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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 38162-2019

High content silver jewellery alloys - Determination of silver - Difference method using inductively coupled plasma optical emission spectroscopy

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 21198.5-2007 "Precious metal alloy jewellery - Determination of precious metal content - Part 5

Points. 999 per mille silver alloy jewelry silver content determination of the difference method.

Compared with GB/T 21198.5-2007, the main technical changes of this standard are as follows.

--- Increased the provisions of the sampling method, corresponding to the addition of ISO 11596 in the normative reference documents (see Chapters 2 and 6);

---Modified the principle of the method, the impurity element in the filtrate from the precipitation separation test was changed to the centrifugal separation and the supernatant and the separated substance were tested separately.

Impurity elements in (see Chapter 3, Chapter 2 of the.2007 edition);

--- Added aqua regia and silver nitrate in the reagent material (see 4.5 and 4.7);

--- Increased the corresponding health and safety operating procedures warnings in the test procedure (see Chapter 7);

--- Revised the repeatability to 0.1 per mille (see 8.3, 6.3 of the.2007 edition);

--- Revised Appendix C as a normative appendix and corrected the wavelength of the elements given in Table C.1 (see Appendix C,.2007 Edition)

Appendix A).

This standard uses the redrafting method to modify the use of ISO 15096.2014 "jewelry 999 silver alloy jewelry silver content determination

ICP-OES subtraction method.

This standard has more structural adjustments than ISO 15096.2014. This standard and ISO 15096.2014 are listed in Appendix A.

The chapter number difference comparison checklist.

There are technical differences between this standard and ISO 15096.2014, and the terms involved in these differences have been passed on the outer margins of the margins.

The vertical single line (|) is marked. A list of the corresponding technical differences and their causes is given in Appendix B.

This standard also made the following editorial changes.

--- Change the standard name to "Measurement of ICP subtraction of silver content in high-content silver alloy jewelry."

--- Removed references to ISO 15096.2014.

This standard was proposed by the China Light Industry Association.

This standard is under the jurisdiction of the National Jewelry Standardization Technical Committee (SAC/TC256).

This standard was drafted. Beijing Guoshou Jewelry Inspection Co., Ltd., National Jewelry Quality Supervision and Inspection Center, Beijing Guoshou Jewelry

Standardization Research Center.

1 Scope

This standard specifies the determination of impurity elements in high-content silver alloy jewellery by inductively coupled plasma optical emission spectroscopy (ICP-OES).

The method of determining the silver content.

This standard applies to silver alloy jewellery with a silver content of 995.0 per mille~999.9 ,. Silver alloy products can be used as reference.

2 Normative references

The following documents are indispensable for the application of this document. For dated

references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 11596 Sampling of precious metal alloy jewellery and related products (Jewelery-Samplingofpreciousmetalal-

Loysforandinjeweleryandassociatedproducts)

3 Principle

A silver alloy sample was weighed and dissolved in nitric acid. The solution was centrifuged, and the solution was made up to a 10 g/L solution. After the separation was dissolved in aqua regia,

Volume. Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-OES) was used to determine the content of impurity elements in two solutions, and the difference was calculated.

Silver content.

4 reagent materials

Unless otherwise stated, only reagents identified as superior grade and secondary water or water of comparable purity were used in the analysis.

4.2 Nitric acid (HNO3). The mass fraction is 65%~68%.

4.3 Acid storage solution 1 (without chloride). All elements except for Au (100 mg/L, respectively) in Table C.1 of Appendix C at 1 mol/L

In acid (4.2) medium, prepare before use.

4.4 Acid storage solution 2 (which may contain chlorides and nitrates). Al, Au, Cr, Fe, Mg, Ni, Pt and Sn (100 mg/L, respectively)

1mol/L hydrochloric acid (4.1) or nitric acid (4.2) medium, prepared before use.

4.5 Aqueous water. The volume ratio of hydrochloric acid (4.1) to nitric acid (4.2) is 3.1, and it is prepared before use.

5 instruments

5.1 Inductively coupled plasma optical emission spectrometer (ICP-OES). with fixed or scanning channels; wavelength of related elements (see Appendix C)

The resolution is better than 0.02nm, the detection limit is better than 0.05mg/L; with

background correction function.