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National Standards Authority of Ireland

IRISH STANDARD

I.S. 588 : 1982

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METHODS OF TESTING WINDOWS - WATERTIGHTNESS TEST UNDER STATIC PRESSURE.

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IRISH STANDARD SPECIFICATION

METHODS OF TESTING WINDOWS WATERTIGHTNESS TEST UNDER STATIC PRESSURE

I.S. 588: 1982
(EN 86: 1980)

Price Code D

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DECLARATION

OF

SPECIFICATION

ENTITLED

METHODS OF TESTING WINDOWS

WATERTIGHTNESS TEST UNDER STATIC PRESSURE

AS

THE IRISH STANDARD SPECIFICATION FOR

METHODS OF TESTING WINDOWS

WATERTIGHTNESS TEST UNDER STATIC PRESSURE

The Institute for Industrial Research and Standards in exercise of the power conferred by section 20 of the Industrial Research and Standards Act, 1961 (No. 20 of 1961), and with the consent of the Minister for Industry and Energy hereby declares as follows:

1. This instrument may be cited as the Standard Specification (Methods of Testing Windows - Watertightness Test under Static Pressure) Declaration, 1982.

2. (1) The Specification set forth in the Schedule to this declaration is hereby declared to be the standard specification for Methods of Testing Windows - Watertightness Test under Static Pressure.

(2) The said standard specification may be cited as Irish Standard 588 : 1982 (EN 86 : 1980) or as I.S. 588 : 1982 (EN 86 : 1980).

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SCHEDULE

Methods of Testing Windows
Watertightness Test under Static Pressure

1. SCOPE

This standard defines the methods to be used for the watertightness test under static pressure of windows to be fitted in exterior walls, and supplied in the form of finished units in actual operating conditions.

2. FIELD OF APPLICATION

This standard applies to all windows including door-height windows made of any material, in the actual operating conditions in which they should be used and fixed according to the manufacturer's recommendations in a finished building, bearing in mind the conditions of test as defined hereafter. The standard does not apply to the joints between the windows and surrounding components and material.

3. PRINCIPLE OF THE TEST

The principle of the test is to apply a quantity of water and an air pressure under defined conditions, on the outside surface of the window and to note possible water leakage.

4. TERMINOLOGY

4.1 Watertightness. The ability of a closed window to resist the water leakages. It is observed in the conventional conditions of test defined in the standard.

4.2 Water leakage. The penetration of water that would continuously or repeatedly wet parts of a building or components not designed to be wetted.

4.3 Limit of watertightness. Maximum pressure recorded during the test at which watertightness is assured.

5. APPARATUS

The basic test apparatus consists of:

5.1 A chamber with an opening to which the test window is fitted.

5.2 A means of providing a controlled differential air pressure across the window.

5.3 A device for rapid controlled changes of the differential air pressure operating between defined limits.

5.4 A device for spraying water such that a continuous film is applied over the whole test area.

Note: Spraying devices and methods which comply with this requirement, are shown in the Annex. The spraying method No. 2 is the preferred method.*

5.5 A means of measuring the amount of water sprayed.

5.6 A means of measuring the differences in pressure between the two faces of the window.

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* In case of a dispute, the spraying method No. 2 is to be used.

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6. PREPARATION OF WINDOW FOR TESTING

A surround for the specimen to be tested shall be prepared. This shall be stiff enough to withstand the test pressures without deflecting to an extent likely to impair jointing or to impose bending stresses on the test specimen. When actual operation conditions are known, the fixing of the specimen shall simulate these conditions (e.g., a window in curtain walling).

The window shall be fixed plumb, square, and without twist or bends.

The window shall be cleaned in its entirety and dried.

The thickness, type of the glass and the method of glazing shall comply with the requirements of the manufacturer. In case of no specification or when there is a possibility that the window may be used with different glasses, tests shall be carried out with a glass of minimum thickness with respect to the surface area, as specified in the national standards.

7. PREPARATION FOR THE TEST

The air temperature of the laboratory and the test chamber shall be measured and recorded in the report.

The temperature of the water used in the test chamber shall be maintained between + 8°C and + 25°C.

The surface tension of the water shall be not less than 60×10^{-3} N/m and this shall be checked with suitable equipment.

The spraying device shall be set to apply about 2 litres/m^2 min on the test area.

Three air pressure pulses shall be applied; the rate of application shall be over a period of not less than one second. Each pulse shall be maintained over three seconds at least. These pulses shall be at a pressure of 10% higher than Pmax required for the test, without however being less than 500 Pa. (†)

With the pressure reduced to zero, all the operating parts of the window shall be opened and closed 5 times and finally secured in the closed position.

8. TEST

The spraying of the window having been done, the air pressure inside the chamber is increased up to the required pressure Pmax following the programme hereafter:

Pressure difference between the chamber and the exterior, in pascals	Duration, in minutes
0	15
50	5
100	5
150	5
200	5
300	5
400	5
500	5
then by stages of 250 Pa maximum	5 at each stage

All dimensions are in millimetres

A diagram showing the sequence of the operation for a required pressure, of for example 500 Pa, is given in the Figure 1.

(†) $1\ \text{Pa} = 1\ \frac{\text{N}}{\text{m}^2} = 0.1\ \frac{\text{kp}}{\text{m}^2}$

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