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Water quality - Sampling - Part 6: Guidance on sampling of rivers and streams

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Qualité de l'eau - Échantillonnage - Partie 6: Lignes directrices pour l'échantillonnage
des rivières et des cours d'eau (standards.iteh.ai)

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SIST ISO 5667-6:2015

en

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STANDARD

ISO
5667-6

Third edition
2014-07-15

Water quality — Sampling —

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

Qualité de l'eau — Échantillonnage —

*Partie 6: Lignes directrices pour l'échantillonnage des rivières et des
cours d'eau*

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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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 6, *Sampling*.

This third edition cancels and replaces the second edition (ISO 5667-6:2005), which has been technically revised.

<https://standards.iteh.ai/catalog/standards/sist/b8b8c606-00fc-46fb-a38f-109c197cc3b9/sist-iso-5667-6-2015>

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: 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*
- *Part 14: Guidance on quality assurance and quality control of environmental water sampling and handling*
- *Part 15: Guidance on the preservation and handling of sludge and sediment samples*

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- *Part 16: Guidance on biotesting of samples*
- *Part 17: Guidance on sampling of bulk suspended solids*
- *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*
- *Part 21: Guidance on sampling of drinking water distributed by tankers or means other than distribution pipes*
- *Part 22: Guidance on the design and installation of groundwater monitoring points*
- *Part 23: Guidance on passive sampling in surface water*

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Introduction

An understanding of the purpose of sampling is an essential prerequisite to identifying the principles to be applied to a particular sampling problem. Examples of the purposes of sampling programmes commonly devised for rivers and streams are as follows:

- a) to determine the suitability of the water quality of a river or stream within a river basin for a particular use, such as
 - 1) a source of drinking water,
 - 2) for agricultural use (e.g. all types of irrigation, live-stock watering),
 - 3) for the maintenance or development of fisheries,
 - 4) for amenity use (e.g. aquatic sports and swimming), and
 - 5) for conservation and protection of aquatic life;
- b) to assess the impact of human activities on the quality of water, such as
 - 1) study of the effects of waste discharge or accidental spillages on a receiving water,
 - 2) assessment of the impact of land use on river or stream quality,
 - 3) assessment of the effect of the accumulation and release of substances including contaminants from bottom deposits on aquatic biota within the water mass, or on bottom deposits,
 - 4) study of the effects of abstraction, river regulation, and river-to-river water transfers on the chemical quality of rivers and their aquatic biota, and
 - 5) study of the effects of river engineering works on the water quality (e.g. addition or removal of weirs, changes to channel or bed structure).

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Water quality — Sampling —

Part 6: Guidance on sampling of rivers and streams

WARNING — The focus of this part of ISO 5667 is the collection and integrity of water samples. The collection of these samples can be hazardous and attention is therefore drawn to the existence in some countries of legislative requirements for the safety of personnel. It is essential that all sampling personnel have had thorough health and safety training for the conditions they are likely to encounter.

1 Scope

This part of ISO 5667 sets out the principles to be applied to the design of sampling programmes, sampling techniques, and the handling of water samples from rivers and streams for physical and chemical assessment.

It is not applicable to the sampling of estuarine or coastal waters nor for microbiological sampling.

NOTE 1 Procedures for microbiological sampling are given in ISO 19453.^[10]

This part of ISO 5667 is neither applicable to the examination of sediment, suspended solids or biota, nor to dammed stretches of rivers or streams. Also, it is not applicable to passive sampling of surface waters (see ISO 5667-23).

NOTE 2 In cases where naturally occurring or artificially constructed dams result in the retention or storage of water for several days or more, the stretch of the river or stream should be considered as a standing water body. For sampling purposes, see ISO 5667-4.

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.

ISO 5667-1, *Water quality — Sampling — Part 1: Guidance on the design of sampling programmes and sampling techniques*

ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples*

ISO 5667-11, *Water quality — Sampling — Part 11: Guidance on sampling of groundwaters*

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

ISO 6107-2:2006, *Water quality — Vocabulary — Part 2*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5667-11, ISO 6107-2, and the following apply.

ISO 5667-6:2014(E)

3.1 automatic sampling
process whereby samples are taken either discretely or continuously, independently of human intervention, and according to a predetermined programme

[SOURCE: ISO 6107-2:2006, 9]

3.2 composite sample
two or more samples or sub-samples, mixed together in appropriate known proportions (either discretely or continuously), from which the average value of a desired characteristic can be obtained

Note 1 to entry: The proportions are usually based on time or flow measurements.

[SOURCE: ISO 6107-2:2006, 29]

3.3 continuous sampling
process whereby a sample is taken continuously from a body of water

[SOURCE: ISO 6107-2:2006, 32]

3.4 discrete sampling
process whereby single samples are taken from a body of water

[SOURCE: ISO 6107-2:2006, 40]

3.5 incremental sampling
technique in which small samples are taken because of a low flow rate (with the possibility of contamination by bottom deposits) or because of restricted access (e.g. where a sample is obtained through a small aperture), these small samples then being aggregated to form a composite sample

Note 1 to entry: All the liquid contained in the small samples is used, unlike blending of aliquots used to make a flow-proportional sample (see [9.4](#)).

3.6 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

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

3.7 light non-aqueous-phase liquid LNAPL
organic compound that has low water solubility and a density less than that of water

EXAMPLE Petroleum products.

[SOURCE: ISO 5667-11:2009, 3.15, modified — Singular forms replace plural forms.]

3.8 random sampling
form of sampling whereby the chances of obtaining different concentration values of a determinand are precisely those defined by the probability distribution of the determinand in question