INTERNATIONAL STANDARD

ISO 5667-17

Second edition
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Water quality — Sampling —

Part 17: Guidance on sampling of bulk suspended solids

Qualité de l'eau — Échantillonnage —

Partie 17: Lignes directrices pour l'échantillonnage des matières solides en suspension

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web 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.

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 5667-17 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 6, *Sampling (general methods)*.

This second edition cancels and replaces the first edition (ISO 5667-17:2000), which has been technically revised.

ISO 5667 consists of the following parts, under the general title *Water quality — Sampling*:

— *Part 1: Guidance on the design of sampling programmes and sampling techniques*

— *Part 3: Guidance on the preservation and handling of water samples*

— *Part 4: Guidance on sampling from lakes, natural and man-made*

— *Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems*

— *Part 6: Guidance on sampling of rivers and streams*

— *Part 7: Guidance on sampling of water and steam in boiler plants*

— *Part 8: Guidance on the sampling of wet deposition*

— *Part 9: Guidance on sampling from marine waters*

— *Part 10: Guidance on sampling of waste waters*

— *Part 11: Guidance on sampling of groundwaters*

— *Part 12: Guidance on sampling of bottom sediments*

— *Part 13: Guidance on sampling of sludges from sewage and water treatment works*

— *Part 14: Guidance on quality assurance of environmental water sampling and handling*

— *Part 15: Guidance on preservation and handling of sludge and sediment samples*

— *Part 16: Guidance on biotesting of samples*

— *Part 17: Guidance on sampling of bulk suspended solids*

— *Part 18: Guidance on sampling of groundwater at contaminated sites*

— *Part 19: Guidance on sampling of marine sediments*

— Part 20: *Guidance on the use of sampling data for decision making — Compliance with thresholds and classification systems*

The following parts are under preparation:

— *Part 21: Guidance on sampling of drinking water distributed by tankers or means other than distribution pipes*

— *Part 22: Guidance on design and installation of groundwater sample points*

— *Part 23: Determination of significant pollutants in surface waters using passive sampling*

Introduction

This part of ISO 5667 reflects the important role of suspended solids in flowing water, especially of the silt plus clay (< 63 µm) component and associated carbon, as a transport medium for nutrients (especially phosphorus), trace metals, and certain classes of organic compounds (see Clause A.1).

Although analysis of suspended solids has been carried out for many years, there are no standard methods for field sampling of suspended solids for water quality purposes (i.e. for physical, chemical, biological and/or toxicological characterisation). While standard methods exist for sampling of water for sedimentological purposes (see ISO 5667-1 [1], ISO 5667-4 [2] and ISO 5667-6 [3]), these are often not appropriate for the chemical analysis of suspended solids due to contamination from the sampler itself and to a lack of sufficient sample volume for reliable chemical analysis. Often, indirect methods of assessing the chemical contribution of the solid fraction (e.g. method of differences, see Clause A.3) provide erroneous results (see Clause A.2) due to problems caused during the filtration process and through the manipulation of analytical results to determine the concentrations of chemical analytes in the particulate phase (see Clauses A.2 and A.3). Because of the lack of standards for sampling of suspended solids for water quality purposes and the improbability of achieving complete standardisation because of differences in the objectives of water quality programmes and the lack of standard apparatus, this part of ISO 5667 provides guidance to the various sampling procedures, their biases, and alternatives. This part of ISO 5667 excludes sampling protocols that apply to conventional water sampling. Field and laboratory filtration procedures that are conventionally used to measure the quantity of suspended solids are also excluded. Any reference to these methods is solely for the purpose of demonstrating their profound limitations for suspended solids quality purposes.

The objectives of a water quality programme will dictate the size of sample required and therefore the type of apparatus to be used. Generally, however, the analysis of physical, chemical, biological, and toxicological properties can require samples of mass measurable in grams to hundreds of grams to be collected, depending on the analysis to be undertaken. Examples of programme objectives that require bulk collection of suspended solids include:

— ambient monitoring for water quality assessment, control or regulation;

— in-river monitoring of effluents for regulatory or control purposes, especially for chemical and toxicological properties;

— research into water quality, including physico-chemical processes that affect the pathways, fate, and effects of suspended solids, and their associated nutrient and contaminant chemistry;

— recovery of suspended solids for purposes of physical analysis, including particle size, organic content including particulate organic carbon, suspended solids geochemistry, inorganic and organic chemistry of suspended solids, and toxicity of suspended solids;

— collecting of suspended solids samples for the purpose of long-term storage (Reference [35]).

Water quality — Sampling —

Part 17: Guidance on sampling of bulk suspended solids

1 Scope

This part of ISO 5667 is applicable to the sampling of suspended solids for the purpose of monitoring and investigating freshwater quality, and more particularly to flowing freshwater systems such as rivers and streams. Certain elements of this part of ISO 5667 can be applied to freshwater lakes, reservoirs, and impoundments; however, field sampling programmes can differ and are not necessarily covered here.

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

ISO 5667-14, *Water quality — Sampling — Part 14: Guidance on quality assurance of environmental water sampling and handling*

ISO 5667-15, *Water quality — Sampling — Part 15: Guidance on preservation and handling of sludge and sediment samples* [1)]

3 Terms and definitions

For the purposes of this part of ISO 5667, the following terms and definitions apply.

3.1
suspended solids
⟨bulk sampling⟩ solids with a diameter greater than 0,45 µm that are suspended in water

3.2
bulk suspended solids
solids that can be removed from water by filtration, settling or centrifuging under specified conditions

NOTE Adapted from ISO 6107-2:2006 [4], 139, “suspended solids”.

3.3
isokinetic sampling
technique in which the sample from a water stream passes into the orifice of a sampling probe with a velocity equal to that of the stream in the immediate vicinity of the probe

[ISO 6107-2:2006 [4], 56]

1) To be published. (Revision of ISO 5667-15:1999)