KEEMILISED DESINFEKTSIOONIVAHENDID JA ANTISEPTIKUMID. KVANTITATIIVNE SUSPENSIOONKATSE VIIRUSAKTIIVSUSE PEATAMISE HINDAMISEKS MEDITSIINIVALDKONNAS. KATSEMEETOD JA NÕUDED (2. FAAS, 1. ETAPP)

Chemical disinfectants and antiseptics - Quantitative suspension test for the evaluation of virucidal activity in the medical area - Test method and requirements (Phase 2/Step 1)



## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 14476:2013+A1:2015 sisaldab Euroopa standardi EN 14476:2013+A1:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 14476:2013+A1:2015 consists of the English text of the European standard EN 14476:2013+A1:2015.
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 09.09.2015.	Date of Availability of the European standard is 09.09.2015.
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 <u>standardiosakond@evs.ee</u>.

#### ICS 11.080.20

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; koduleht www.evs.ee; telefon 605 5050; e-post 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; homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

# EUROPEAN STANDARD NORME EUROPÉENNE

**EUROPÄISCHE NORM** 

EN 14476:2013+A1

September 2015

ICS 11.080.20

Supersedes EN 14476:2013

## **English Version**

Chemical disinfectants and antiseptics - Quantitative suspension test for the evaluation of virucidal activity in the medical area - Test method and requirements (Phase 2/Step 1)

Antiseptiques et désinfectants chimiques - Essai quantitatif de suspension pour l'évaluation de l'activité virucide dans le domaine médical - Méthode d'essai et prescriptions (Phase 2/Étape 1) Chemische Desinfektionsmittel und Antiseptika -Quantitativer Suspensionsversuch zur Bestimmung der viruziden Wirkung im humanmedizinischen Bereich -Prüfverfahren und Anforderungen (Phase 2, Stufe 1)

This European Standard was approved by CEN on 5 July 2013 and includes Amendment 1 approved by CEN on 27 July 2015.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Cont	ents	Page
Furon	ean foreword	4
_	luction	
	Scope	
1		
2	Normative references	7
3	Terms and definitions	7
4	Requirements	8
5	Test methods	10
5.1	Principle	10
5.2	Materials and reagents, including cell cultures	10
5.2.1	Test organisms	10
5.2.2	Culture media, reagents and cell cultures	11
5.3	Apparatus and glassware	14
5.4	Preparation of test organism suspensions and product test solutions	15
5.4.1	Test organisms suspensions (test virus suspension)	15
5.4.2	Product test solutions	15
5.5	Procedure for assessing the virucidal activity of the product	16
5.5.1	General	
5.5.2	Test procedure	17
5.5.3	Modified method for ready-to-use products	
5.5.4	Cytotoxicity caused by product test solutions	
5.5.5	Control of efficiency of suppression of product's activity	
5.5.6	Reference test for virus inactivation	
5.5.7	Titration of the virus control	
5.5.8	Titration of test samples	
5.6	Experimental data and calculation	
5.6.1	Protocol of results	
5.6.2	Calculation of infectivity titer (TCID <sub>50</sub> or PFU)	
5.0.2 5.7	Verification of the methodology	
5. <i>7</i> 5.8	OF CONTRACTOR OF	
	Expression of resultsGeneral	
5.8.1		
5.8.2	Calculation of the virucidal activity of products	22
5.9	Test report	ZZ
Annex	A (informative) Examples of viruses sorted according to their presence in the human body in case of virus infection	24
Annex	B (informative) Detoxification of test mixtures by molecular sieving	26
B.1	Molecular sieving with Sephadex™ LH 20	
B.1.1	Principle	26
B.1.2	Sephadex suspension	
B.1.3	Procedure	
B.2	Molecular sieving using MicroSpin™ S 400 HR	
	c C (informative) Calculation of the viral infectivity titre	
C. <b>1</b>	Quantal tests — Example of TCID50 determination by the Spearman-Kärber method	
	The state of the state of the state of the specific state of the state	

<b>C.2</b>	Plaque test	29
C.3	Biometrical evaluation of experimental approaches and assessment of the disinfecting effect on the virus (reduction $[R]$ ):	30
C.3.1	General	30
C.3.2	Calculating the virus titre with 95 % confidence interval	31
C.3.3	Calculating the reduction and its 95 % confidence interval	31
C.3.4	Calculating the average reduction ( $R_{(mi)}$ ) and its 95 % confidence interval	32
C.3.5	Practical example	33
Annex	x D (informative) Presentation of test results of one active concentration	35
Annex	x E (informative) Quantitative determination of formaldehyde concentrations	38
Annex	x ZA (informative) A Relationship between this European Standard and the Essential Requirements of EU Directive 93/42/EEC A	39
Biblio	graphy	40
	8	
	graphy	
	6.	
		3

## **European foreword**

This document (EN 14476:2013+A1:2015) has been prepared by Technical Committee CEN/TC 216 "Chemical disinfectants and antiseptics", the secretariat of which is held by AFNOR.

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 2016 and conflicting national standards shall be withdrawn at the latest by March 2016.

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 (A) EN 14476:2013 (A).

This document includes Amendment 1 approved by CEN on 2015-07-27.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{\mathbb{A}}$ 

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(s).

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

The document was revised to adapt it to the latest state of science, to correct errors and ambiguities, to harmonise the structure and wording with other existing tests of CEN/TC 216 or in preparation and to improve the readability of the standard and thereby make it more understandable. The following list is a list of significant technical changes since the last edition:

- The scope was expanded for the following fields of application within the medical area, i.e. products for textile disinfection.
- "Obligatory test conditions" were replaced by "minimum test conditions" (test temperatures and contact times can be chosen within limits) that have to be performed to pass the test.
- An additional modified method is described to test ready-to-use products in a higher concentration than 80 %, i.e. 9 7%;

### $A_1$

- For the hygienic handrub and handwash method a test for virucidal activity against enveloped viruses with *Vacciniavirus* was added.
- The relationship between this European Standard and the MDD was added (Foreword and Annex ZA).
- The value of  $v_n$  in C.1 was corrected (0,001 instead of 0,0001). (A)

Data obtained using the former version of EN 14476 may still be used.

Other methods to evaluate the efficacy of chemical disinfectants and antiseptics for different applications in the medical area are in preparation.

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, e Unite

Occumbent is a position of the control of Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

This European Standard specifies a suspension test for establishing whether a chemical disinfectant or an antiseptic has a virucidal activity in the area and fields described in the scope.

re, to ractical s s test corres, This laboratory test takes into account practical conditions of application of the product including contact time, temperature, test organisms and interfering substances, i.e. conditions which may influence its action in practical situations. Each utilisation concentration of the chemical disinfectant or antiseptic found by this test corresponds to the chosen experimental conditions.

## 1 Scope

This European Standard specifies a test method and the minimum requirements for virucidal activity of chemical disinfectant and antiseptic products that form a homogeneous physically stable preparation when diluted with hard water – or in the case of ready-to-use products, i. e, products that are not diluted when applied,– with water. Products can only be tested at a concentration of 80 % (97 %, with a modified method for special cases) as some dilution is always produced by adding the test organisms and interfering substance.

This European Standard applies to products that are used in the medical area in the fields of hygienic handrub, hygienic handwash, instrument disinfection by immersion, surface disinfection by wiping, spraying, flooding or other means and textile disinfection.

This European Standard applies to areas and situations where disinfection is medically indicated. Such indications occur in patient care, for example:

- in hospitals, in community medical facilities, and in dental institutions;
- in clinics of schools, of kindergartens, and of nursing homes;

and may occur in the workplace and in the home. It may also include services such as laundries and kitchens supplying products directly for the patients.

NOTE 1 The method described is intended to determine the activity of commercial formulations or active substances under the conditions in which they are used.

NOTE 2 This method corresponds to a phase 2, step 1 test.

NOTE 3 EN 14885 specifies in detail the relationship of the various tests to one another and to "use recommendations".

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12353, Chemical disinfectants and antiseptics — Preservation of test organisms used for the determination of bactericidal (including Legionella), mycobactericidal, sporicidal, fungicidal and virucidal (including bacteriophages) activity

EN 14885, Chemical disinfectants and antiseptics — Application of European Standards for chemical disinfectants and antiseptics

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14885 and the following apply.

## 3.1

#### cytotoxicity

morphological alteration of cells and/or their destruction or their reduced sensitivity to virus multiplication caused by the product

#### 3.2

### plaque forming units

**PFU** 

number of infectious virus particles per unit volume (ml)