International Standard 8288

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Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods

Qualité de l'eau — Dosage du cobalt, nickel, cuivre, zinc, cadmium et plomb — Méthodes par spectrométrie d'absorption atomique avec flamme

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Foreword

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Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods

1 Scope

This International Standard specifies three methods for the determination of cobalt, nickel, copper, zinc, cadmium and lead in water by flame atomic absorption spectrometry:

Section one: method A, for direct determination by flame atomic absorption spectrometry;

Section two: method B, for determination by flame atomic absorption spectrometry after chelation (APDC) and extraction (MIBK);

Section three: method C, for determination by flame atomic absorption spectrometry after chelation (HMA-HMDC) and extraction (DIPK-xylene).

2 Field of application

2.1 Method A is particularly applicable when concentrations of elements to be analysed are relatively high and when there are no interferences.

When the samples are of a complex or unknown nature or when they contain high concentrations of dissolved solids (brines or brackish waters) method A is not applicable and either method B or C should be selected.

The concentrations of elements which can be determined by method A may vary according to the characteristics of the atomic absorption spectrometric apparatus used but are generally in the ranges indicated in table 1.

Table 1

Element to be determined	Range of determination (mg/l)
Cobalt	0,1 to 10
Nickel	0,1 to 10
Copper	0,05 to 6
Zinc	0,05 to 2
Cadmium	0,02 to 2
Lead	0,2 to 10

If the concentrations are greater than the upper limits indicated in the table, the sample may be diluted before analysis.

2.2 Methods B and C are applicable when concentrations of elements to be analysed in the sample (or dilution of the sample) are greater than 0,5 µg/l.

2.2.1 Method B

The concentrations of the elements which can be determined by method B may vary according to the characteristics of the atomic absorption spectrometer used but are generally in the ranges indicated in table 2.

Table 2

Element to be determined	Range of determination (µg/l)
Cobalt	1 to 200
Nickel	1 to 200
Copper	1 to 200
Zinc	0,5 to 50
Cadmium	0,5 to 50
Lead	5 to 200

2.2.2 Method C

With a ratio of test portion to extraction solution of 20 to 1 by volume as indicated in 21.2, the concentrations of elements which can be determined by method C vary as indicated in table 3.

Table 3

Element to be determined	Range of determination (µg/l)
Cobalt	0,5 to 100
Nickel	0,5 to 100
Copper	0,5 to 100
Zinc	0,2 to 50
Cadmium	0,2 to 50
Lead	2 to 200