ICS 17.060 SLOVENSKÁ TECHNICKÁ NORMA Marec 2022

STN	**Laboratórne sklo a vybavenie z plastov Odmerné sklo Metódy na skúšanie objemu a používania (ISO 4787: 2021)**	**STN EN ISO 4787** 70 4101

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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 02/22

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Oznámením tejto normy sa ruší
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 4787

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)

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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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.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.

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

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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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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 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.

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INTERNATIONAL STANDARD **ISO 4787:2021(E)**

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 µl 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 µl 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 — Pyknometers*

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 5215[1)], *Laboratory plastic ware — Volumetric flasks*

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

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

1) Under preparation. Stage at the time of publication: ISO/DIS 5215:2021.

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ISO 4787:2021(E)

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

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