
Water quality — Sampling —

Part 4:

**Guidance on sampling from lakes,
natural and man-made**

Qualité de l'eau — Échantillonnage —

*Partie 4: Lignes directrices pour l'échantillonnage des eaux des lacs
naturels et des lacs artificiels*

This document is a preview generated by EBS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Sampling equipment	2
4.1 Material selection	2
4.2 Cleaning	3
4.3 Maintenance	3
5 Design of the sampling programme	3
6 Sampling procedure	4
6.1 General	4
6.2 Sampling location	4
6.2.1 General	4
6.2.2 Horizontal distribution of sampling positions	4
6.2.3 Vertical distribution of sampling points	5
6.3 Frequency and timing of sampling	5
6.4 Choice of sampling method	5
6.5 Choice of the sampling device	5
6.6 Aids for recovery of lost sampling equipment	6
6.7 Blank sample	6
6.8 Transport, stabilization and keeping of samples	6
7 Occupational health and safety	6
8 Sample containers	6
9 Priority of procedure	6
10 Sample collection, contamination with environmental materials	8
11 Rinsing the sampling equipment	9
12 Sampling surface or near-surface water with an open sampling device	9
12.1 General	9
12.2 Sampling	9
12.3 Filling multiple containers	9
13 Sampling with closed samplers	10
14 Sampling for volatile parameters	10
15 Sampling through ice	10
16 Severe freezing conditions	10
17 Sample identification and records	11
18 Quality assurance and quality control	11
18.1 General	11
18.2 Avoidance of contamination	12
Annex A (informative) Examples of sampling devices	14
Annex B (informative) Advantages and disadvantages of sampling equipment	28
Annex C (informative) Sampling from boats — Maintaining station	29
Annex D (informative) Example of a report — Sampling from lakes, natural and man-made	31
Annex E (informative) Continuous measurement of water samples with immersion probes	32
Bibliography	34

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 147, *Water quality*, Subcommittee SC 6, *Sampling (general methods)*.

This second edition cancels and replaces the first edition (ISO 5667-4:1987), 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: 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*
- *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 waters*
- *Part 24: Guidelines for the auditing of water quality sampling*

Water quality — Sampling —

Part 4:

Guidance on sampling from lakes, natural and man-made

1 Scope

This part of ISO 5667 gives guidelines for the design of sampling programmes, techniques and the handling and preservation of samples of water, from natural and man-made lakes during open-water and ice-covered conditions. This part of ISO 5667 is applicable to lakes with and without aquatic vegetation.

Guidance on sampling for microbiological examination is not included.

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

ISO 7027, *Water quality — Determination of turbidity*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

grab sample

single discrete sample collected from a body of water at a specific time, location and depth

3.2

depth profile samples

two or more discrete samples collected at two or more depths at a specific time and location on a lake

3.3

area profile samples

two or more discrete samples collected from the same depth at two or more locations on a lake

3.4

composite sample

two or more *depth profile* (3.2) or *area profile samples* (3.3) that are combined to form a single sample prior to measurement of water quality parameters

3.5

integrated sample

single sample collected by a tube or similar sampler that collects a water sample across a range of depths