

**LABORATOORIUMI KLAASNÕUD
KLAASMAHUNÕUD
Kasutamise ja mahu katsetamise meetodid**

Laboratory glassware
Volumetric glassware
Methods for use and testing of capacity

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

Käesolev Eesti standard EVS-ISO 4787:2007 "Laboratooriumi klaasnõud. Klaasmahunõud. Kasutamise ja mahu katsetamise meetodid" sisaldab rahvusvahelise standardi ISO 4787:1984 "Laboratory glassware - Volumetric glassware - Methods for use and testing of capacity" identset ingliskeelset teksti. Standardi avaldamise korraldas Eesti Standardikeskus.	This Estonian Standard EVS-ISO 4787:2007 consists of the identical English text of the International Standard ISO 4787:1984 "Laboratory glassware - Volumetric glassware - Methods for use and testing of capacity". Estonian standard is published by the Estonian Centre for Standardisation.
Standard EVS-ISO 4787:2007 on kinnitatud Eesti Standardikeskuse 05.10.2007 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teataja 2007. aasta novembrikuu numbris. Standard on kättesaadav Eesti Standardikeskusest.	This standard is ratified with the order of Estonian Centre for Standardisation dated 05.10.2007 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation. The standard is available from Estonian Centre for Standardisation.

Käsitlusala

Käesolev rahvusvaheline standard esitab klaasmahunõude katsemeetodid, et mahunõude kasutamisel saada parim täpsustase.

Üksikteemade rahvusvahelised standardid sisaldavad jaotisi mahu määratluse osas, mis kirjeldavad käsitletavaid meetodeid piisavalt detailset, et määrata maht ühetähenduslikult. Käesolev rahvusvaheline standard täiendab teavet, mis sisaldub nendes määratlustes.

Standardi protseduurid on rakendatavad väikestele mahunõudele, mis on tavaliselt mõõteulatusega 0,1 ml kuni 2000 ml. Need mahunõud hõlmavad jaotamise ja ilma alajaotusteta ühemärgi pipette, skaalaga mõõtepipette ja osa või täieliku alajaotistega lahjendamise pipette; bürette; mahukolbe ja skaalaga mõõtesilindreid. Need protseduurid ei ole soovitatavad alla 0,1 ml mahuga vahendite katsetamiseks, nagu näiteks mikroklaasnõud.

Märkused

1. Katsetamine on protsess, millega määratakse üksikobjektide vastavus asjakohasele standardile, kulmineerudes selle hälvete määramisele ühes või mitmes skaalapunktis.
2. Antud rahvusvaheline standard ei käsitlen otseselt ISO 3507 määratletud püknomeetreid. Siiski võib klaasnõude mahu määramise allpool esitatud protseduure suures osas järgida ka püknomeetrite kalibreerimisel.

ICS 71.040.20 Laborinõud ja -aparaadid**Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele**

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4787 was prepared by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*.

Laboratory glassware — Volumetric glassware — Methods for use and testing of capacity

1 Scope and field of application

This International Standard provides methods for the testing of volumetric glassware in order to obtain the best accuracy in use.

The International Standards for the individual articles include clauses on the definition of capacity, which describe the method of manipulation in sufficient detail to define the capacity without ambiguity. This International Standard is supplementary to the information contained in these definitions.

The procedures are applicable to small-capacity ware, usually defined as items with capacities in the range of 0,1 to 2 000 ml. These include transfer and one-mark pipettes without subdivisions; graduated measuring pipettes and dilution pipettes, with partial or complete subdivisions; burettes; volumetric flasks; graduated measuring cylinders. The procedures are not recommended for testing of apparatus with capacities below 0,1 ml, such as microglassware, for example.

NOTES

1 Testing is the process by which the conformity of the individual article with the appropriate standard is determined, culminating in the determination of its error at one or more points.

2 This International Standard does not deal specifically with pyknometers as specified in ISO 3507. However, the procedures specified below for the determination of volume of glassware can, for the greater part, also be followed for the calibration of pyknometers.

2 References

ISO 384, *Laboratory glassware — Principles of design and construction of volumetric glassware.*

ISO 385/1, *Laboratory glassware — Burettes — Part 1: General requirements.*

ISO 385/2, *Laboratory glassware — Burettes — Part 2: Burettes for which no waiting time is specified.*

ISO 385/3, *Laboratory glassware — Burettes — Part 3: Burettes for which a waiting time of 30 s is specified.*

ISO 648, *Laboratory glassware — One-mark pipettes.*

ISO 835/1, *Laboratory glassware — Graduated pipettes — Part 1: General requirements.*

ISO 835/2, *Laboratory glassware — Graduated pipettes — Part 2: Pipettes for which no waiting time is specified.*

ISO 835/3, *Laboratory glassware — Graduated pipettes — Part 3: Pipettes for which a waiting time of 15 s is specified.*

ISO 835/4, *Laboratory glassware — Graduated pipettes — Part 4: Blow-out pipettes.*

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

ISO 3507, *Pyknometers.*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders.*

3 Summary of method

The general procedure is based upon a determination of volume of water either contained in or delivered by the vessel. This volume of water is based upon knowledge of its mass and its tabulated density.

4 Definitions

For the purpose of this International Standard, the following definitions apply (see also ISO 384).

4.1 Unit of volume

The unit of volume shall be the cubic centimetre (cm³) or, in special cases, the cubic decimetre (dm³) or cubic millimetre (mm³) for which the names millilitre (ml), litre (l) or microlitre (μl) may be used.

NOTE — The term millilitre (ml) is commonly used as a special name for the cubic centimetre (cm³) [and, similarly, the litre (l) for the cubic decimetre (dm³) and the microlitre (μl) for the cubic millimetre (mm³)], in accordance with a decision of the twelfth Conférence Générale des Poids et Mesures. The term millilitre is acceptable, in general, for references in International Standards to capacities of volumetric glassware and it is used, in particular, in the present text.

4.2 Reference temperature

The standard reference temperature, i.e. the temperature at which the article of volumetric laboratory ware is intended to contain or deliver its nominal volume (nominal capacity) shall be 20 °C.

NOTE — When it is necessary in tropical countries to work at an ambient temperature considerably above 20 °C, and these countries do not wish to use the standard reference temperature of 20 °C, it is recommended that they adopt a temperature of 27 °C.