170. The rounding-off digits shall be consistent with the chemical composition limit digits specified in the corresponding standards of the designations (as shown in Table 1, GB/T 1196 or GB/T 3190 or GB/T 8733 or GB/T 27677 or YS/T 275 or YS/T 665).

5.2 Temperature

Adopt a temperature measuring instrument with an accuracy of not lower than 1 °C for temperature measurement.

5.3 Slag Inclusion

The test can be carried out by taking the method specified in Appendix B or other methods agreed upon by the demand-side and the supply-side as a reference.

6.1 Inspection and Acceptance

6.1.1

The products shall be inspected by the supply-side to ensure that the product quality complies with the stipulations of this Standard and the order sheet (or contract). In addition, a quality certificate shall be filled in.

6.1.2

The demand-side shall re-inspect the received products in accordance with the stipulations of this Standard. When the re-inspection results are inconsistent with the stipulations of this Standard and the order sheet (or contract), it shall be submitted to the supply-side in writing, which shall be resolved through negotiation between the demand-side and the supply-side.

Objections related to temperature shall be immediately raised upon receipt of the product, and other objections 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 recognized by the demand-side and the supply-side, and the sampling can be jointly conducted at the demand-side's site.

6.2 Group Batch

The products shall be submitted for acceptance in batches. Each batch of products shall be composed of products of the same designation, the same aluminum ladle or melting furnace.

6.3 Weight

The products shall be checked for weight.

6.4 Inspection Items

6.4.1

Each batch of products shall be inspected for chemical composition (in addition to Cd, Hg, Pb and Cr6+ elements) and temperature.

6.4.2

Cd, Hg, Pb and Cr6+ should be inspected once a year. When there are special requirements, the inspection period shall be jointly determined by the demand-side and the supply-side, and instrument and conduct a second temperature measurement. If the result of the second temperature measurement is qualified, then, the batch of products shall be determined as qualified; otherwise, the batch of products shall be determined as disqualified.

6.6.3 Slag inclusion

When it is disqualified in the amount of slag inclusion, it is allowed to conduct a second sampling test. If the result of the second test is qualified, then, the batch of products shall be determined as qualified; otherwise, the batch of products shall be determined as disqualified.