
**Water quality — Determination of
chromium(VI) — Method using flow
analysis (FIA and CFA) and spectrometric
detection**

*Qualité de l'eau — Dosage du chrome(VI) — Méthode par analyse en
flux (FIA et CFA) et détection spectrométrique*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Principle	1
4 Interferences	2
5 Reagents	2
6 Apparatus	5
7 Sampling and sample preparation	6
8 Procedure	6
9 Determination	7
10 Expression of results	8
11 Test report	8
Annex A (informative) Examples of flow analysis systems for the determination of chromium(VI)	9
Annex B (informative) Performance characteristics	12
Bibliography	14

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 23913 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Introduction

Methods using flow analysis automatic wet chemical procedures are particularly suitable for the processing of many analytes in water, in large sample series at a high analysis frequency.

Analysis can be performed by flow injection analysis (FIA) [1], [2] and continuous flow analysis (CFA). Both methods share the feature of an automatic dosage of the sample into a flow system (manifold) where the analyte in the sample reacts with the reagent solutions on its way through the manifold. The sample preparation may be integrated in the manifold. The reaction product is measured in a flow detector (e.g. flow photometer).

It should be investigated whether and to what extent particular problems will require the specification of additional marginal conditions.

This document is a preview generated by EVS

Water quality — Determination of chromium(VI) — Method using flow analysis (FIA and CFA) and spectrometric detection

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

IMPORTANT — It is absolutely essential that tests conducted according to this International Standard are carried out by suitably qualified staff.

1 Scope

This International Standard specifies flow injection analysis (FIA) and continuous flow analysis (CFA) methods for the determination of chromium(VI) in various types of water. The method applies to the following mass concentration ranges.

FIA: 20 µg/l to 200 µg/l and 200 µg/l to 2 000 µg/l for surface water, leachates and waste water.

CFA: 2 µg/l to 20 µg/l and 20 µg/l to 200 µg/l for drinking water, ground water, surface water, leachates and waste water.

The range of application may be changed by varying the operating conditions.

Seawater may be analysed by these methods with changes in sensitivity and after adaptation of the reagent and calibration solutions to the salinity of the samples.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 5667-3, *Water quality — Sampling — Part 3: Guidance on the preservation and handling of water samples*

ISO 8466-1, *Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 1: Statistical evaluation of the linear calibration function*

3 Principle

Chromium(VI) reacts with 1,5-diphenylcarbazide (DPC) to form a red-violet chromium-1,5-diphenylcarbazone complex. The absorbance of this complex is measured at $544 \text{ nm} \pm 10 \text{ nm}$ (maximum absorbance at 544 nm).