



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 8655-4:2002

# Piston-operated volumetric apparatus - Part 4: Dilutors (ISO 8655-4:2002)

## I.S. EN ISO 8655-4:2002

*Incorporating amendments/corrigenda issued since publication:*

EN ISO 8655-4:2002/AC:2009

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EUROPEAN STANDARD

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English version  
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Piston-operated volumetric apparatus - Part 4: Dilutors (ISO 8655-4:2002/Cor 1:2008)

Appareils volumétriques à piston - Partie 4:  
Diluteurs (ISO 8655-4:2002/Cor 1:2008)

Volumenmessgeräte mit Hubkolben - Teil  
4: Dilutoren (ISO 8655-4:2002/Cor 1:2008)

This corrigendum becomes effective on 18 February 2009 for incorporation in the three official language versions of the EN.

Ce corrigendum prendra effet le 18 février 2009 pour incorporation dans les trois versions linguistiques officielles de la EN.

Die Berichtigung tritt am 18. Februar 2009 zur Einarbeitung in die drei offiziellen Sprachfassungen der EN in Kraft.



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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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**EN ISO 8655-4:2002/AC:2009 (E)**

**I.S. EN ISO 8655-4:2002**

**Endorsement notice**

The text of ISO 8655-4:2002/Cor.1:2008 has been approved by CEN as a European Corrigendum without any modification.



**I.S. EN ISO 8655-4:2002**  
**INTERNATIONAL STANDARD ISO 8655-4:2002**  
**TECHNICAL CORRIGENDUM 1**

Published 2008-12-15

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## **Piston-operated volumetric apparatus —**

### **Part 4: Dilutors**

#### **TECHNICAL CORRIGENDUM 1**

*Appareils volumétriques à piston —*

*Partie 4: Diluteurs*

*RECTIFICATIF TECHNIQUE 1*

Technical Corrigendum 1 to ISO 8655-4:2002 was prepared by Technical Committee ISO/TC 48, *Laboratory equipment*, Subcommittee SC 6, *Laboratory and volumetric ware*.

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*Page iv, Foreword*

Add the following part to the list of parts:

— *Part 7: Non-gravimetric methods for the assessment of equipment performance*

Delete “The following part is under preparation:” and the former title of part 7.

*Page 1, Scope*

In the note, replace the third sentence with the following:

“Alternative test methods such as photometric and titrimetric methods are given in ISO 8655-7.”

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**Ref. No. ISO 8655-4:2002/Cor.1:2008(E)**

*Page 2, 5.1*

Add the following paragraph at the end of the subclause:

“When a dilutor is required for use in a country which has adopted a standard reference temperature of 27 °C (the alternative recommended for tropical use), this figure shall be substituted for 20 °C.”

*Page 4, Clause 7*

In list item a), replace “(20 °C)” with “(20 °C or 27 °C)” to give the following:

- a) adjustment of sample and diluent channel (Ex or In) and reference temperature (20 °C or 27 °C);

*Page 5, Clause 8*

In list item f), replace “20 °C” with “20 °C” or “27 °C” to give the following:

- f) abbreviation for the adjustment and the reference temperature “20 °C” or “27 °C”;

ICS 17.060

English version

## Piston-operated volumetric apparatus - Part 4: Dilutors (ISO 8655-4:2002)

Appareils volumétriques à piston - Partie 4: Diluteurs (ISO 8655-4:2002)

Volumenmessgeräte mit Hubkolben - Teil 4: Dilutoren (ISO 8655-4:2002)

This European Standard was approved by CEN on 13 July 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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**I.S. EN ISO 8655-4:2002**

**EN ISO 8655-4:2002 (E)**

**Foreword**

This document (ISO 8655-4:2002) has been prepared by Technical Committee ISO/TC 48 "Laboratory glassware and related apparatus" 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 March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

**Endorsement notice**

The text of the International Standard ISO 8655-4:2002 has been approved by CEN as a European Standard without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).



**Annex ZA** (normative)**Normative references to international publications with their relevant European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN	Year
EN ISO 3696	1995	Water for analytical laboratory use - Specification and test methods	ISO 3696	1987

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I.S. EN ISO 8655-4:2002

# INTERNATIONAL STANDARD

# ISO 8655-4

First edition  
2002-09-15

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## **Piston-operated volumetric apparatus — Part 4: Dilutors**

*Appareils volumétriques à piston —*

*Partie 4: Diluteurs*



Reference number  
ISO 8655-4:2002(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 8655 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8655-4 was prepared by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*, Subcommittee SC 1, *Volumetric instruments*.

ISO 8655 consists of the following parts, under the general title *Piston-operated volumetric apparatus*:

- *Part 1: Terminology, general requirements and user recommendations*
- *Part 2: Piston pipettes*
- *Part 3: Piston burettes*
- *Part 4: Dilutors*
- *Part 5: Dispensers*
- *Part 6: Gravimetric methods for the determination of measurement error*

The following part is under preparation:

- *Part 7: Non-gravimetric methods for the determination of measurement error*

## **Introduction**

ISO 8655 addresses the needs of:

- suppliers, as a basis for quality control including, where appropriate, the issuance of supplier's declarations;
- test houses and other bodies, as a basis for independent certification;
- users of the equipment, to enable routine checking of accuracy.

The tests specified should be carried out by trained personnel.

**I.S. EN ISO 8655-4:2002**



# Piston-operated volumetric apparatus —

## Part 4: Dilutors

### 1 Scope

This part of ISO 8655 specifies

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

for dilutors with a sample uptake capacity (In) from 5  $\mu\text{l}$  to 10 ml and a diluent capacity (Ex) from 50  $\mu\text{l}$  to 100 ml. They are designed to deliver the sample and diluent together in measured proportion and measured volume.

NOTE General requirements and definitions of terms for piston-operated volumetric apparatus are given in ISO 8655-1. Conformity testing (type evaluation) of piston-operated volumetric apparatus is given in ISO 8655-6. Alternative test methods such as photometric and titrimetric methods will be the subject of a future Part 7 to ISO 8655. For all other tests (e.g. quality assurance by the supplier, analytical and measuring equipment quality assurance by the user) see ISO 8655-6 or alternative test methods. For safety requirements of electrically powered piston dilutors, see IEC 61010-1.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8655. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8655 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

ISO 8655-1:2002, *Piston-operated volumetric apparatus — Part 1: Terminology, general requirements and user recommendations*

ISO 8655-6:2002, *Piston-operated volumetric apparatus — Part 6: Gravimetric methods for the determination of measurement error*

### 3 Terms and definitions

For the purposes of this part of ISO 8655, the terms and definitions given in ISO 8655-1 apply.

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