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## Industrial, commercial and garage doors and gates – Resistance to water penetration – Test method

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EUROPEAN STANDARD

**EN 12489**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2000

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English version

## Industrial, commercial and garage doors and gates - Resistance to water penetration - Test method

Portes équipant les locaux industriels, commerciaux et les garages - Résistance à la pénétration de l'eau - Méthode d'essai

Tore - Widerstand gegen eindringendes Wasser - Prüfverfahren

This European Standard was approved by CEN on 19 July 2000.

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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 Central Secretariat has the same status as the official versions.

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### Foreword

This European Standard has been prepared by Technical Committee CEN/TC 33 " Doors, windows, shutters, building hardware and curtain walling", 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of an identical text or by endorsement, at the latest by January 2001, and conflicting national standards shall be withdrawn at the latest by January 2001.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.

No existing EN standard is superseded.

This standard is one of a series of performance standards identified within the product standard prEN 13 421:1998.

European Standards as well as relevant national regulations and standards will enable the actual exposure levels to be determined for the individual locations of the products.

Annex A is normative. Annex B is informative.

## 1 Scope

### 1.1 General

This European Standard specifies the test method for determining the resistance to water penetration for doors in a closed position.

The doors are intended for installation in areas in the reach of people, for which the main intended uses are giving safe access for goods, vehicles and persons in industrial, commercial or residential premises.

The doors may be manually or power operated.

This document applies to all doors provided in accordance with prEN 13 241:1998.

### 1.2 Exclusions

It does not apply to:

- lock gates and dock gates;
- doors on lifts;
- doors on vehicles;
- armoured doors;
- doors mainly for the retention of animals;
- theatre textile curtains;
- horizontally moving doors less than 2,5 m wide and 6,25 m<sup>2</sup> area, designed principally for pedestrian use;
- revolving doors of any size;
- doors outside the reach of people (such as crane gantry fences);
- railway barriers;
- barriers used solely for vehicles.

## 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.

EN 12 433-1	Industrial, commercial and garage doors and gates - Terminology - Part 1: Types of doors
EN 12 433-2	Industrial, commercial and garage doors and gates - Terminology - Part 2: Parts of doors
EN 12 425	Industrial, commercial and garage doors and gates - Resistance to water penetration - Classification
prEN 13 241:1998	Industrial, commercial and garage doors and gates - Product standard

### 3 Terms and definitions

For the purpose of this standard the terms and definitions in EN 12 433-1 and EN 12 433-2 apply. In addition the following definitions also apply:

- 3.1** Resistance to water penetration: ability of the test specimen, when in closed position, to resist water penetration under specified test conditions.
- 3.2** Water penetration: continuous or repeated wetting of the internal surface of the test specimen or parts which are not designed to be wetted.

### 4 Principle of test

Constant spraying of a specified quantity of water onto the external surface of the test specimen while increments of positive test pressure are applied at regular intervals. Details shall be recorded for test pressure and location of water penetration.

### 5 Apparatus

The basic test apparatus shall include:

- a) an opening to which the test specimen can be fitted, to simulate the structure of the product on site.
- b) device(s) to provide controlled air pressure, above atmospheric air pressure, to the exposed surface of the specimen, enabling rapid changes of air pressure, controlled between defined limits.
- c) device(s) to measure the amount of supplied water to an accuracy of  $\pm 10\%$ . If several rows of nozzles with different flows are set up, at least two are necessary.
- d) device(s) for measuring air pressure with an accuracy of  $\pm 5\%$ .
- e) a spraying system capable of applying a continuous regularly dispersed film of water all over the surface likely to be wetted in real exposure conditions by means of full circular nozzles according to figure 1 and with the following features:

- angle of spray:  $120^{\circ} \begin{matrix} +0^{\circ} \\ -10^{\circ} \end{matrix}$
- air pressure working range: 2 bar to 3 bar according to manufacturers specifications
- nozzle rate: top row  $2 \pm 0,2$  l / min / nozzle  
additional rows  $1 \pm 0,1$  l / min / nozzle

- water characteristics
  - its temperature shall be between 4° C and 30° C.
  - it shall be clean enough to enable the nozzles to spray properly.
  - any locally supplied water will be acceptable.
- f) a system able to drain the sprayed water away from the surround, without interfering with the self drainage of the door itself.

NOTE The test rig should not be designed to increase the performance of the specimen.

The test rig shall be prepared so that it is able to withstand the pressures applied during the test, without deflecting to an extent likely to impair jointing or to impose bending stresses.

The test rig shall be prepared and installed so that any water leakage, including that through the frame joints shall be readily detectable.

## 6 Preparation of test specimen

- a) The test specimen shall be installed in accordance with the manufacturer's standard or published installation instructions.
- b) The test specimen shall consist of parts which in detail conform to the production level of quality. Whenever possible the test specimen should be newly made. Doors and parts in stock are to be regarded as newly made if they fully comply with the specification of the running production.
- c) The test specimen shall be clean and the surfaces dry.
- d) Any ventilation, drainage or "weep holes" shall be taped up or left open according to the purpose of test and this purpose and state shall be noted and recorded. In most cases, air can pass through both fixed or opening joints.
- e) The application of the test specimen in its normal use as indicated in the manufacturer's standard or published installation instructions shall be taken into account when determining the position of the water spraying system.
- f) Minimum dimensions of specimen, see table 1.

**Table 1 - Minimum dimensions of specimen**

Commercial and garage doors	Width: 2 000 mm Height: 2 000 mm
Industrial doors	Width: 3 500 mm Height: 3 000 mm

- g) The help of an adequate template is recommended to achieve the set-up of the spraying system according to Figure 1:

### for an overall door height up to 2000 mm

- a single row adjusted so that each nozzle sprays on average 2 l/min ± 0,2 l/min

**for an overall door height more than 2000 mm**

- an upper row adjusted so that each nozzle sprays on average 2 l/min  $\pm 0,2$  l/min and
- one or more additional rows equally divided between the bottom of the specimen and the upper row of nozzles, with a tolerance of  $\pm 150$  mm. According to the table 2 below the flow of each nozzle should be an average 1 l/min  $\pm 0,1$  l/min.

**Table 2 - Number of nozzle rows**

<b>Overall door height (daylight height) mm</b>	<b>Number of nozzle rows (upper row included)</b>	<b>Distance between nozzle rows (equally divided) mm</b>
< 2000	1	
$\geq 2000$ to < 3000	2	1000 – 1500
$\geq 3000$ to < 4500	3	1000 – 1500
$\geq 4500$ to < 6000	4	1120 – 1500