
**Water quality — Determination of
selected phthalates using gas
chromatography/mass spectrometry**

*Qualité de l'eau — Dosage de certains phtalates par chromatographie
en phase gazeuse/spectrométrie de masse*



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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.

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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 18856 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Introduction

The user should be aware that particular problems could require the specification of additional marginal conditions.

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WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International 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 be carried out by suitably trained staff.

1 Scope

This International Standard specifies a method for the determination of phthalates in water after solid phase extraction and gas chromatography/mass spectrometry.

This method is applicable to the determination of phthalates (see Table 1) in ground water, surface water, wastewater and drinking water in mass concentrations ranging from above 0,02 µg/l up to 0,150 µg/l, depending on the individual substance and the value of the blank.

The applicability of this method to other phthalates not specified in Table 1 is not excluded, but it is necessary to determine its applicability in each case (see Annex A for the list of phthalates).

General remarks concerning the recovery and use of internal standards is given in Annex B.

Table 1 — Phthalates determined by this method

No	Name	Formula	Abbreviation	Molar mass g/mol	CAS ^a number
1	Dimethyl phthalate	C ₁₀ H ₁₀ O ₄	DMP	194,2	131-11-3
2	Diethyl phthalate	C ₁₂ H ₁₄ O ₄	DEP	222,24	84-66-2
3	Dipropyl phthalate	C ₁₄ H ₁₈ O ₄	DPP	250,3	131-16-8
4	Diisobutyl phthalate	C ₁₆ H ₂₂ O ₄	DiBP	278,4	84-69-5
5	Dibutyl phthalate	C ₁₆ H ₂₂ O ₄	DBP	278,4	84-74-2
6	Butyl benzyl phthalate	C ₁₉ H ₂₀ O ₄	BBzP	312,4	85-68-7
7	Dicyclohexyl phthalate	C ₂₀ H ₂₆ O ₄	DCHP	330,4	84-61-7
8	Di(2-ethylhexyl) phthalate	C ₂₄ H ₃₈ O ₄	DEHP	390,6	117-81-7
9	Di(<i>n</i> -octyl) phthalate	C ₂₄ H ₃₈ O ₄	DOP	390,6	117-84-0
10	Didecyl phthalate	C ₂₈ H ₄₆ O ₄	DDcP	446,7	84-77-5
11	Diundecyl phthalate	C ₃₀ H ₅₀ O ₄	DUP	474,4	3648-20-2

^a CAS: Chemical Abstracts System.

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 reference document (including any amendments) applies.

ISO 5667-1, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes*

ISO 5667-2, *Water quality — Sampling — Part 2: Guidance on sampling techniques*

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

3 Principle

Extraction of the compounds from the water by solid-phase extraction. Then separation is accomplished using capillary columns by gas chromatography and followed by identification and quantification of the phthalates by mass spectrometry. The principle of this method is outlined in Figure 1.

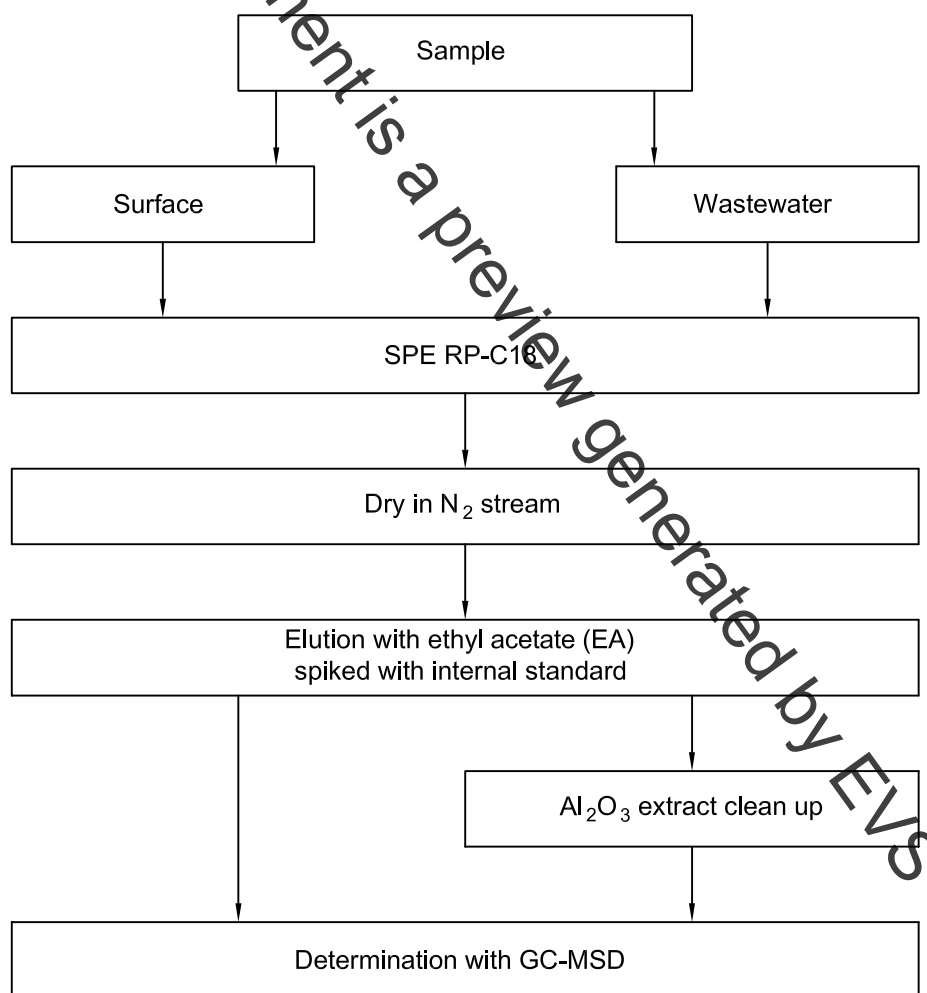


Figure 1 — Flowchart of the analysis