

**Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pyknometer method and titration method (ISO 1183-1:2012)**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 1183-1:2012 sisaldab Euroopa standardi EN ISO 1183-1:2012 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 1183-1:2012 consists of the English text of the European standard EN ISO 1183-1:2012.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.12.2012.	Date of Availability of the European standard is 12.12.2012.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 83.080.01

### Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Aru 10, 10317 Tallinn, Eesti; [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

### The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:  
Aru 10, 10317 Tallinn, Estonia; [www.evs.ee](http://www.evs.ee); phone 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

Plastics - Methods for determining the density of non-cellular  
plastics - Part 1: Immersion method, liquid pycnometer method  
and titration method (ISO 1183-1:2012)

Plastiques - Méthodes de détermination de la masse  
volumique des plastiques non alvéolaires - Partie 1:  
Méthode par immersion, méthode du pycnomètre en milieu  
liquide et méthode par titrage (ISO 1183-1:2012)

Kunststoffe - Verfahren zur Bestimmung der Dichte von  
nicht verschäumten Kunststoffen - Teil 1:  
Eintauchverfahren, Verfahren mit Flüssigkeitspycnometer  
und Titrationsverfahren (ISO 1183-1:2012)

This European Standard was approved by CEN on 2 June 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Foreword

This document (EN ISO 1183-1:2012) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics" the secretariat of which is held by NBN.

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 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 1183-1:2004.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 1183-1:2012 has been approved by CEN as a EN ISO 1183-1:2012 without any modification.

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Conditioning</b> .....	<b>2</b>
<b>5 Methods</b> .....	<b>2</b>
5.1 Method A — Immersion method .....	2
5.2 Method B — Liquid pyknometer method .....	4
5.3 Method C — Titration method .....	5
<b>6 Correction for buoyancy in air</b> .....	<b>6</b>
<b>7 Test report</b> .....	<b>7</b>
<b>Annex A (informative) Liquid systems suitable for use in Method C</b> .....	<b>8</b>
<b>Annex B (informative) Correction for buoyancy in air</b> .....	<b>9</b>
<b>Bibliography</b> .....	<b>10</b>

# Plastics — Methods for determining the density of non-cellular plastics —

## Part 1:

## Immersion method, liquid pycnometer method and titration method

**WARNING**— The use of this part of ISO 1183 might involve hazardous materials, operations or equipment. This part of ISO 1183 does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this part of ISO 1183 to establish appropriate health and safety practices and to determine the applicability of any regulatory limitations prior to use.

### 1 Scope

This part of ISO 1183 specifies three methods for the determination of the density of non-cellular plastics in the form of void-free moulded or extruded objects, as well as powders, flakes and granules.

- **Method A: Immersion method**, for solid plastics (except for powders) in void-free form.
- **Method B: Liquid pycnometer method**, for particles, powders, flakes, granules or small pieces of finished parts.
- **Method C: Titration method**, for plastics in any void-free form.

**NOTE** This part of ISO 1183 is applicable to pellets as long as they are void-free. Density is frequently used to follow variations in physical structure or composition of plastic materials. Density might also be useful in assessing the uniformity of samples or specimens. Often, the density of plastic materials will depend upon the choice of specimen preparation method. When this is the case, precise details of the specimen preparation method will have to be included in the appropriate material specification. This note is applicable to all three methods.

### 2 Normative references

The following referenced documents are indispensable for the application 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 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 472, *Plastics — Vocabulary*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and the following apply.

#### 3.1

##### **mass**

*m*

quantity of matter contained in a body

**NOTE** It is expressed in kilograms (kg) or grams (g).