

Photocatalysis - Measurement of efficiency of photocatalytic devices used for the elimination of VOC and odour in indoor air in active mode - Part 1: Batch mode test method with a closed chamber

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 16846-1:2017 sisaldab Euroopa standardi EN 16846-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 16846-1:2017 consists of the English text of the European standard EN 16846-1:2017.
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English Version

**Photocatalysis - Measurement of efficiency of  
photocatalytic devices used for the elimination of VOC and  
odour in indoor air in active mode - Part 1: Batch mode  
test method in closed chamber**

Photocatalyse - Mesure de l'efficacité des dispositifs  
photocatalytiques servant à l'élimination, en mode  
actif, des COV et des odeurs dans l'air intérieur - Partie  
1 : Méthode d'essai en enceinte confinée

Photokatalyse - Messung der Effizienz  
photokatalytischer Geräte im aktiven Modus zur  
Beseitigung flüchtiger organischer Verbindungen  
(VOC) und von Geruch in der Raumluft - Teil 1: Batch-  
Betrieb-Prüfverfahren mit einer geschlossenen  
Kammer

This European Standard was approved by CEN on 14 November 2016.

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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.

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## European foreword

This document (EN 16846-1:2017) has been prepared by Technical Committee CEN/TC 386 "Photocatalysis", 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of an identical text or by endorsement, at the latest by September 2017, and conflicting national standards shall be withdrawn at the latest by September 2017.

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

EN 16846, *Photocatalysis — Measurement of efficiency of photocatalytic devices used for the elimination of VOC and odour in indoor air in active mode*, is dedicated to photocatalytic devices for indoor air cleaning and is constituted by the following parts:

- *Part 1: Batch mode test method in closed chamber;*
- *Part 2: In situ test under real conditions.*

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard describes the methodologies to be used in a laboratory air tight chamber to test prototype or commercial air cleaner systems with a maximum flow rate of 1,000 m<sup>3</sup>/h used for photocatalytic indoor air remediation.

It is applicable to the treatment of atmospheres that are representative of the air inside buildings and workplaces.

This protocol is applicable solely to photocatalytic systems alone or to combined systems that include a photocatalytic function. The photocatalytic function is demonstrated by verifying the mineralization of model VOCs to form CO<sub>2</sub>.

## 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 13725, *Air quality - Determination of odour concentration by dynamic olfactometry*

EN ISO 16017-1:2000, *Indoor, ambient and workplace air - Sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography - Part 1: Pumped sampling (ISO 16017-1:2000)*

ISO 16000-3, *Indoor air — Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method*

ISO 16000-6:2011, *Indoor air — Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **photocatalyst**

substance that performs one or more functions based on oxidation and reduction reactions under photoirradiation, including decomposition and removal of air and water contaminants, deodorization, and antibacterial, self-cleaning and antifogging actions

### 3.2

#### **volatile organic compounds**

VOC

all three classes of VOC as per EN ISO 16000-6:2011, 3.1, 3.2 and 3.3

### 3.3

#### **system**

commercial or prototype air cleaner system that includes at least one photocatalytic function with or without a fan function

### 3.4

#### **chamber blank analysis**

value of an analysis of the composition of the air inside the air tight chamber with no air cleaner system inside the chamber and after venting by taking sampling on special cartridge for VOC and aldehyde