
**Water quality — Determination of
polychlorinated naphthalenes (PCN)
— Method using gas chromatography
(GC) and mass spectrometry (MS)**

*Qualité de l'eau — Détermination des naphthalènes polychlorés
(PCN) — Méthode par chromatographie en phase gazeuse (CG) et
spectrométrie de masse (SM)*



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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

Water quality — Determination of polychlorinated naphthalenes (PCN) — Method using gas chromatography (GC) and mass spectrometry (MS)

WARNING — Persons using this Technical Specification should be familiar with normal laboratory practice. This Technical Specification 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.

Attention is drawn to any relevant national safety regulations. A number of PCN congeners have dioxin-like properties and are toxic chemicals. All work with PCNs requires the utmost care; the national safety measures which correspond to those for toxic substances shall be strictly followed.

IMPORTANT — It is absolutely essential that tests conducted in accordance with this Technical Specification be carried out by suitably trained staff.

1 Scope

This Technical Specification specifies a method for the determination of polychlorinated naphthalenes (PCNs), where “poly” means “mono” to “octa”, in waters and waste waters [containing less than 2 g/l solid particulate material (SPM)] using high resolution gas chromatography–high resolution mass spectrometry (HRGC–HRMS).

NOTE 1 The congeners analysed by this method are listed in [Table 1](#).

The working range of the method is 20 pg/l to 8 ng/l. The method is optimized for PCNs, but can be modified to include other coplanar compounds such as polychlorinated dioxins and furans (PCDDs/PCDFs) and dioxin-like tetra- to heptachlorinated biphenyls (dlPCBs). This method can be used to determine PCNs in other matrices (e.g. biota, sediments, air); however, additional clean-up steps and techniques can be necessary for samples with high organic loadings. Low resolution mass spectrometry (LRMS) and mass spectrometry–mass spectrometry (MS–MS) can be used.

NOTE 2 LRMS and MS–MS conditions are summarized in [Annex A](#).

Both LRMS and MS–MS can be less selective than HRMS and there is a possibility of bias due to interfering compounds if these techniques are used.

The detection limits and quantification levels in this method are dependent on the level of interferences as well as instrumental limitations.

NOTE 3 The minimum levels (ML) in [Table 4](#) are the levels at which the PCNs can typically be determined with no interferences present.

This method is performance based. The analyst is permitted to modify the method, e.g. to overcome interferences, provided that all performance criteria in this method are met.

NOTE 4 The requirements for establishing method validation or equivalency are given in [Clause 9](#).

2 Normative references

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