
**Nickel alloys — Determination of
trace-element content by electrothermal
atomic absorption spectrometric
method —**

Part 2:

Determination of lead content

*Alliages de nickel — Dosage des éléments-traces — Méthode par
spectrométrie d'absorption atomique à excitation électrothermique —
Partie 2: Dosage du plomb*



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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11437-2 was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys*, Subcommittee SC 4, *Analysis of nickel alloys*.

ISO 11437 consists of the following parts, under the general title *Nickel alloys — Determination of trace-element content by electrothermal atomic absorption spectrometric method*:

- Part 1: *General requirements and sample dissolution*
- Part 2: *Determination of lead content*
- Part 3: *Determination of bismuth content*
- Part 4: *Determination of silver content*

Nickel alloys — Determination of trace-element content by electrothermal atomic absorption spectrometric method —

Part 2:

Determination of lead content

1 Scope

This part of ISO 11437 specifies an electrothermal atomic absorption spectrometric method for the determination of lead in the range of 0,5 g/tonne to 10,0 g/tonne in nickel alloys.

The general requirements concerning the apparatus, sampling, dissolution of the test sample, atomic absorption measurements, calculation and test report are given in ISO 11437-1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11437. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11437 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5725:1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests*.

ISO 11437-1:1994, *Nickel alloys — Determination of trace-element content by electrothermal atomic absorption spectrometric method — Part 1: General requirements and sample dissolution*.

3 Principle

Dissolution of a test portion in a mixture of acids. Addition of a modifier to an aliquot of the test solution.

Transfer of a small volume of the test solution to a graphite furnace electrothermal atomizer.

Measurement of the absorbance of the resonance line energy from the spectrum of lead and comparison with that of calibration solutions at a wavelength of 283,3 nm.

4 Reagents

In addition to the reagents listed in ISO 11437-1, the following special reagents are required.

4.1 Pure nickel metal, containing less than 1 g/tonne of lead.

4.2 Nickel, stock solution (50 g/l).

Weigh, to the nearest 0,1 g, 25,0 g of the pure nickel (4.1). Transfer to a 600 ml tall-form beaker and add 100 ml of water. Cautiously add 100 ml of nitric acid ($\rho_{20} = 1,41$ g/ml) in small portions, in such a manner that the dissolution remains under control. Cool the solution and transfer it to a 500 ml one-mark volumetric flask. Make up to the mark with water and mix.

NOTE 1 If large nickel turnings or chunks are used, gentle heating may be required to complete the dissolution.