

# *Geregistreeerde Belgische norm*

**NBN EN 13829**

1e uitg., februari 2001

**Normklasse: B 62**

## **Thermische eigenschappen van gebouwen - Bepaling van de luchtdoorlatendheid van gebouwen - Overdrukmethode (ISO 9972:1996, gewijzigd)**

Performance thermique des bâtiments - Détermination de la perméabilité à l'air des bâtiments - Méthode de pressurisation par ventilateur (ISO 9972:1996, modifiée)

Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996, modified)

**Toelating tot publicatie: 22 januari 2001**

Deze Europese norm EN 13829 : 2000 heeft de status van een Belgische norm.

Deze Europese norm bestaat in drie officiële versies (Duits, Engels, Frans).



**Bureau voor Normalisatie - Birminghamstraat 131 - 1070 Brussel - België**

Tel: +32 2 738 01 12 - Fax: +32 2 733 42 64 - E-mail: [info@nbn.be](mailto:info@nbn.be) - NBN Online: [www.nbn.be](http://www.nbn.be)  
Bank 000-3255621-10 IBAN BE41 0003 2556 2110 BIC BPOTBEB1 BTW BE0880857592

ICS: 91.120.10

***norme belge  
enregistrée***

**NBN EN 13829**

1e éd., février 2001

**Indice de classement: B 62**

---

**Performance thermique des bâtiments - Détermination de la perméabilité à l'air des bâtiments - Méthode de pressurisation par ventilateur (ISO 9972:1996, modifiée)**

Thermische eigenschappen van gebouwen - Bepaling van de luchtdoorlatendheid van gebouwen - Overdrukmethode (ISO 9972:1996, gewijzigd)

Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996, modified)

---

**Autorisation de publication: 22 janvier 2001**

La présente norme européenne EN 13829 : 2000 a le statut d'une norme belge.

La présente norme européenne existe en trois versions officielles (allemand, anglais, français).



**Bureau de Normalisation - Rue de Birmingham 131 - 1070 Bruxelles - Belgique**

Tél: +32 2 738 01 12 - Fax: +32 2 733 42 64 - E-mail: [info@nbn.be](mailto:info@nbn.be) - NBN Online: [www.nbn.be](http://www.nbn.be)  
Banque 000-3255621-10 IBAN BE41 0003 2556 2110 BIC BPOTBEB1 TVA BE0880857592

ICS 91.120.10

English version

**Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996, modified)**

Performance thermique des bâtiments - Détermination de la perméabilité à l'air des bâtiments - Méthode de pressurisation par ventilateur (ISO 9972:1996, modifiée)

Wärmetechnisches Verhalten von Gebäuden - Bestimmung der Luftdurchlässigkeit von Gebäuden - Differenzdruckverfahren (ISO 9972:1996, modifiziert)

This European Standard was approved by CEN on 18 October 2000.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## Contents

|   | Page |
|---|------|
| Foreword .....  | 3    |
| Introduction .....  | 3    |
| 1 Scope .....   | 4    |
| 2 Normative references .....  | 4    |
| 3 Terms and definitions .....   | 4    |
| 4 Apparatus .....   | 6    |
| 5 Measurement procedure .....   | 6    |
| 6 Expression of results .....   | 10   |
| 7 Test Report .....   | 15   |
| 8 Accuracy .....  | 15   |
| Annex A (informative) Description of equipment used to pressurize buildings .....                       | 17   |
| Annex B (informative) Dependence of air density on temperature, dew point and barometric pressure ..... | 19   |
| Annex C (informative) Recommended procedure for estimating errors in derived quantities .....           | 20   |
| Annex D (informative) Beaufort scale for wind force indication .....                                    | 23   |
| Bibliography .....  | 23   |

## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS.

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 May 2001, and conflicting national standards shall be withdrawn at the latest by May 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This document modifies prEN ISO 9972:1996 "Thermal insulation - Determination of building airtightness - Fan pressurization method" which failed the Unique Acceptance Procedure (UAP).

This standard is one of a series of standards for the assessment of the thermal performance of buildings and building components.

Annexes A, B, C and D of this European Standard are for information only.

This standard includes a bibliography.

## Introduction

The fan pressurization method is intended to characterize the air permeability of the building envelope or parts thereof. It can be used:

- a) to measure the air permeability of a building or part thereof for compliance with a design airtightness specification,
- b) to compare the relative air permeability of several similar buildings or parts of buildings,
- c) to identify the leakage sources, and
- d) to determine the air leakage reduction resulting from individual retrofit measures applied incrementally to an existing building or part of building.

This method does not measure the air infiltration rate of a building. The results of the fan pressurization test can be used to estimate the air infiltration by means of calculation. Other methods are applicable when it is desired to obtain a direct measurement of the air infiltration rate. It is better to use the fan pressurization method for diagnostic purposes and measure the actual infiltration rate with tracer gas methods. A single tracer gas measurement will give limited information on the performance of ventilation and infiltration of buildings.

This method applies to measurements of air flow through the construction from outside to inside or vice versa. It does not apply to air flow measurements from outside through the construction and back to outside.

The proper use of this standard requires a knowledge of the principles of air flow and pressure measurements. Ideal conditions for the test described in this standard are small temperature differences and low wind speeds. For tests conducted in the field, it needs to be recognized that field conditions may be less than ideal. Nevertheless, strong winds and large indoor-outdoor temperature differences should be avoided.

## 1 Scope

This standard is intended for the measurement of the air permeability of buildings or parts of buildings in the field. It specifies the use of mechanical pressurization or depressurization of a building or part of a building. It describes the measurement of the resulting air flow rates over a range of indoor-outdoor static pressure differences.

This standard is intended for the measurement of the air leakage of building envelopes of single-zone buildings. For the purpose of this standard, many multi-zone buildings can be treated as single-zone buildings by opening interior doors or by inducing equal pressures in adjacent zones.

It does not address evaluation of air permeability through individual components.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN ISO 7345

Thermal Insulation - Physical quantities and definitions (ISO 7345:1987)

## 3 Terms and definitions

For the purposes of this standard, the terms and definitions in accordance with EN ISO 7345 and, as indicated in the follow, apply.

### 3.1

#### **air leakage rate**

air flow rate across the building envelope.

NOTE This movement includes flow through joints, cracks and porous surfaces, or a combination thereof, induced by the air-moving equipment used in this standard (see clause 4).

### 3.2

#### **internal volume**

deliberately heated, cooled or mechanically ventilated space within a building or part of a building subject to the measurement, generally not including the attic space, basement space and attached structures.

### 3.3

#### **building envelope**

boundary or barrier separating the internal volume subject to the test from the outside environment or another part of the building.

### 3.4

#### **air change rate at reference pressure**

air leakage rate per internal volume at the test reference pressure differential across the building envelope.

NOTE Usually 50 Pa.

### 3.5

#### **air permeability**

air leakage rate per envelope area at the test reference pressure differential across the building envelope.

NOTE Usually 50 Pa.