

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 Industrial door with Tecsedo panels
Type of door: Industrial, overhead, sectional door
Daylight size: Width 4000 mm, Height 3300 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 4
Resistance to water penetration according to EN 12425:	Class 2
Resistance to wind load according to EN 12424:	Class 3

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 three horizontal rows of nozzles with ten nozzles on each row. The upper row supplied 2 ± 0.2 l/min of water per nozzle. The two lower rows 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: 2.7 m³/h,m²
 Classification according to EN 12426: Class 4

Resistance to water penetration

The test was interrupted after 70 Pa and 30 minutes.

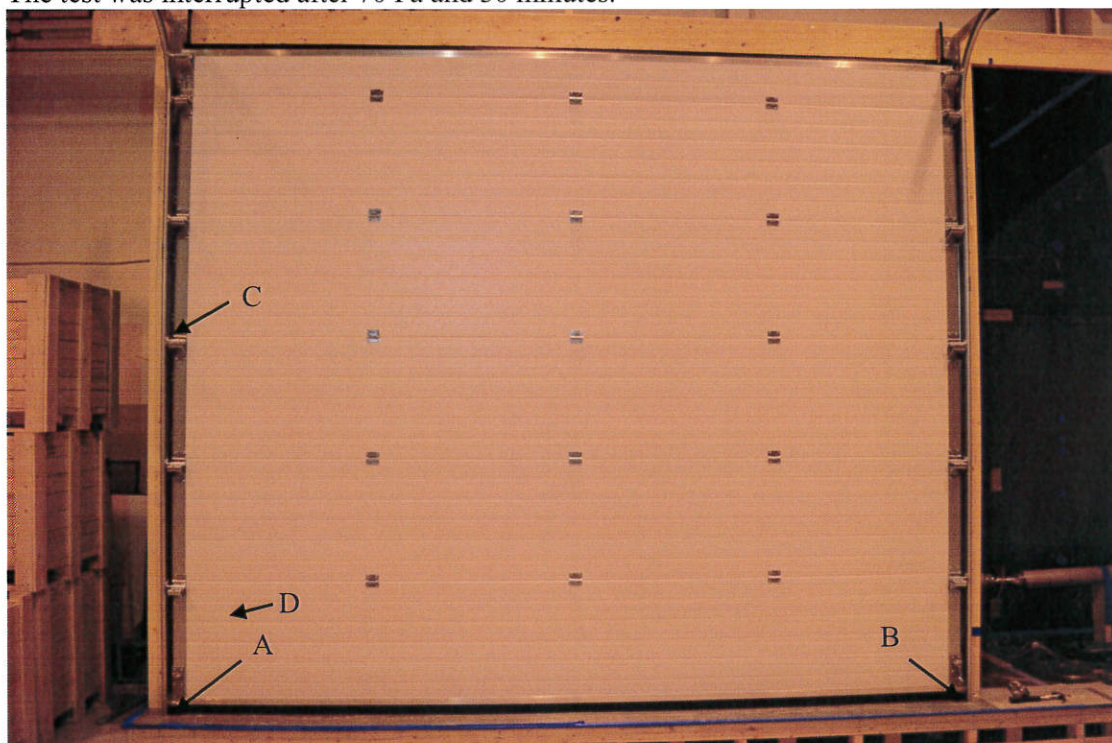


Figure 1. The door as seen from inside.

Air pressure (Pa)	Time (min)	Degree of water leakage at location			
		A	B	C	D
0	0-10	3	0	0	0
10	11-15	3	3	0	0
30	16-20	3	3	0	0
50	21-25	3	3	0	0
70	26-30	3	3	3	3

Location of leakage:

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

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 D.

Classification according to EN 12425: Class 2

Resistance to wind load

The door collapsed at an inner pressure of about 1200 Pa. The panels folded at the middle.

No visible deformations were noted at pressure step, 1100 Pa.

Classification according to EN 12424: Class 3

Conditions of test

The test results refer only to the tested object.

Date of test: 2013-01-15
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 31 %, atmospheric pressure 988 hPa

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

Performed by

Examined by



Roger Davidsson



Börje Gustavsson

Appendix 1: Description and pictures of the door.

Appendix 1

Description of the door

Tested door	DOCO Industrial door with Tecsedo panels
Daylight size	4000 x 3300 mm
Type and producer of panels	Tecsedo
Thickness of panel	40 mm
Type of tracks	DOCO IND
Type of side hinges	DOCO 25334
Type of slides	DOCO 25238
Type of rollers	DOCO 25010-E
Type of intermediate hinges	DOCO 25333
Type of bottom bracket	DOCO 25032
Type of top sealing	DOCO 825101
Type of bottom sealing	DOCO 825103
Type of side sealing	DOCO 225030 series

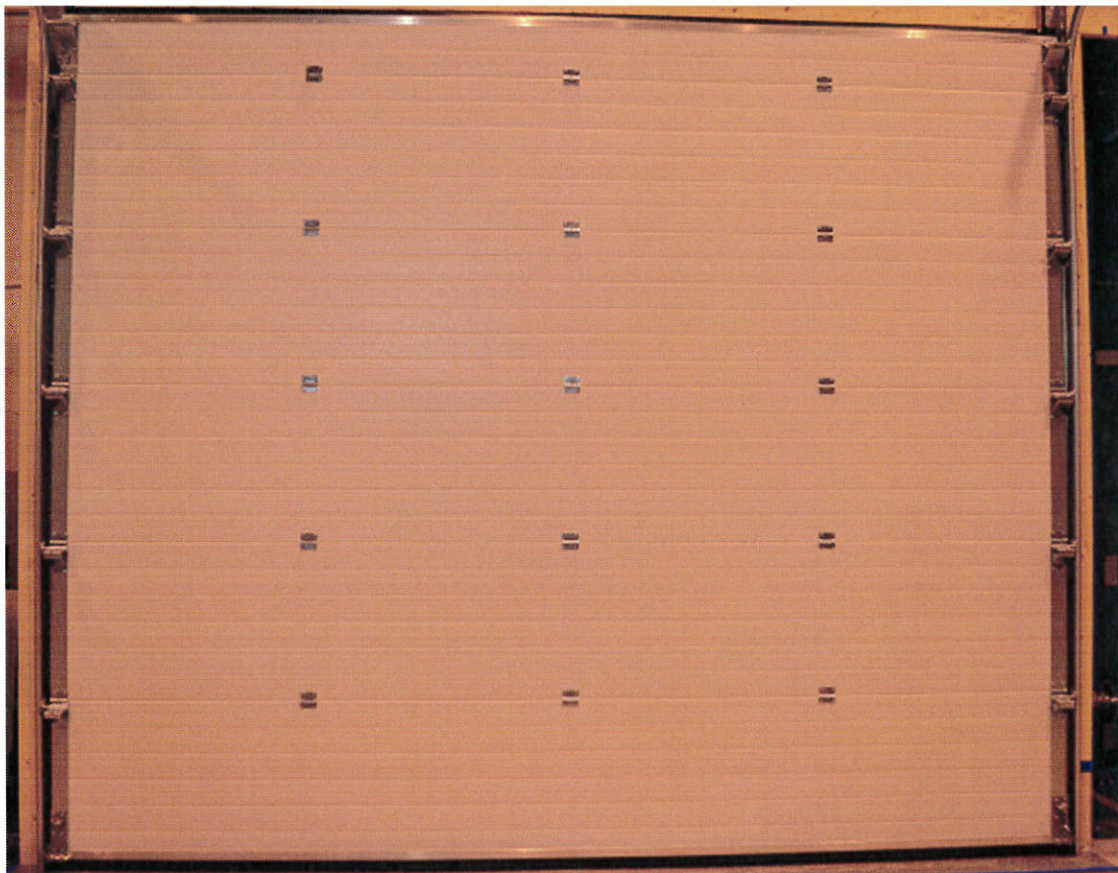


Figure 2. Tested door, DOCO Industrial door with Tecsedo panels, mounted in the test rig, as seen from inside.

Appendix 1



Figure 3. Side hinge, slide and roller.

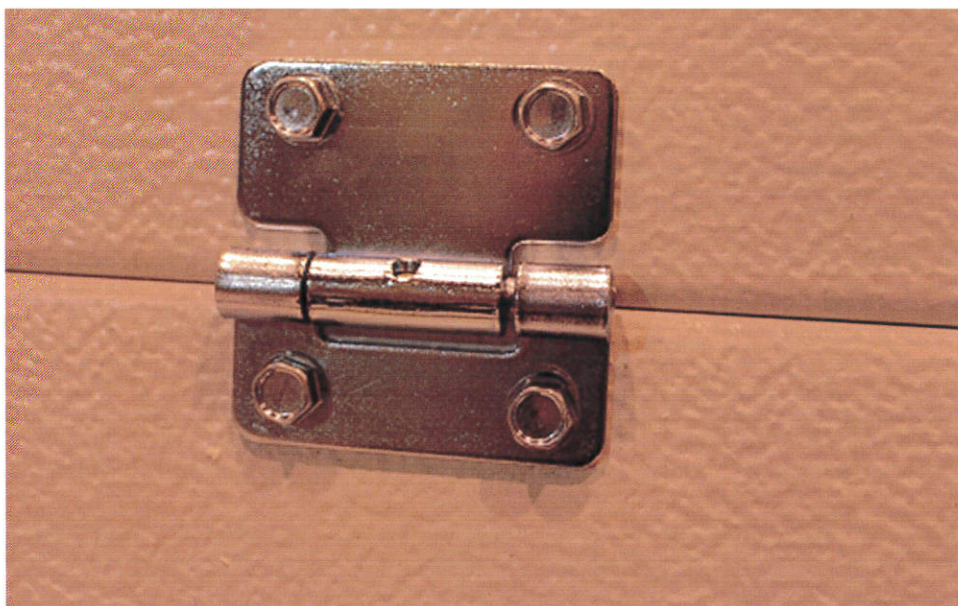


Figure 4. Intermediate hinge.

Appendix 1



Figure 5. Bottom bracket.