International Standard ISO 7627/6

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Hardmetals — Chemical analysis by flame atomic absorption spectrometry — Part 6 : Determination of chromium in contents from 0,01 to 2 % (*m/m*)

Métaux-durs — Analyse chimique par spectrométrie d'absorption atomique dans la flamme — Partie 6 : Dosage du chrome à des teneurs comprises entre 0,01 *et* 2 % (*m/m*)

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Foreword

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Hardmetals — Chemical analysis by flame atomic absorption spectrometry — Part 6 : Determination of chromium in contents from 0,01 to 2 % (*m/m*)

1 Scope and field of application

This part of ISO 7627 specifies the method to be used for the determination of the chromium content of hardmetals within the range 0,01 to 2 % (*m/m*) by flame atomic absorption spectrometry.

General requirements concerning the field of application, principle, interfering elements, apparatus, sampling and test report are given in ISO 7627/1.

2 Reference

ISO 7627/1, *Hardmetals — Chemical analysis by flame atomic absorption spectrometry — Part 1 : General requirements.*

3 Reagents

3.1 Potassium pyrosulfate.

3.2 Perchloric acid, ϱ 1,54 or 1,67 g/ml.

3.3 Ammonium citrate, solution.

Dissolve 100 g of citric acid in 1 500 ml of water and add 400 ml of ammonia solution (ϱ 0,91 g/ml).

3.4 Hydrogen peroxide, 30 % (*m/m*).

3.5 High purity stock solution, for calibration purposes, containing 1,000 g of chromium per litre.

NOTE — This value is understood to establish a maximum limit of 1,000 5 g and a minimum limit of 0,999 5 g.

4 Procedure

4.1 Test portion

Weigh, to the nearest 0,001 g, the relevant amount of the test sample indicated in table 1. Transfer it to a 100 ml conical flask (preferably of quartz).

NOTE — In this special case, the sample shall pass a 0,18 mm sieve.

4.2 Dissolution of the test portion

Add 5 g of the potassium pyrosulphate (3.1) and a few drops of the perchloric acid (3.2) to the beaker containing the test portion (4.1) and heat gently until the test portion is completely dissolved. Add 40 ml of the ammonium citrate solution (3.3), and about 0,5 ml of the hydrogen peroxide (3.4). Then transfer the solution to a 100 ml polypropylene one-mark volumetric flask and dilute to the mark.

Table 1 — Test portion, instrumental parameters and characteristics of calibration functions

Content %	Test portion g	Dilution volume (*V*) for the test portion[1] ml	Oxidant	Wavelength nm	Reciprocal sensitivity, for 1 % absorption[1] µg/ml	Linear range[1] %
0,01 to 0,1	0,500	100	N_2O	357,9	0,11	0 to 0,12
0,1 to 0,5	0,500	500	N_2O	357,9	0,11	0,1 to 0,5
0,1 to 0,5	0,100	100	N_2O	357,9	0,11	0,1 to 0,5
0,5 to 2	0,100	500	N_2O	357,9	0,11	0,4 to 2

1) Guidelines for information only.