



Doco International B.V.
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Nederl nderna

Determination of air permeability, resistance to water penetration and resistance to wind load according to EN 13241-1

(1 appendix)

Test object

Client: Doco International B.V.
Tested door: DOCO SFR/SF/SRR, Garage door with Tecsedo panels
Type of door: Residential, overhead, sectional door
Daylight size: Width 2500 mm, Height 2460 mm

The door was supplied and installed by the client in the opening of an airtight chamber, with its exterior facing inwards towards the chamber, see description and pictures in appendix 1.

Summary of classification

Air permeability according to EN 12426:	Class 3
Resistance to water penetration according to EN 12425:	Class 3, 150 Pa
Resistance to wind load according to EN 12424:	Class 5, 1200 Pa

Test procedure

Air permeability

A positive air pressure was established in the chamber and the air leakage was measured at 50 Pa.

The tests were carried out in accordance with EN 12427.

Resistance to water penetration

Water was applied through two horizontal rows of nozzles with seven nozzles on each row. The upper row supplied 2±0.2 l/min of water per nozzle. The lower row supplied 1±0.1 l/min of water per nozzle.

The test was carried out in accordance with EN 12489.

Resistance to wind load

The door was tested in accordance with EN 12444 in an air pressure chamber. Before the test measures were taken to minimize air leakage in the door and its supporting construction. The air pressure in the test chamber was increased in steps in accordance with the different classes given in EN 12424.

The test was carried out in accordance with EN 12444.

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Test results

Air permeability

Leakage at 50 Pa positive pressure: 3.9 m³/h,m²
 Classification according to EN 12426: Class 3

Resistance to water penetration

The test was interrupted after 170 Pa and 55 minutes.

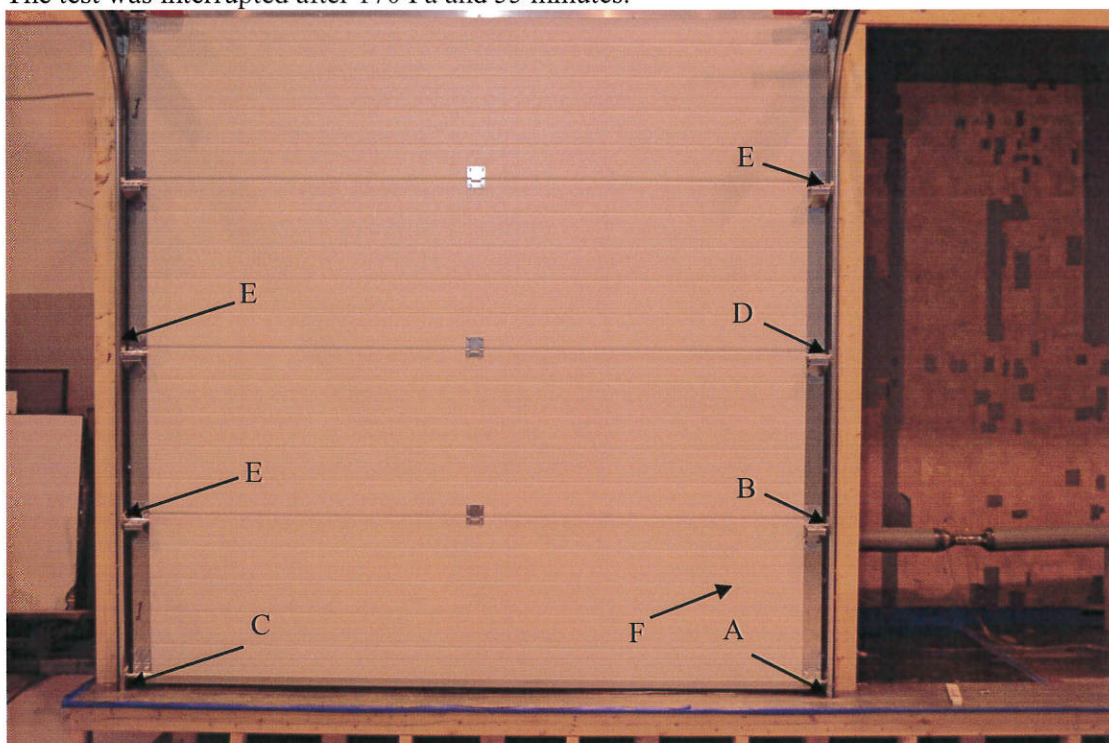


Figure 1. The door as seen from inside.

Air pressure (Pa)	Time (min)	Degree of water leakage at location					
		A	B	C	D	E	F
0	0-10	0	0	0	0	0	0
10	11-15	0	3	0	0	0	0
30	16-20	3	3	3	0	0	0
50	21-25	3	3	3	0	0	0
70	26-30	3	3	3	3	0	0
90	31-35	3	3	3	3	0	0
110	36-40	3	3	3	3	0	0
130	41-45	3	3	3	3	3	0
150	46-50	3	3	3	3	3	0
170	51-55	3	3	3	3	3	3

Location of leakage:

- A: Leakage at the edge of the bottom sealing
- B: Leakage between the panels at the edge
- C: Leakage at the edge of the bottom sealing
- D: Leakage between the panels at the edge
- E: Leakage between the panels at the edge
- F: Water runs on the panel from leakage D and E

Degree of water leakage:

- 0: No leak
- 1: One clinging drop
- 2: Two or more falling or chain drops
- 3: Runs
- 4: Considerable flow

Failure according to leakage F.

Classification according to EN 12425:

Class 3, 90 Pa

Resistance to wind load

The test was interrupted after the inner pressure step at 1650 Pa. After the test the screws to the side hinges had started to come loose from the panel.

No visible deformations were noted at pressure step, 1320 Pa.

Classification according to EN 12424:

Class 5, 1200 Pa

Conditions of test

The test results refer only to the tested object.

Date of test: 2013-01-17
Place of test: SP, Energy Technology, Borås, Sweden
Equipment used: Measuring equipment no. 202429, 202733, 202214
Estimated error margin: Air pressure difference $\pm 2\%$, air flow $\pm 5\%$, water flow $\pm 5\%$
Ambient climate: Air temperature 18 °C, RH 26 %, atmospheric pressure 997 hPa


**SP Technical Research Institute of Sweden
Energy Technology - Building Physics and Indoor Environment**

Performed by

Examined by



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Appendix 1: Description and pictures of the door.

Appendix 1

Description of the door

Tested door	DOCO SFR/SF/SRR Garage door with Tecsedo panels
Daylight size	2500 x 2460 mm
Type and producer of panels	Tecsedo
Thickness of panel	40 mm
Type of tracks	DOCO SFR/SF/SRR
Type of side hinges	DOCO 25734
Type of slides	DOCO 25238
Type of rollers	DOCO 25010-E
Type of intermediate hinges	DOCO 25733
Type of bottom bracket	DOCO 25052 / 25057
Type of top sealing	DOCO 825101
Type of bottom sealing	DOCO 825100
Type of side sealing	DOCO 24740 series



Figure 2. Tested door, DOCO SFR/SF/SRR garage door with Tecsedo panels, mounted in the test rig, as seen from inside.

Appendix 1



Figure 3. Side hinge, slide and roller.



Figure 4. Intermediate hinge.

Appendix 1



Figure 5. Bottom bracket.