

# ILNAS

Institut luxembourgeois de la normalisation  
de l'accréditation, de la sécurité et qualité  
des produits et services

## ILNAS-EN 16523-2:2015+A1:2018

### **Determination of material resistance to permeation by chemicals - Part 2: Permeation by potentially hazardous gaseous chemicals under conditions of**

Détermination de la résistance des  
matériaux à la perméation par des  
produits chimiques - Partie 2:  
Perméation par des produits chimiques

Bestimmung des Widerstands von  
Materialien gegen die Permeation von  
Chemikalien - Teil 2: Permeation durch  
potentiell gefährliche gasförmige

12/2018

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## National Foreword

This European Standard EN 16523-2:2015+A1:2018 was adopted as Luxembourgish Standard ILNAS-EN 16523-2:2015+A1:2018.

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ILNAS-EN 16523-2:2015+A1:2018

EUROPEAN STANDARD **EN 16523-2:2015+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2018

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ICS 13.340.01

English Version

**Determination of material resistance to permeation by  
chemicals - Part 2: Permeation by potentially hazardous  
gaseous chemicals under conditions of continuous contact**

Détermination de la résistance des matériaux à la  
perméation par des produits chimiques - Partie 2:  
Perméation par des produits chimiques gazeux  
potentiellement dangereux dans des conditions de  
contact continu

Bestimmung des Widerstands von Materialien gegen  
die Permeation von Chemikalien - Teil 2: Permeation  
durch potentiell gefährliche gasförmige Chemikalien  
unter Dauerkontakt

This European Standard was approved by CEN on 5 December 2014 and includes Amendment 1 approved by CEN on 7 May 2018.

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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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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 16523-2:2015+A1:2018) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, 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 June 2019 and conflicting national standards shall be withdrawn at the latest by June 2019.

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.

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).

This document includes Amendment 1 approved by CEN on 7 May 2018.

A1 This document supersedes EN 16523-2:2015. A1

A1 Deleted text A1

EN 16523, *Determination of material resistance to permeation by chemicals*, is composed of the following parts:

- *Part 1: Permeation by liquid chemical under conditions of continuous contact;*
- *Part 2: Permeation by gaseous chemical under conditions of continuous contact* [the present document].

NOTE CEN/TC 162 WG 13 has foreseen to work on other test methods in the future that will spread in several standard parts:

- *Permeation by solid chemical under conditions of continuous contact;*
- *Permeation by chemical under conditions of intermittent contact;*
- *Permeation by chemical of seams, joins, assemblages and closers;*
- *Permeation by chemical in a form of droplets;*
- *Guide on testing and interpretation.*

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1

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

## Introduction

~~A1~~ Deleted text ~~A1~~. A future part of EN 16523 will explain the use of the series of standards EN 16523.

This standard includes only the specific aspects linked with the testing with gaseous challenge chemicals.

## 1 Scope

This European Standard specifies a test method for the determination of the resistance of protective clothing, gloves and footwear materials to permeation by potentially hazardous gaseous chemicals under the condition of continuous contact.

This test method is applicable to the assessment of protection against gaseous chemicals that can be collected only by liquid or gaseous collecting media.

**A1** This test method is not applicable for the assessment of gaseous chemical mixtures. **A1**

This test method describes the modifications to EN 16523-1 necessary to test against gaseous chemicals that can be collected by liquid or gaseous collecting media.

## 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 16523-1:2015, *Determination of material resistance to permeation by chemicals - Part 1: Permeation by liquid chemical under conditions of continuous contact*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions in EN 16523-1:2015 together with the following apply.

### 3.1

#### **gaseous challenge chemical**

chemical that is gaseous at the test conditions (atmospheric pressure and 23 °C) and that is used to challenge the PPE (protective clothing, gloves and footwear) material specimen

Note 1 to entry: Annex A lists the most common gaseous challenge chemicals. Other gases may be tested.

Note 2 to entry: The gas may be either pure or diluted in air or in nitrogen.

## 4 Test principle

The resistance of a PPE (protective clothing, gloves and footwear) material to permeation by a gaseous chemical is determined by measuring the normalized breakthrough time (NBT).

**A1** This standard shall be read in conjunction with EN 16523-1. **A1**

In the permeation test apparatus, the PPE (protective clothing, gloves and footwear) material separates the challenge chemical from the collecting medium. The collecting medium, which can be a gas or, a liquid, is analysed quantitatively for its concentration of the chemical and thereby the amount of that chemical that has permeated the barrier as a function of time after its initial contact with the PPE (protective clothing, gloves and footwear) material.