INTERNATIONAL STANDARD

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Doorsets and windows — Water-tightness test under dynamic pressure — Cyclonic aspects

Blocs portes et fenêtres — Essai d'étanchéité à l'eau sous pression dynamique — Aspects cycloniques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 15821 was prepared by Technical Committee ISO/TC 162, *Doors and windows*.

Doorsets and windows — Water-tightness test under dynamic pressure — Cyclonic aspects

1 Scope

This International Standard specifies a test method for determining the water-tightness under dynamic pressure of doorsets and windows, assembled for normal use and installed as in practice.

This International Standard is applicable to areas subject to severe weather, e.g. that are heavily weather-beaten, stricken by driving rain and wind, including typhoons, hurricanes, cyclones and other severe climate.

This International Standard does not apply to the joints between the door or window frame and the building construction.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1804, *Doors — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1804 and the following apply.

3.1
pressure differential
differential air pressure between the external and internal faces of the test specimen

3.2
dynamic pressure
pressure differential which cyclically pulsates in approximate to a sine wave, applied to the external face of the test specimen

3.3
upper limit value
P_{max}
upper limit value of dynamic pressure during the test

3.4
median value
P
median value of dynamic pressure during the test, required by product specification or agreed between the parties concerned

3.5
lower limit value
P_{min}
lower limit value of dynamic pressure during the test

3.6
water tightness
ability of the closed test specimen to resist water penetration

3.7
water penetration
continuous or repeated wetting of the parts of the building and components that are not designed to be wetted

4 Principle

A specified amount of water is sprayed constantly across the external face of the test specimen under dynamic pressure. If water penetration is observed visually, the location where water penetration has occurred is recorded.

5 Test specimen

5.1 Test specimen

The test specimen shall be such that it is completely assembled for normal use and installed as in practice.

5.2 Glazing for test specimen

If the test specimen contains a glazed area, it shall be glazed in compliance with the requirements of the manufacturer. If no glass thickness is specified, the test shall be carried out with the minimum glass thickness specified by the manufacturer.

6 Test apparatus

6.1 General

The test apparatus shall be a mechanical device having the elements as designated in Figure 1.

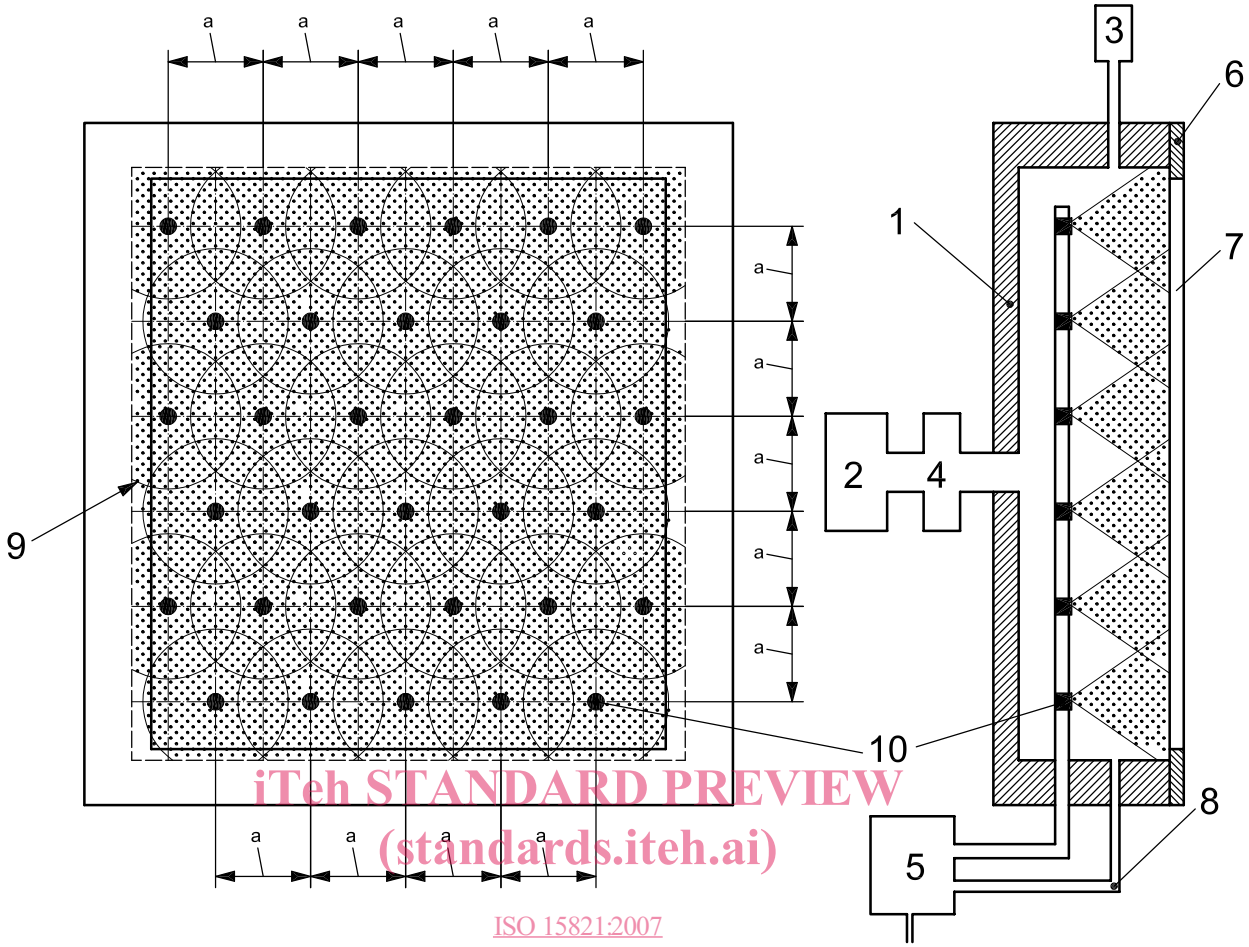
6.2 Pressure chamber

The pressure chamber shall be constructed to maintain the internal pressure at a certain level and to support the attaching rig, and shall be equipped with water spray nozzles.

The pressure chamber shall have an overflow drainage or water tank so that the specimen is not flooded by sprayed water.

6.3 Pressurizer

The pressurizer shall be able to apply controlled pressure to the weather-exposed face of the test specimen.



a) Front view of spraying **b) Cross-section of testing chamber**

Key

1	pressure chamber	6	test-specimen attaching rig
2	pressurizer	7	test specimen
3	device for measuring pressure differential	8	drain
4	device for generating pressure	9	area sprayed by nozzle
5	device for spraying water	10	water-spray nozzle

[a] The distance between nozzles in the same row and the distance between the rows of nozzles are equal.

Figure 1 — Example of test apparatus

6.4 Device for measuring pressure differential

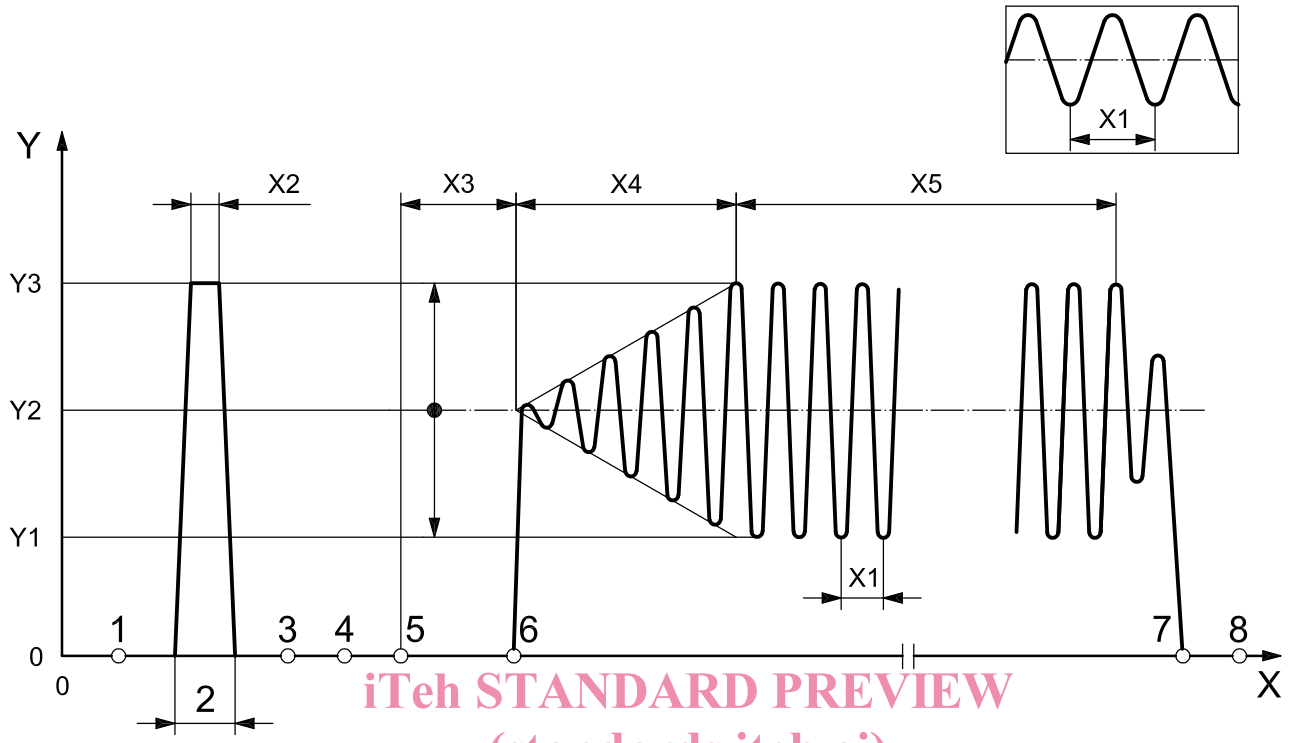
The device shall be able to measure the pressure differential, with ± 3 % accuracy, between the external and internal faces of the test specimen.

6.5 Device for generating dynamic pressure

The device shall be able to produce dynamic pressure, as shown in Figure 2 and Table 1. The dynamic pressure cycles at intervals of 2 s to 4 s, with a tolerance of ± 0,2 s to ± 0,4 s.

NOTE The selected interval cycle shall be kept unchanged during the test.

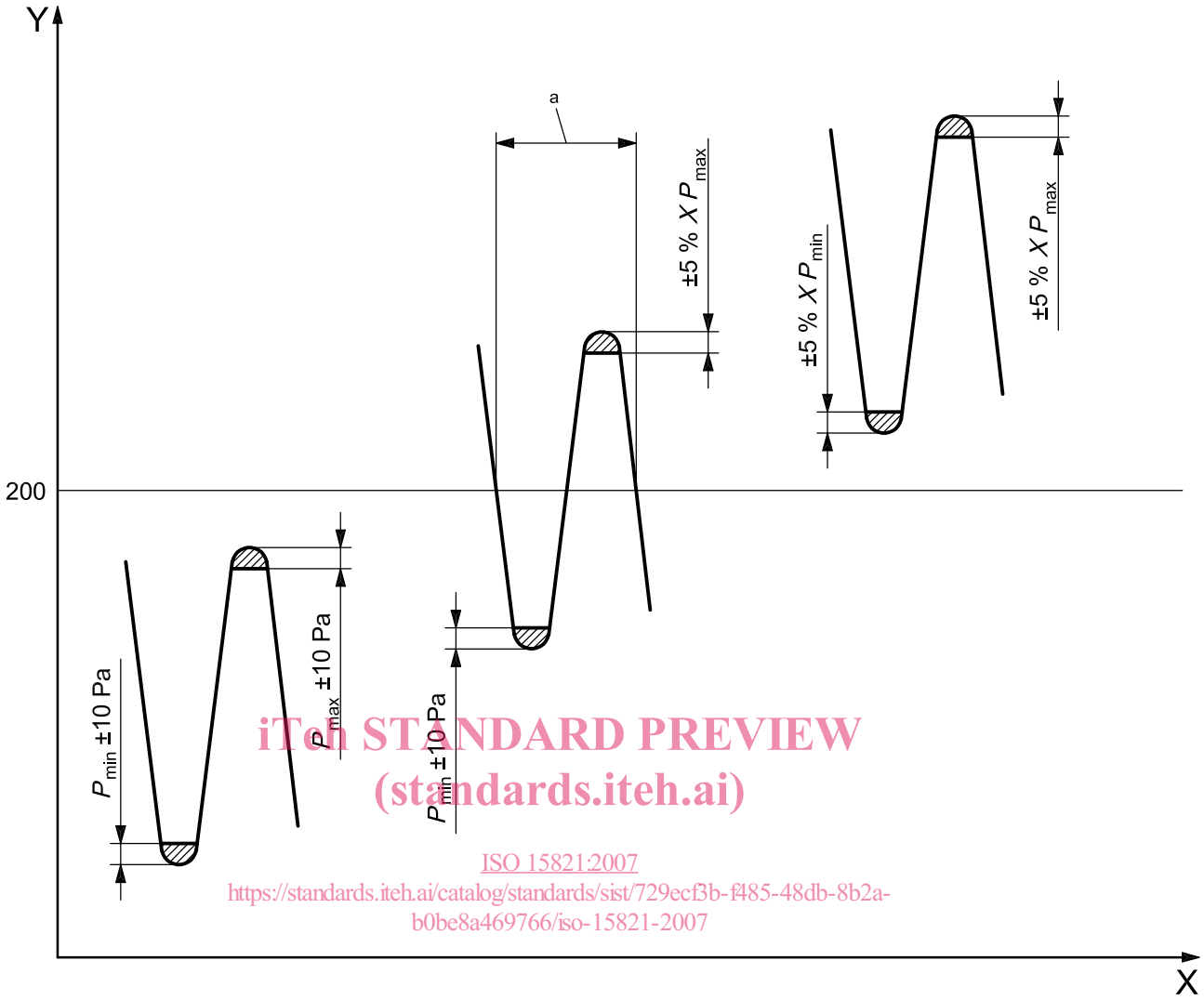
The permissible range of generating dynamic pressure shall be regulated within ± 10 Pa of a pressure below 200 Pa, and/or within ± 5 % of a pressure at 200 Pa and more, as shown in Figure 3.



Key

X pressurization time
X1 2 s to 4 s
X2 1 min
X3 ⩽ 30 s
X4 increments
X5 10 min pressurization time
Y pressure differential, expressed in pascals
Y1 lower limit value, P_{min}
Y2 median value, P
Y3 upper limit value, P_{max}
1 actuation
2 preparatory pressurization
3 observation start
4 water-spraying start
5 affirmation of required amount of water flow
6 pressurization start
7 pressurization and observation end
8 water-spraying end

Figure 2 — Test procedure chart



Key

X pressurization time

Y pressure differential, expressed in pascals

a 2 s to 4 s.

Figure 3 — Permissible range of pressure differential applied to the specimen

6.6 Device for spraying water

The device shall be able to spray the required amount of water across the weather-exposed face of the test specimen.

The flow meter is allowed a ± 10 % accuracy.

6.7 Test specimen attaching rig

The test specimen attaching rig shall be of such a construction that it is possible to install the test specimen as in normal use and practice, it shall fit into the pressure chamber and shall withstand the pressures applied.