



Nickel — Determination of silver, arsenic, bismuth, cadmium, lead, antimony, selenium, tin, tellurium and thallium contents — Electrothermal atomic absorption spectrometric method

Nickel — Dosage de l'argent, de l'arsenic, du bismuth, du cadmium, du plomb, de l'antimoine, du sélénium, de l'étain, du tellure et du thallium — Méthode par spectrométrie d'absorption atomique électrothermique

First edition — 1985-12-15

UDC 669.24 : 543.7 : 546

Ref. No. ISO 7523-1985 (E)

Descriptors : nickel, chemical analysis, determination of content, silver, arsenic, bismuth, cadmium, lead, antimony, selenium, tin, tellurium, thallium, electrothermal atomic absorption method.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7523 was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Nickel — Determination of silver, arsenic, bismuth, cadmium, lead, antimony, selenium, tin, tellurium and thallium contents — Electrothermal atomic absorption spectrometric method

1 Scope and field of application

This International Standard specifies an electrothermal atomic absorption spectrometric method for the determination of the silver, arsenic, bismuth, cadmium, lead, antimony, selenium, tin, tellurium and thallium contents of high purity, refined, wrought and cast nickel within the ranges specified in table 1. This method is applicable to the independent determination of any one or more of the elements listed without including all elements specified in the standard solutions.

Table 1 — Concentration ranges of elements to be determined

Element	Concentration range* ($\mu\text{g/g}$)**
Ag	0,1 to 10
As	1 to 20
Bi	0,5 to 15
Cd	0,1 to 2
Pb	0,1 to 10
Sb	1 to 10
Se	1 to 10
Sn	1 to 5
Te	0,2 to 10
Tl	0,5 to 10

* For specific compositions, see ISO 6283.

** 1 $\mu\text{g/g}$ = 1 g/t

For potential interferences and precautions, see clause 9.

2 References

ISO 385/1, *Laboratory glassware — Burettes — Part 1: General requirements*.

ISO 648, *Laboratory glassware — One-mark pipettes*.

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*.

ISO 5725, *Precision of test methods — Determination of repeatability and reproducibility by inter-laboratory tests*.

3 Principle

Dissolution of a test portion in nitric acid and dilution of the solution to a known volume.

Introduction of a known volume of the solution into an electrothermal atomizer of an atomic absorption spectrometer.

Measurement of the absorption of the resonance line energy from the spectrum of each element and comparison with that of calibration solutions of the same element in a matched nickel matrix using background correction.

4 Reagents

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only deionized water or water of equivalent purity.

4.1 Nitric acid, $\rho_{20} = 1,41$ g/ml.

The same batch of nitric acid shall be used throughout the procedure.

NOTE — It may be necessary to redistil the nitric acid if high blanks are obtained.

4.2 Nitric acid, $\rho_{20} = 1,41$ g/ml, diluted 1 + 19.

The same batch of nitric acid shall be used throughout the procedure.

4.3 Mixed analyte standard solutions.

4.3.1 Analyte stock standard solutions, corresponding to 1,000 g of Ag, As, Bi, Cd, Pb, Sb, Se, Sn, Te and Tl per litre.

Prepare separately for each metal of interest.

4.3.1.1 Silver, arsenic, bismuth, cadmium, lead, selenium and tellurium.