

EUROPEAN STANDARD

EN ISO 5667-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2024

ICS 13.060.45

Supersedes EN ISO 5667-3:2018

English Version

Water quality - Sampling - Part 3: Preservation and handling of water samples (ISO 5667-3:2024)

Qualité de l'eau - Échantillonnage - Partie 3:
Conservation et manipulation des échantillons d'eau
(ISO 5667-3:2024)

Wasserbeschaffenheit - Probenahme - Teil 3:
Konservierung und Handhabung von Wasserproben
(ISO 5667-3:2024)

This European Standard was approved by CEN on 1 March 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Document Preview

[SIST EN ISO 5667-3:2024](https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST EN ISO 5667-3:2024](https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cf1836b41b2/sist-en-iso-5667-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cf1836b41b2/sist-en-iso-5667-3-2024>

European foreword

This document (EN ISO 5667-3:2024) 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.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2024, and conflicting national standards shall be withdrawn at the latest by October 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 5667-3:2018.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

iTeh Standards
(<https://standards.iteh.ai>)
Endorsement notice

The text of ISO 5667-3:2024 has been approved by CEN as EN ISO 5667-3:2024 without any modification.

[SIST EN ISO 5667-3:2024](https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>



**International
Standard**

ISO 5667-3

**Water quality — Sampling —
Part 3:
Preservation and handling of
water samples**

Qualité de l'eau — Échantillonnage —

Partie 3: Conservation et manipulation des échantillons d'eau

**Sixth edition
2024-03**

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST EN ISO 5667-3:2024](https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>

ISO 5667-3:2024(en)

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[SIST EN ISO 5667-3:2024](https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cf1836b41b2/sist-en-iso-5667-3-2024)

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cf1836b41b2/sist-en-iso-5667-3-2024>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, 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
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2024 – All rights reserved

ISO 5667-3:2024(en)

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviated terms for plastics	2
5 Sampling and chain of custody	3
6 Reagents and materials	3
6.1 Solids.....	3
6.2 Solutions.....	4
6.3 Materials.....	5
7 Containers	5
7.1 Container selection and preparation.....	5
7.2 On-site filtration.....	6
7.3 Filling the container.....	6
8 Sample handling and preservation	6
8.1 General.....	6
8.2 Sample handling and preservation for physical and chemical analysis.....	7
8.3 Sample handling and preservation for hydrobiological analysis.....	7
8.4 Sample handling and preservation for radiochemical analysis.....	8
9 Sample transport	8
10 Identification of samples	9
11 Sample reception	9
12 Sample storage	9
Annex A (informative) Techniques for sample preservation	11
Annex B (informative) Container preparation	58
Bibliography	59

ISO 5667-3:2024(en)

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 6, *Sampling (general 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).

This sixth edition cancels and replaces the fifth edition (ISO 5667-3:2018), which has been technically revised.

The main changes are as follows:

- ISO/TS 5667-25 has been added as a reference;
- a flow diagram for preservation and storage of water samples has been added;
- references in [Table A.1](#) have been updated;
- references in [Tables A.2](#) and [A.3](#) have been added;
- the previous Table A.1 has been split into [Table A.1](#) on inorganic analytes and [Table A.2](#) on organic analytes;
- [Table A.4](#) on microbiological analysis has been added;
- types of water have been added to [Tables A.1](#) to [A.5](#);
- the added terms used in [Tables A.1](#) to [A.5](#) have been explained.

A list of all parts in the ISO 5667 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 5667-3:2024(en)

Introduction

This document is intended to be used in conjunction with ISO 5667-1, which deals with the design of sampling programmes and sampling techniques.

Where possible, this document has been aligned with current standards. Where new research or validation results have provided new insights, the latest knowledge has been used.

Guidance on validation protocols can be found in ISO/TS 5667-25 and ISO 17034^[87].

[Tables A.1](#) to [A.5](#) provide the validated preservation times or conditions as well as the descriptions of best practice. [Tables A.1](#) to [A.5](#) also refer, for each analyte, to references available at the time of publication of this document (i.e. ISO 5667-3:2024). This is however not an exhaustive list. Other preservation methods may be used when they have been validated. However, it is strongly recommended that, where a method validation is not available, the preservation times for the analyte listed in [Tables A.1](#) to [A.5](#) for ISO test methods be followed. In case more than one storage time is provided in [Tables A.1](#) to [A.5](#), the order of preferred use is:

- validated method;
- method provided by reference;
- best practice.

The preservation and storage conditions and maximum storage times per analyte as listed in [Tables A.1](#) to [A.5](#) should be regarded as default conditions to be applied in the absence of any other information.

However, if validation of preservation techniques and holding times has been carried out, relative to specific circumstances and matrices, by a laboratory, then, provided that it can produce evidence of this validation where they differ from those set out in [Tables A.1](#) to [A.5](#), these validated preservation and storage conditions and maximum storage times are deemed acceptable for use by the validating laboratories. A national standard can contain information on preservation.

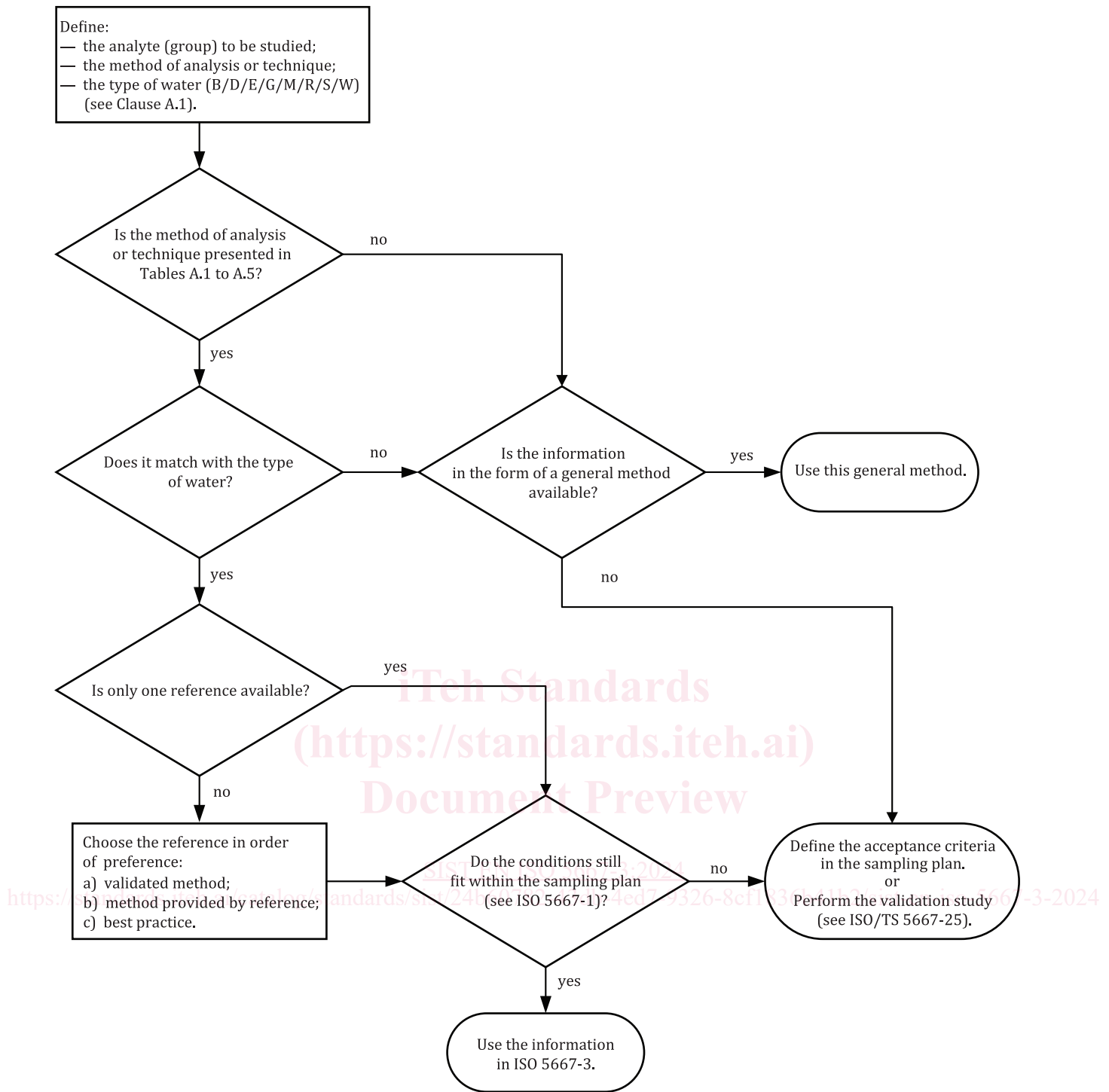
This document and the related analytical references can be used as presented in [Figure 1](#).

Document Preview

[SIST EN ISO 5667-3:2024](#)

<https://standards.itech.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>

ISO 5667-3:2024(en)



WARNING — ‘Method provided by reference’ and ‘validated method’ can be based on previous standards and methods and therefore not be in line with ISO/TS 5667-25. This information can be interpreted by a qualified and experienced person.

Figure 1 — Flow diagram for the selection of a method for the preservation and storage of water samples

Attention is drawn to ISO/TS 5667-25, which contains guidelines and the elaboration of the required techniques of how to validate new storage times or preservative methods and details of the techniques described.

Water quality — Sampling —

Part 3: Preservation and handling of water samples

1 Scope

This document specifies the general requirements for sampling, preservation, handling, transport and storage of all water samples for physicochemical, chemical, hydrobiological and microbiological analyses and determination of radiochemical analytes and activities.

Guidance on the validation of storage times of water samples is provided in ISO/TS 5667-25.

This document is not applicable to water samples intended for ecotoxicological assays, biological assays (which is specified in ISO 5667-16), passive sampling (which is specified in ISO 5667-23) and microplastics (which is specified in ISO 5667-27).

This document is particularly appropriate when samples cannot be analysed on site and have to be transported to a laboratory for analysis.

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 19458:2006, *Water quality — Sampling for microbiological analysis*

3 Terms and definitions

SIST EN ISO 5667-3:2024

<https://standards.iteh.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

best practice

method based upon consensus or general use and that can be referred to in literature

Note 1 to entry: Given the differences in conditions and circumstances as well as the impossibility to validate all parameters from a *validated method* (3.7) or technique or process, a best practice method based upon the corresponding properties of a validated parameter can be used.

3.2

integrity

property of the parameter(s) of interest, information or content of a sample stored in a container that has not been altered or lost in an unauthorized manner or that has been subject to loss of representativeness

ISO 5667-3:2024(en)

3.3

method provided by reference

procedure or technique for the preservation of samples taken from the reference to which it refers

Note 1 to entry: It is not in all cases clear whether the preservation procedure provided by the reference was *validated method* (3.7), a *best practice* (3.1) or which procedure was used for its determination or validation. Where available, the information about the matrices is taken over.

3.4

sample preservation

procedure used to stabilize a sample in such a way that the properties under examination are maintained stable from the collection step until preparation for analysis

Note 1 to entry: Different analytes can require several samples from the same source that are stabilized by different procedures.

[SOURCE: ISO 11074:2015, 4.4.20, modified — Note 1 to entry has been added.]

3.5

sample storage

process and result of keeping a sample available under predefined conditions, usually for a specified time interval between collection and further treatment of a sample

Note 1 to entry: The specified time is the maximum time interval.

[SOURCE: ISO 11074:2015, 4.4.22, modified — Note 1 to entry has been added; “soil sample” has been changed to “sample”.]

3.6

storage time

period of time between filling of the sample container and further treatment of the sample in the laboratory, if stored under predefined conditions

Note 1 to entry: Sampling finishes as soon as the sample container has been filled with the sample. Storage time ends when the sample is taken by the analyst to start sample preparation prior to analysis.

Note 2 to entry: Further treatment is, for most analytes, a solvent extraction or acid destruction. The initial steps of sample preparation can be steps complementary to the storage conditions for the maintenance of analyte concentrations.

SIST EN ISO 5667-3:2024

<https://standards.itech.ai/catalog/standards/sist/24b60782-43db-4ed7-9326-8cfl836b41b2/sist-en-iso-5667-3-2024>

3.7

validated method

method for which the validity or correctness has been checked by verification or qualification against a number of predefined requirements

Note 1 to entry: A validated method indicates that a preservation method is capable of delivering the intended results with an acceptable degree of uncertainty for the parameter or group of parameters and water type.

4 Abbreviated terms for plastics

FEP perfluoro(ethylene/propylene)

PE polyethylene

PE-HD high density polyethylene

PET polyethylene terephthalate

PFA perfluoroalkoxy (polymer)

PP polypropylene