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**Water quality — Determination of  
glyphosate and AMPA — Method using  
high performance liquid chromatography  
(HPLC) and fluorometric detection**

*Qualité de l'eau — Dosage du glyphosate et de l'AMPA — Méthode par  
chromatographie liquide à haute performance (CLHP) et détection  
fluorimétrique*



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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.

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 21458 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*.

# Water quality — Determination of glyphosate and AMPA — Method using high performance liquid chromatography (HPLC) and fluorometric detection

**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. Some of the solvents used in the procedure are toxic and dangerous. Exercise caution when handling them.

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

When this method is applied to its analysis, surface water shall be tested for additional and for multiplicative interferences.

## 1 Scope

This International Standard specifies a method for the determination of glyphosate and its major metabolite, aminomethylphosphonic acid (AMPA), in drinking water, ground water and surface water. The lowest limit of determination is about 0,05 µg/l. This method may be applicable to other types of waters provided the method is validated for each case.

## 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 6058, *Water quality — Determination of calcium content — EDTA titrimetric method*

ISO 6059, *Water quality — Determination of the sum of calcium and magnesium — EDTA titrimetric method*

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

This method is based on derivatization of glyphosate and AMPA (see Table 1) by using 9-fluorenylmethyl chloroformate (FMOCCl) in basic conditions followed by analysis using liquid chromatography on a polar phase linked to a fluorescence detector.

The quantification of the compounds is performed by using external calibration or by internal standard calibration or by applying the standard addition method. The compounds are identified by comparing the retention times or by using the standard addition method.