

STN	Kvalita vody Analýza mikroplastov vo vode Časť 2: Metódy vibračnej spektroskopie pre vody s nízkym obsahom nerozpustených látok vrátane pitnej vody (ISO 16094-2: 2025)	STN EN ISO 16094-2 75 7401
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Water quality - Analysis of microplastic in water - Part 2: Vibrational spectroscopy methods for waters with low content of suspended solids including drinking water (ISO 16094-2:2025)

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

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EN ISO 16094-2

October 2025

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English Version

**Water quality - Analysis of microplastic in water - Part 2:
Vibrational spectroscopy methods for waters with low
content of suspended solids including drinking water (ISO
16094-2:2025)**

Qualité de l'eau - Analyse des microplastiques dans
l'eau - Partie 2: Méthodes de spectroscopie
vibrationnelle pour les eaux à faible teneur en matières
en suspension, y compris l'eau potable (ISO 16094-
2:2025)

Wasserbeschaffenheit - Analyse von Kunststoff in
Wasser - Teil 2: Verfahren mittels
Vibrationsspektroskopie (ISO 16094-2:2025)

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EN ISO 16094-2:2025 (E)

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European foreword

This document (EN ISO 16094-2:2025) has been prepared by Technical Committee ISO/TC 147 "Water quality" in collaboration with Technical Committee CEN/TC 230 "Water analysis" the secretariat of which is held by DIN.

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Endorsement notice

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International Standard

ISO 16094-2

Water quality — Analysis of microplastic in water —

Part 2: Vibrational spectroscopy methods for waters with low content of suspended solids including drinking water

Qualité de l'eau — Analyse des microplastiques dans l'eau —

*Partie 2: Méthodes de spectroscopie vibrationnelle pour les eaux
à faible teneur en matières en suspension, y compris l'eau potable*

**First edition
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ISO 16094-2:2025(en)



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ISO 16094-2:2025(en)**Foreword**

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This document was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 2, *Physical, chemical and biochemical methods*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 230, *Water analysis*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 16094 series can be found on the ISO website.

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ISO 16094-2:2025(en)

Introduction

Pollution linked to microplastics is recognized as a global phenomenon. The standardization of the sampling, quantification and identification protocols is required to ensure reliability and comparability of the data produced for health and environmental risk assessments.

Microplastics in water can be identified and quantified using various methodological approaches. Depending on the measurement objectives, several complementary approaches shall be used to cover the full spectrum of microplastics (size and chemical nature). [Table 1](#) resumes the characteristics and the information obtained with spectroscopic techniques.

Table 1 — Characteristics of the various analytical techniques and information obtained.

Characteristics and information obtained	Raman micro spectroscopy	Infrared micro spectroscopy
Type of sample	Water filtrate residues	
Chemical nature of the polymer	Yes	
Information provided by analytical technique	Functional groups	
Results expression	Polymer type, number of particles, size of particles	
Minimum measurable size range of particles	1 µm to 5 µm	20 µm
Minimum mass subject to measurement after preparation	Undefined	
Consequences for the test sample after measurement	Non-destructive	
Main interferences	mineral particles, coloured particles, pigments, fluorescence, fatty acids, fatty amides, proteins, surface alterations by biofilms or weathering, carbohydrates, generated by microbes	mineral particles, proteins, surface alterations by biofilms or weathering, particles loaded with carbon black, presence of water, carbohydrates generated by microbes

Water quality — Analysis of microplastic in water —

Part 2:

Vibrational spectroscopy methods for waters with low content of suspended solids including drinking water

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

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

1 Scope

This document establishes key principles for the investigation of microplastics in drinking water and water with low content of natural suspended solids using a microscopy technique coupled with vibrational spectroscopy.

This method is applicable to:

- determine the size of microplastics [which range from 1 μm to 5 000 μm], count them and classify them by size range;
- identify the chemical composition of microplastics, the main ones (most used in industry and most abundant in the environment) being: polyethylene (PE), polypropylene (PP), polyethylene terephthalate (PET), polycarbonate (PC), polystyrene (PS), polytetrafluoroethylene (PTFE), polyvinyl chloride (PVC), polyamide (PA), polymethyl methacrylate (PMMA) and polyurethane (PU);

This method is applicable to water with a low content of organic matter and other suspended matter as defined in ISO 6107 (1 mg/l to 100 mg/l or lower when interfering with the determination), i.e.,

- ultrapure water;
- water intended for human consumption;
- raw groundwaters.

Given the very low concentrations of microplastics usually present in these waters, special attention needs to be paid to potential sources of contamination during sample preparation.

This method is intended to determine and characterize large numbers of particles in the sample in automatic mode.

This method can also identify the nature of the other particles that are outside the scope of this document, for example minerals, proteins, cellulose and pigments.

This method does not apply to the characterization of substances intentionally added to or adsorbed on the surface of microplastics. This method does not apply to the determination of the geometric shape of microplastics.

ISO 16094-2:2025(en)**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 14644-1:2015, *Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness by particle concentration*

ISO/IEC Guide 99:2007, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

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