International

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

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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