



NSAI
Standards

Irish Standard
I.S. EN ISO 4787:2021

Laboratory glass and plastic ware -
Volumetric instruments - Methods for
testing of capacity and for use (ISO
4787:2021)

I.S. EN ISO 4787:2021

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National Foreword

I.S. EN ISO 4787:2021 is the adopted Irish version of the European Document EN ISO 4787:2021, Laboratory glass and plastic ware - Volumetric instruments - Methods for testing of capacity and for use (ISO 4787:2021)

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EUROPEAN STANDARD

EN ISO 4787

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2021

ICS 17.060

Supersedes EN ISO 4787:2011

English Version

Laboratory glass and plastic ware - Volumetric
instruments - Methods for testing of capacity and for use
(ISO 4787:2021)

Verrerie et matériel en plastique de laboratoire -
Instruments volumétriques - Méthodes d'essai de la
capacité et d'utilisation (ISO 4787:2021)

Laborgeräte aus Glas und Kunststoff -
Volumenmessgeräte - Prüfverfahren und Anwendung
(ISO 4787:2021)

This European Standard was approved by CEN on 20 November 2021.

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European foreword

This document (EN ISO 4787:2021) has been prepared by Technical Committee ISO/TC 48 "Laboratory equipment" in collaboration with Technical Committee CEN/TC 332 "Laboratory equipment" 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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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.

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Endorsement notice

The text of ISO 4787:2021 has been approved by CEN as EN ISO 4787:2021 without any modification.

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**INTERNATIONAL
STANDARD**

**ISO
4787**

Third edition
2021-11

**Laboratory glass and plastic ware —
Volumetric instruments — Methods
for testing of capacity and for use**

*Verrerie et matériel en plastique de laboratoire — Instruments
volumétriques — Méthodes d'essai de la capacité et d'utilisation*



Reference number
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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).

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This document was prepared by Technical Committee ISO/TC 48, *Laboratory equipment*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 332, *Laboratory equipment*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 4787:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

- a) volumetric plastic ware has been included;
- b) new information on meniscus adjustment of convex meniscus has been added; namely, altered procedure "Upper edge of the graduation line is horizontally tangential to the highest point of meniscus" as compared to older procedure "Upper edge of the graduation line is horizontally tangential to the lowest point of the meniscus";
- c) improved figures for meniscus adjustment have been provided;
- d) [Table 1](#) has been improved;
- e) new [Table 2](#) for minimum requirements for the measurement devices has been added;
- f) new test room ambient conditions have been added;
- g) new information regarding repeatability and uncertainty has been added in [Annex E](#);
- h) [Formula \(C.1\)](#) has been changed to [Formula \(1\)](#).

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.

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Introduction

The International Standards for the individual volumetric instruments include clauses on the specification of capacity (volume); these clauses describe the method of manipulation in sufficient detail to determine the capacity without ambiguity. This document contains supplementary information.

Laboratory glass and plastic ware — Volumetric instruments — Methods for testing of capacity and for use

1 Scope

This document provides methods for the testing, calibration and use of volumetric instruments made from glass and plastic in order to obtain the best accuracy in use.

NOTE Testing is the process by which the conformity of the individual volumetric instrument with the appropriate standard is determined, resulting in the determination of its error of measurement at one or more points.

This document is applicable to volumetric instruments with nominal capacities in the range of 100 μ l to 10 000 ml. These include single-volume pipettes (see ISO 648), graduated pipettes (see ISO 835), burettes (see ISO 385), volumetric flasks (see ISO 1042 and ISO 5215), and graduated measuring cylinders (see ISO 4788 and ISO 6706).

The methods are not intended for testing of volumetric instruments with capacities below 100 μ l such as micro-glassware.

This document does not deal specifically with pycnometers as specified in ISO 3507. However, the procedures specified for the determination of volume of glassware can, for the most part, also be followed for the determination of a pycnometer volume. For some types of pycnometers, special handling can be necessary.

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 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 835, *Laboratory glassware — Graduated pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

ISO 1773, *Laboratory glassware — Narrow-necked boiling flasks*

ISO 3507, *Laboratory glassware — Pycnometers*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders*

ISO 4797, *Laboratory glassware — Boiling flasks with conical ground joints*

ISO 5215¹⁾, *Laboratory plastic ware — Volumetric flasks*

ISO 6706, *Plastics laboratory ware — Graduated measuring cylinders*

ISO 24450, *Laboratory glassware — Wide-necked boiling flasks*

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