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H 68

National Standard of the People's Republic of China

GB/T 4135—2016
Replace GB/T 4135—2002

Silver ingots

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(*English Translation*)

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Foreword

SAC/TC 243 is in charge of this English translation. In case of any doubt about the contents of English translation, the Chinese original shall be considered authoritative.

This standard is drafted in accordance with the rules given in the GB/T 1.1—2009.

This standard replaces the GB/T 4135—2002 *Silver* in whole. The following changes have been made with respect to the GB/T 4135—2002.

—Changed the name of standard to Silver ingots;

—Deleted the related content of granular silver and silver bar in the GB/T 4135—2002;

—For grade IC-Ag99.99, revised the requirements on copper content from 0.003% to 0.0025%;

—For grade IC-Ag99.99, revised the tellurium content no greater than 0.0008%;

—Deleted the GB/T 4135—2002 in Table 1 "Note 2: In lead recovery silver, the content of bismuth in the IC-Ag99.99 grade may not be greater than 0.001%;

—For Silver ingots physical specifications, added the requirements on dimension, weight and weight expression;

—For Silver ingots physical specifications, revised the weight of the silver ingots from four specifications to two specifications (15 kg, 30 kg);

—Revised the content of test methods and added the requirements on instrument for physical specification inspection;

—Revised the 3.4.2: For 30 kg silver ingots, top shrinkage cavity depth shall be less than 12 mm.

This standard was proposed by the Nonferrous In dustrial Association of China.

This standard was prepared by SAC/TC 243 Chinese Nonferrous Metal Standardization Technical Committee.

The previous editions of this standard are as follows:

—GB/T 4135—2002、GB/T 4135—1994.

Silver ingots

1 Scope

This standard specifies the requirements, test methods, inspection, marking, packaging, transportation, storage, quality certificate and the order (or contract) information of silver ingots.

It applies to silver ingots produced by different kinds of argentiferous raw materials, which mainly used for electronic materials, photographic materials, jewelry, financial field etc.

2 Normative references

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

GB/T 8170, *Rules of rounding off for numerical values & expression and judgment of limiting values*

GB/T 11067(*all parts*), *Method for chemical analysis of silver*

3 Requirements

3.1 Product Classification

Silver ingots are classified into three grades by chemical composition: IC-Ag99.99, IC-Ag99.95 and IC-Ag99.90.

3.2 Chemical Composition

3.2.1 The silver ingots shall conform to the chemical composition prescribed in Table 1.

Table 1

Grade	Chemical composition/%									
	Silver content (mass fraction) min	Content of impurities (mass fraction), max								
		Cu	Pb	Fe	Sb	Se	Te	Bi	Pd	Total content of impurity
IC-Ag99.99	99.99	0.002 5	0.001	0.001	0.001	0.000 5	0.000 8	0.000 8	0.001	0.01
IC-Ag99.95	99.95	0.025	0.015	0.002	0.002	—	—	0.001	—	0.05
IC-Ag99.90	99.90	0.05	0.025	0.002	—	—	—	0.002	—	0.10

3.2.2 The silver content of grade IC-Ag99.99 and IC-Ag99.95 for silver shall be determined by subtracting the total percentage of the concentration of specified impurities from 100%. The impurities determined shall include all the impurities for which limits are specified but not be limited to those in Table 1. The silver content of grade IC-Ag99.90 is obtained by direct determination.

3.2.3 If the purchaser has special requirements on chemical composition, the solution shall be discussed and agreed between the suppler and the purchaser.

3.3 Physical Specifications

3.3.1 The silver ingots shall be in rectangle or trapezoid shapes.

3.3.2 The dimensions and weight for silver ingots shall be as shown in Table 2. Special requirements shall be discussed and agreed between the supplier and the purchaser.

Table 2

Specification		Length/mm	Width/mm	Weight/kg
15 kg		365±20	135±20	15±1
30 kg	Front Side	300±50	300±50	30±3
	Bottom Side	255±50	255±50	

3.4 Surface Quality

3.4.1 The silver ingots surfaces shall be smooth, clean and free from interlayers, cold shuts, inclusions, voids, cracks, etc.

3.4.2 For 30 kg silver ingots, top shrinkage cavity depth shall be less than 12 mm.

3.4.3 For 15 kg silver ingots, top notch height shall not exceed the endface by 5 mm.

3.4.4 Silver ingot surfaces shall not have mechanical processing traces or handwork marks (except incision, copper brush processing and surface marking).

4 Test methods

4.1 Referee analysis of chemical composition shall be carried out in accordance with GB/T 11067 (all parts).

4.2 The shape of silver ingots shall be inspected with instruments capable of inspecting to the accuracy required.

4.3 The weight of silver ingots shall be inspected by corresponding accurate instrument. Rounding off for numerical values carried out according to the standard of GB/T 8170, and results shall be accurate to 0.1 g.

4.4 The weight of silver ingots shall be inspected with instruments capable of weighing to the accuracy required. Weight value shall be rounded to 0.1 g in accordance with the rounding method of GB/T 8170.

4.5 Examination of appearance shall be carried out by visual inspection.

5 Conformity with standards

5.1 Inspection and Acceptance

5.1.1 The silver ingots shall be inspected by the Quality Control Department of the supplier to ensure the products are in conformity with this standard. A quality certificate shall be filled out accordingly.

5.1.2 Inspection of the products received shall be carried out by the purchaser in accordance with the requirements of this standard. In case of non-conformity with the requirements of this standard or with the stipulations of the contract, complaints of non-conformity shall be made within 30 days after the date of receiving the products. In case of arbitration, solution shall be discussed and agreed between the two parties.

5.2 Lots

Inspection and acceptance shall be carried out in lots. Each lot shall consist of silver ingots which are produced from the same melt.

5.3 Inspection items

For each lot of silver ingots, inspection of chemical composition, physical specifications and surface quality shall be carried out before they are delivered out of the factory.

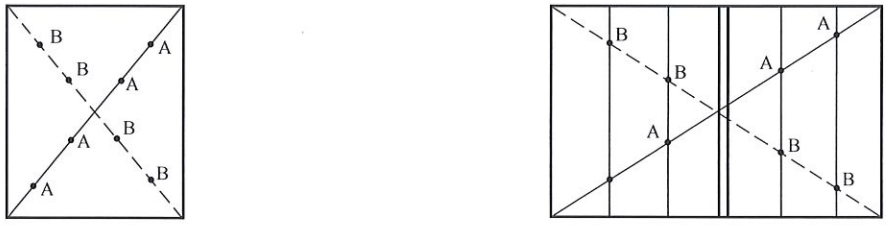
5.4 Sampling method

5.4.1 Referee Sampling method for chemical composition

5.4.1.1 10% of silver ingots shall be selected from each lot, but no less than 1 bar. In special case, each bar may be sampled. Sampling shall be done by a procedure that avoids dust and grease stain or other foreign matter on the surface.

5.4.1.2 Sampling method for single bar: Draw diagonal lines across the two big sides, sampling holes shall be drilled at 1/3 and 2/3 from the center point to the apex angle, 8 sampling holes shall be drilled in total. As shown in Figure 1a).

5.4.1.3 Sampling method for two or more bars: Drill sampling holes shall be in accordance with $4n$ rule (n is the number of bars). Arrange the silver ingots into rectangle. On the two big sides of each silver ingot, draw parallel lines on the long side. The ingot width shall be divided into 3 equal parts. The sampling holes shall be drilled at the crossing points of the parallel lines and the diagonal lines. As shown in Figure 1b).



NOTE A is sampling points at one face. B is sampling points on opposite face.

Figure 1

5.4.1.4 Preparation of samples: The bar shall be drilled with a diameter of 12 mm drill. The holes shall be drilled no less than 2/3 thickness of the silver ingots.

The drillings shall be mixed thoroughly after magnet treatment, and then reduced to no less than 300 g. The sample shall be divided into three parts (each with 100 g), one for the supplier, one for the purchaser and one for umpire.

5.4.2 Sampling methods for surface quality and physical specifications

Physical specifications and surface quality shall be inspected for each bar.

5.5 Rejection and retest

5.5.1 If the chemical composition determination result does not meet this standard, the inspection lot which they represent shall be deemed not to comply with the requirements of this standard.

5.5.2 If physical specification test result does not meet this standard, the bar shall be deemed not to comply with the requirements of this standard.

5.5.3 If weight and surface quality test result does not meet this standard, the bar shall be deemed not to comply with the requirements of this standard.

6 Marking, packaging, transportation, storage and quality certificate

6.1 Marking

The bar number, brand, grade etc shall be cast or marked upon each bar.

6.2 Packing

Packing shall be discussed and agreed between the suppler and the purchaser.

6.3 Transportation and Storage

During the process of transportation and storage, the product shall not be damaged or contaminated.

6.4 Quality certificate

Each lot shall be provided with a product quality certificate with the following information stated:

a) Name, address, telephone number and fax of the manufacturer;

b) Product name and grade;

c) Lot number;

d) Net weight and the number of packaging;

e) Inspection results of analysis items and Inspection stamp of the Quality Control Department;

f) Number of this standard;

g) Date of manufacture.

7 Ordering or contract information

The order (or contract) for the products listed in this standard shall contain the following information:

a) Product name;

b) Grade;

c) Quantity;

d) Special requirements on impurity content;

e) Requirements on dimension;

f) Requirements on packaging;

g) Number of this standard;

h) Others.