
Volumetrične naprave, delujoče na bat - 9. del: Ročno upravljanje natančne laboratorijske brizgalke (ISO/DIS 8655-9:2020)

Piston-operated volumetric apparatus - Part 9: Manually operated precision laboratory syringes (ISO/DIS 8655-9:2020)

Volumenmessgeräte mit Hubkolben - Teil 9: Manuell betätigte Präzisionslaborspritzen (ISO/DIS 8655-9:2020)

Appareils volumétriques à piston - Partie 9: [Titre manqué] (ISO/DIS 8655-9:2020)

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ICS:

17.060	Merjenje prostornine, mase, gostote, viskoznosti	Measurement of volume, mass, density, viscosity
71.040.20	Laboratorijska posoda in aparati	Laboratory ware and related apparatus

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Piston-operated volumetric apparatus —

Part 9: Manually operated precision laboratory syringes

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Foreword

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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 on 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 the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 48, *Laboratory equipment*.

A list of all parts in the ISO 8655 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.

Introduction

ISO 8655 addresses the needs of:

- manufacturers, as a basis for quality control including, where appropriate, the issuance of manufacturer's declarations;
- calibration laboratories, test houses, users of the equipment and other bodies as a basis for independent calibration, verification, and routine checking.

The tests specified in the ISO 8655 series are intended to be carried out by trained personnel.

Some definitions of ISO 7886-1 are included in this standard.

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Piston-operated volumetric apparatus —

Part 9: Manually operated precision laboratory syringes

1 Scope

This part of ISO 8655 specifies

- metrological requirements,
- maximum permissible errors,
- requirements for marking and
- information to be provided for users,

for manually operated precision laboratory syringes made of glass or glass and metal designed to deliver their selected volume (Ex).

Manually operated precision laboratory syringes are instruments used for delivering liquids and gases. The barrel is typically made of glass and the plunger and the needle are typically made of metal.

NOTE General requirements and definitions of terms for piston-operated volumetric apparatus are given in ISO 8655-1. The gravimetric reference measurement procedure for the determination of volume is given in ISO 8655-6. The photometric reference measurement procedure for the determination of volume is given in ISO 8655-8. Alternative measurement procedures for the determination of volume are given in ISO 8655-7.

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 384:2015, *Laboratory glass and plastics ware — Principles of design and construction of volumetric instruments*

ISO 4787:2010, *Laboratory glassware — Volumetric instruments — Methods for testing of capacity and for use*

ISO 7886-1:2017, *Sterile hypodermic syringes for single use — Part 1: Syringes for manual use*

ISO/DIS 8655-1:2020, *Piston-operated volumetric apparatus — Part 1: Terminology, general requirements and user recommendations*

ISO/DIS 8655-6:2020, *Piston-operated volumetric apparatus — Part 6: Gravimetric reference measurement procedure for the determination of volume*

ISO/DIS 8655-7:2020, *Piston-operated volumetric apparatus — Part 7: Alternative measurement procedures for the determination of volume*

ISO/DIS 8655-8:2020, *Piston-operated volumetric apparatus — Part 8: Photometric reference measurement procedure for the determination of volume*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/DIS 8655-1:2020 and ISO 7886-1:2017 and the following apply.

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

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

3.1 barrel flanges
flanges that protrude from the barrel (also referred to as finger grips) to provide the user an ergonomic means of gripping the syringe during injection
SOURCE: ISO 7886-1:2017, 3.16

3.2 fiducial line
leading edge on the plunger that is in contact with and perpendicular to the syringe barrel and aligns with the zero marking on the syringe barrel when the piston is fully inserted
SOURCE: ISO 7886-1:2017, 3.5

3.3 graduation line
line defining the position on the scale

Note 1 to entry: Requirements for graduation lines are given in ISO 7886-1.

3.4 nominal volume
(syringes) maximum useable volume specified by the manufacturer

3.5 plunger stopper
component connected to the leading end of the plunger and seals the open end of the syringe barrel
SOURCE: ISO 7886-1:2017, 3.11

3.6 plunger
device component which advances the *plunger stopper* (3.5) to deliver the content of the syringe barrel
SOURCE: ISO 7886-1:2017, 3.18 – modified: “deliver the medicinal product” replaced with “deliver the content of the syringe barrel”

3.7 scale interval
interval between the zero mark and the nominal volume

4 Principle of operation

Precision laboratory syringes are instruments used for delivering liquids or gases and can be used for total or partial delivery. Syringes graduated in microlitres are called micro syringes.

In order to fill the syringe, immerse the nozzle or the attached needle in the liquid in an upright position. By pulling up the piston, aspirate the liquid above the graduation line corresponding to the volume to be delivered. Adjust the position of the fiducial line with the graduation line and dispense the liquid by depressing or sliding the piston between the volume-defining limits. The piston should not be touched in order to prevent contamination and should only be operated by the push button. The barrel should only be held at the barrel flange (finger grips) to prevent heat exchange. See [Figure 1](#).