

Water quality — Determination of polycyclic aromatic hydrocarbons (PAH) —

**Part 2: Determination of six PAH
by high-performance liquid
chromatography with fluorescence
detection after liquid-liquid extraction**

ICS 13.060.50

National foreword

This British Standard reproduces verbatim ISO 7981-2:2005 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee EH/3, Water quality, to Subcommittee EH/3/2, Physical, chemical and biochemical methods, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to v, a blank page, pages 1 to 18, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 1 August 2005

© BSI 1 August 2005

INTERNATIONAL STANDARD

ISO
7981-2

First edition
2005-06-15

Water quality — Determination of polycyclic aromatic hydrocarbons (PAH) —

Part 2:

Determination of six PAH by high- performance liquid chromatography with fluorescence detection after liquid-liquid extraction

*Qualité de l'eau — Détermination des hydrocarbures aromatiques
polycycliques (HAP) —*

*Partie 2: Dosage de six HAP par chromatographie de haute
performance en phase liquide avec détection fluorimétrique à la suite
d'une extraction liquide-liquide*



Reference number
ISO 7981-2:2005(E)

AVA Documents
Document Sharing Hub

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Principle	1
4 Interferences	2
5 Reagents	3
6 Apparatus	4
7 Sampling	5
8 Procedure	6
9 Calibration	8
10 Measurement of samples	9
11 Determination of the recovery	9
12 Blank measurement	10
13 Calculation	10
14 Expression of results	10
15 Test report	11
16 Accuracy	11
Annex A (informative) Examples of chromatographic conditions and columns	12
Annex B (informative) Examples for the construction of special apparatus	14
Annex C (informative) Accuracy	17
Bibliography	18

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 7981-2 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

ISO 7981 consists of the following parts, under the general title *Water quality — Determination of polycyclic aromatic hydrocarbons (PAH)*:

- *Part 1: Determination of six PAH by high-performance thin-layer chromatography with fluorescence detection after liquid-liquid extraction*
- *Part 2: Determination of six PAH by high-performance liquid chromatography with fluorescence detection after liquid-liquid extraction*

Introduction

Polycyclic aromatic hydrocarbons (PAH) are present in nearly all types of waters. These substances are adsorbed on solids (sediments, suspended matter) as well as dissolved in the liquid phase.

Some PAH are known or suspected to cause cancer. The maximum acceptable levels of PAH in waters intended for human consumption are given in European Legislation ^[1] ^[2] ^[3] ^[4].

The sum of the mass concentrations of the six PAH specified in this part of ISO 7981 usually is about 0,01 µg/l to 0,05 µg/l in ground water, up to 1 µg/l in surface water, and up to 1 000 µg/l in waste water.

blank

Water quality — Determination of polycyclic aromatic hydrocarbons (PAH) —

Part 2:

Determination of six PAH by high-performance liquid chromatography with fluorescence detection after liquid-liquid extraction

WARNING — Some compounds being measured are presumed to be carcinogenic. Acetonitrile and hexane are harmful.

Persons using this part of ISO 7981 should be familiar with normal laboratory practise. 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 of this part of ISO 7981 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 part of ISO 7981 be carried out by suitably trained staff.

1 Scope

This part of ISO 7981 specifies the determination of six selected PAH in drinking, mineral and table waters and ground and surface waters in mass concentrations above 0,005 µg/l, by high-performance liquid chromatography with fluorescence detection after liquid-liquid extraction. The six PAH are: fluoranthene, benzo[*b*]fluoranthene, benzo[*a*]pyrene, benzo[*k*]fluoranthene, indeno[1,2,3-*cd*]pyrene, and benzo[*ghi*]perylene (see Table 1).

With some modification, this method is also applicable for the analysis of moderately polluted waste waters.

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 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

Since PAH can to a large extent be adsorbed on particulate matter, the whole sample is analysed.

NOTE For the analysis of surface water, a differentiation between dissolved and undissolved PAH can be desirable, but this is not relevant for drinking water.