

**Meditsiinilised infusiooniseadmed. Osa 4: Ühekordsed  
isevooluga infusioonikomplektid**

**Infusion equipment for medical use - Part 4: Infusion  
sets for single use, gravity feed (ISO 8536-4:2010)**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 8536-4:2013 sisaldab Euroopa standardi EN ISO 8536-4:2013 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 8536-4:2013 consists of the English text of the European standard EN ISO 8536-4:2013.
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 06.02.2013.	Date of Availability of the European standard is 06.02.2013.
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 11.040.20

### 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

Infusion equipment for medical use - Part 4: Infusion sets for  
single use, gravity feed (ISO 8536-4:2010)

Matériel de perfusion à usage médical - Partie 4: Appareils  
de perfusion non réutilisables, à alimentation par gravité  
(ISO 8536-4:2010)

Infusionsgeräte zur medizinischen Verwendung - Teil 4:  
Infusionsgeräte für Schwerkraftinfusionen zur einmaligen  
Verwendung (ISO 8536-4:2010)

This European Standard was approved by CEN on 8 January 2013.

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

The text of ISO 8536-4:2010 has been prepared by Technical Committee ISO/TC 76 “Transfusion, infusion and injection, and blood processing equipment for medical and pharmaceutical use” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 8536-4:2013 by Technical Committee CEN/TC 205 “Non-active medical devices” 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 August 2013, and conflicting national standards shall be withdrawn at the latest by August 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 8536-4:2010.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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 8536-4:2010 has been approved by CEN as EN ISO 8536-4:2013 without any modification.

## Annex ZA (informative)

### Relationship between this European Standard and the Essential Requirements of EU Directive 93/42/EEC on Medical Devices

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 93/42/EEC on Medical Devices.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

**Table ZA.1 — Correspondence between this European Standard and Directive 93/42/EEC on Medical Devices**

Clause(s)/subclause(s) of this European Standard	Essential Requirements (ERs) of Directive 93/42/EEC	Qualifying remarks/Notes
6.1, 6.7, 8.3, 8.4, 8.5	7.2	
8.1	7.5	Presumption of conformity with the Essential Requirements relating to the biological evaluation can only be provided if the manufacturer chooses to apply the EN ISO 10993 series of standards.
6.2, 6.4, 6.5	7.6	
6.11, 6.13	8	
3.2	8.1	
10	8.3	
8.2	8.4	
6.3, 6.12	9.1	
6.9, 6.10	10	
6.3	12.7.1	
6.6, 6.8, 6.9, 6.10	12.8	
9	13	The part of ER 13.3 a) relating to the authorized representative is not addressed.  ERs 13.3 f) and 13.6 h) relating to single-use are not fully addressed.  ER 13.6 q) is not addressed.
4	13.3	

**WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.**

# Contents

Page

Foreword .....	iv
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>1</b>
<b>3 General requirements .....</b>	<b>1</b>
<b>4 Designation .....</b>	<b>4</b>
4.1 Infusion set .....	4
4.2 Air-inlet device .....	4
<b>5 Materials .....</b>	<b>4</b>
<b>6 Physical requirements .....</b>	<b>5</b>
6.1 Particulate contamination .....	5
6.2 Leakage .....	5
6.3 Tensile strength .....	5
6.4 Closure-piercing device .....	5
6.5 Air-inlet device .....	5
6.6 Tubing .....	6
6.7 Fluid filter .....	6
6.8 Drip chamber and drip tube .....	6
6.9 Flow regulator .....	6
6.10 Flow rate of infusion fluid .....	6
6.11 Injection site .....	6
6.12 Male conical fitting .....	6
6.13 Protective caps .....	6
<b>7 Chemical requirements .....</b>	<b>7</b>
7.1 Reducing (oxidizable) matter .....	7
7.2 Metal ions .....	7
7.3 Titration acidity or alkalinity .....	7
7.4 Residue on evaporation .....	7
7.5 UV absorption of extract solution .....	7
<b>8 Biological requirements .....</b>	<b>7</b>
8.1 General .....	7
8.2 Sterility .....	7
8.3 Pyrogenicity .....	7
8.4 Haemolysis .....	7
8.5 Toxicity .....	8
<b>9 Labelling .....</b>	<b>8</b>
9.1 Unit container .....	8
9.2 Shelf or multi-unit container .....	8
<b>10 Packaging .....</b>	<b>9</b>
<b>Annex A (normative) Physical tests .....</b>	<b>10</b>
<b>Annex B (normative) Chemical tests .....</b>	<b>14</b>
<b>Annex C (normative) Biological tests .....</b>	<b>16</b>
<b>Bibliography .....</b>	<b>17</b>

# Infusion equipment for medical use —

## Part 4:

# Infusion sets for single use, gravity feed

## 1 Scope

This part of ISO 8536 specifies requirements for single use, gravity feed infusion sets for medical use in order to ensure their compatibility with containers for infusion solutions and intravenous equipment.

Secondary aims of this part of ISO 8536 are to provide guidance on specifications relating to the quality and performance of materials used in infusion sets and to present designations for infusion set components.

In some countries, the national pharmacopoeia or other national regulations are legally binding and take precedence over this part of ISO 8536.

## 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 594-1, *Conical fittings with a 6 % (Luer) taper for syringes, needles and certain other medical equipment — Part 1: General requirements*

ISO 594-2, *Conical fittings with 6 % (Luer) taper for syringes, needles and certain other medical equipment — Part 2: Lock fittings*

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

ISO 7864, *Sterile hypodermic needles for single use*

ISO 14644-1, *Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness<sup>1)</sup>*

ISO 15223-1, *Medical devices — Symbols to be used with medical device labels, labelling and information to be supplied — Part 1: General requirements<sup>2)</sup>*

## 3 General requirements

**3.1** The nomenclature to be used for components of infusion sets and of a separate air-inlet device is given in Figures 1, 2 and 3. These figures illustrate examples of the configuration of infusion sets and air-inlet devices; other configurations may be used provided they lead to the same results. Infusion sets as illustrated in Figure 2 should only be used for collapsible plastic containers. Infusion sets as illustrated in Figure 2 used

1) Under preparation. (Revision of ISO 14644-1:1999)

2) To be published. (Revision of ISO 15223-1:2007)