ESL

مختبر الإمارات للسلامة
EMIRATES SAFETY LABORATORY

TEST REPORT

No. 0054-25-TR-09

Fire resistance of **Latched, Single Action, Single Door Fire-Rated PSB Wooden Door with hardwood non-rebated frame** made according to technical documentation No. ABS00094-STD-FR-60-PSB-148 R00 (dated 03-04-2025).

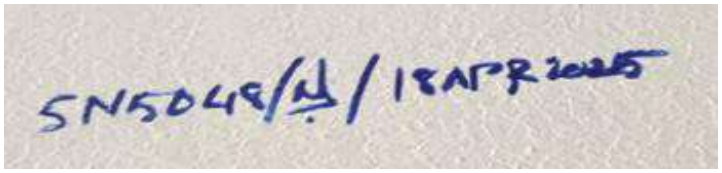
according to:
- EN 1363-1:2020
- EN 1634-1:2014+A1:2018

Date of issue: 30 May 2025

ilac-MRA IAS ACCREDITED Testing Laboratory TL-1038

1 EXCLUSIVE SUMMARY

Test method:	EN 1363-1:2020 – *Fire resistance tests - Part 1: General requirements*. EN 1634-1:2014+A1:2018– *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows.*
Name and address of the testing laboratory:	Emirates Safety Laboratory Al Warsan III, Dubai United Arab Emirates
Date of specimen(s) delivery:	The test element with the technical documentation was delivered by the manufacturer to the laboratory on 22 April 2025.
Date of specimen(s) installation:	22 to 23 April 2025
Date of testing:	24 April 2025
Name and address of the test sponsor:	Abanos Furniture & Decoration Industry LLC P.O. Box 114480 Dubai, United Arab Emirates
Name and address of the manufacturer/supplier:	Abanos Furniture & Decoration Industry LLC P.O. Box 114480 Dubai, United Arab Emirates
Name of the test specimen: (product name)	Latched, Single Action, Single Door Fire-Rated PSB Wooden Door with hardwood non-rebated frame
Identification of the test specimens:	Two single-leaf wooden doorset were installed in a vertical rigid supporting construction, Door 17 – opening towards the furnace Door 18 – opening away from the furnace *Both door sets were of the same design and only the opening direction was different to test from both sides of the door*.
ESL identification number:	0054-25-17 - opening towards the furnace 0054-25-18 - opening away from the furnace
Description of sampling procedure including date if applicable:	Test specimens were selected by ESL Certification (sampling acknowledgement dated 18 April 2025) and delivered to ESL by the test sponsor. The Laboratory Team was not involved in the sampling process.



2 TEST CONDITIONS

Heating temperature of the test element:	The standard temperature-time curve was maintained within its allowable limits according to EN 1363-1. Thea temperature inside the furnace during the test was measured at a distance of 140mm from the surface of the test construction. Heating conditions are shown in Graphs 1 and 2.
Furnace pressure:	Differential pressure in the furnace measured at a height of 500mm above the level of furnace floor was maintained according to EN 1363-1. The pressure probe was located at 322mm above the door sill level of the specimen. The pressure level during the test is shown in Graph 3.
Ambient temperature:	Measured during the test at a distance of 1650mm away from the unexposed face of the specimen, at the commencement of each test was 28.5°C

3 DESCRIPTION OF THE TEST SPECIMEN

Constructional details of the single leaf doorset are presented in the technical documentation enclosed with this report.

Table 1

Measurement	Nominal (mm)		Measured by ESL (mm)	
	Door 17	Door 18	Door 17	Door 18
Overall door frame size (h x w)	2147 x 977	2147 x 977	2149 x 980	2148 x 982
Overall door leaf size (h x w)	2097 x 887	2097 x 887	2098 x 889	2099 x 890
Overall architrave size – unexposed side(h x w)	2175 x 1033	2175 x 1033	2169 x 1032	2175 x 1030
Overall architrave size – exposed side(h x w)	2175 x 1033	2175 x 1033	2170 x 1032	2170 x 1032
Door frame clear opening (h x w)	2085 x 857	2085 x 857	2085 x 854	2084 x 857
Thickness of the door leaf	55	55	56.01	56.52
Door leaf Weight (kg)	-	-	86.66	88.70

3.1 Description of the Doorset (Door 17 & Door 18)

3.1.1 Description of the Door Frame

The doorset consisted of a door frame with a cross-section of 42 x 150 mm, as shown in Figures 3 and 4. The frame was made of Beechwood hardwood with a stated density of nominal 730kg/m³ (700kg/m³ and moisture content of 9.2%, declared by the client) supplied by Florian Legno, S.p.A, Italy. The jambs and head of the door frame were joined at the corners using miter joints, secured with one (2) Ø6 x 48 mm long fine thread stainless steel drywall screws, manufactured by MT Werkz, positioned at each frame head. Additionally, the frame components were bonded together using PW 1612 wood glue produced by Ritver Paints & Coatings. A single coat of FCC-9000 Flame Core Coat, manufactured and supplied by MVL Fire Stop, was applied to both the exposed and unexposed faces of the frame as well as the inner side, with the exception of the rebate.

An architrave with cross-sections of 18 x 60 mm was manufactured and supplied by Al Talah Board Manufacturing Co. Ltd. This architrave was constructed from Desert Board PSB FR, with a stated density of 800kg/m³ and a stated moisture content of 12%.

The 18 x 60 mm architrave was installed on both sides of the door frame jambs using five (5) Ø1.5 x 40 mm nails, spaced approximately 480 mm center-to-center. Additionally, the architrave was secured to the top of the frame with three (3) Ø1.5 x 40 mm nails on each side, approximately 120 mm from each edge, along with an additional nail positioned at the center as illustrated in Figures 3 and 4.

3.1.2 Description of the Door Leaf

The door leaf was constructed from a 55 mm thick Desert Board PSB FR, which featured 21mm thick African Mahogany wood lipping on three (3) sides and 3 mm thick lipping on the bottom side of the leaf. The Desert Board PSB FR, manufactured by Al Talah Board Manufacturing Co. LTD, Abu Dhabi and supplied by Al Talah Board Manufacturing Company Ltd, had a stated density of 800kg/m³ and a stated moisture content of 12% (870kg/m³ calculated by Certification). It was composed of two (2) 27.5 mm layers that were bonded together using Fevicol SWR super synthetic resin adhesive, manufactured by Pidilite Industries. A single FCC-9000 Flame Core Coat coat was applied to both sides of the leaf, including all four (4) edges. as shown in Figure 3 and 4.

The 21mm and 3mm thick African Mahogany wood lipping, supplied by Danube Building Materials FZCO, had a density of 730kg/m³ and a moisture content of content 10.4% (declared by the client) . It was securely attached to the edges of the core using Kleiberit 501.0 PUR adhesive, manufactured by Klebchemie M.G Becker GmbH & Co., as shown in Figure 3 and 4.

3.1.3 Doorset Gaskets:

Door Frame

- Two (2) 15 x 4mm thick intumescent seals (Athmer FP 1504- brown color), manufactured by Athmer, were installed 5mm and 25mm from the rebate. (see Figures 3 and 4).
- A single winged corner seal (PS1212P – brown color) produced by Athmer has been installed on all three sides of the frame. (see Figures 3 and 4).

Door Leaf

- One (1) 15 x 4mm thick intumescent seals (Athmer FP 1504- brown color), manufactured by Athmer, were installed 13mm from the opening edge. (see Figures 3 and 4).

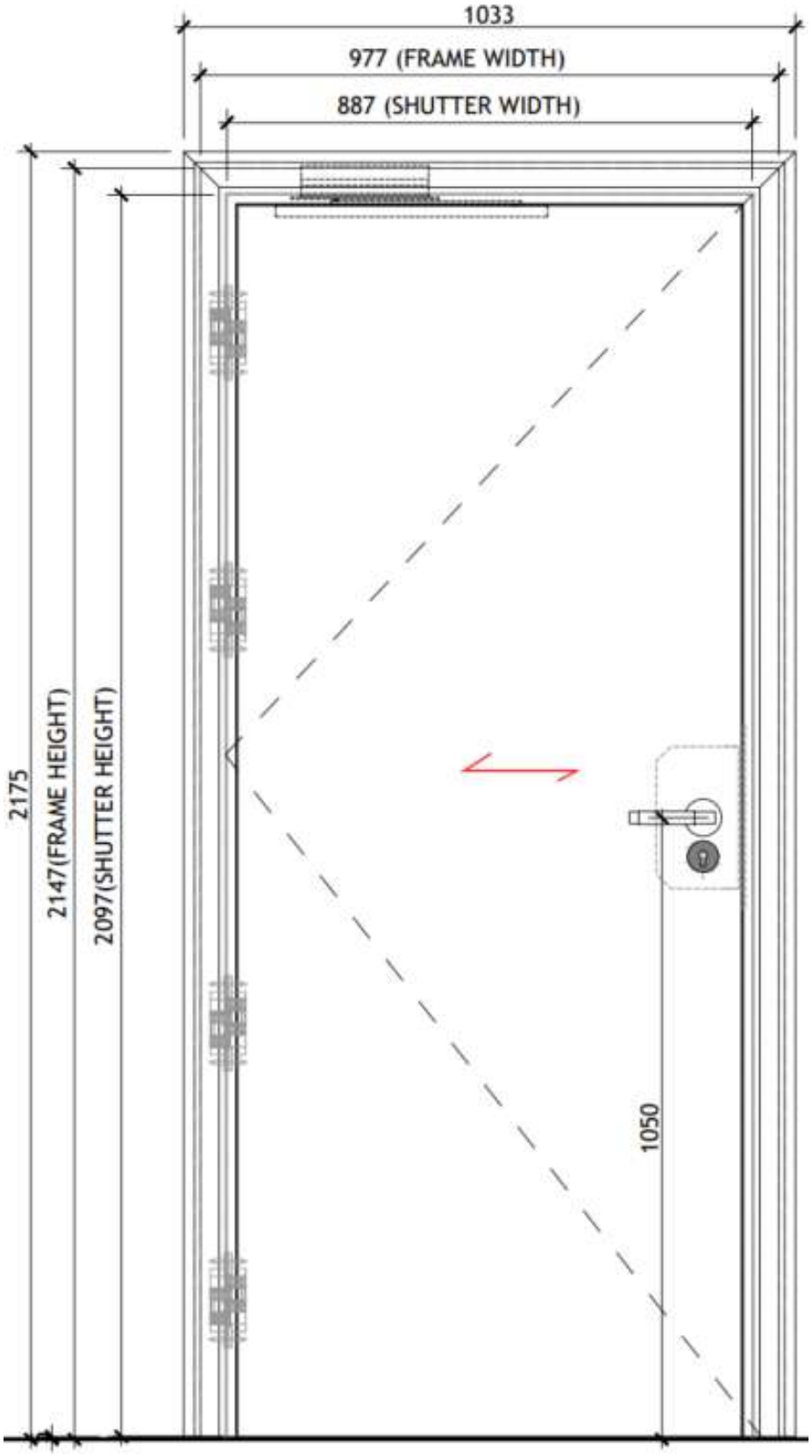


Figure 1. Elevation View of the Door 1 (unexposed)

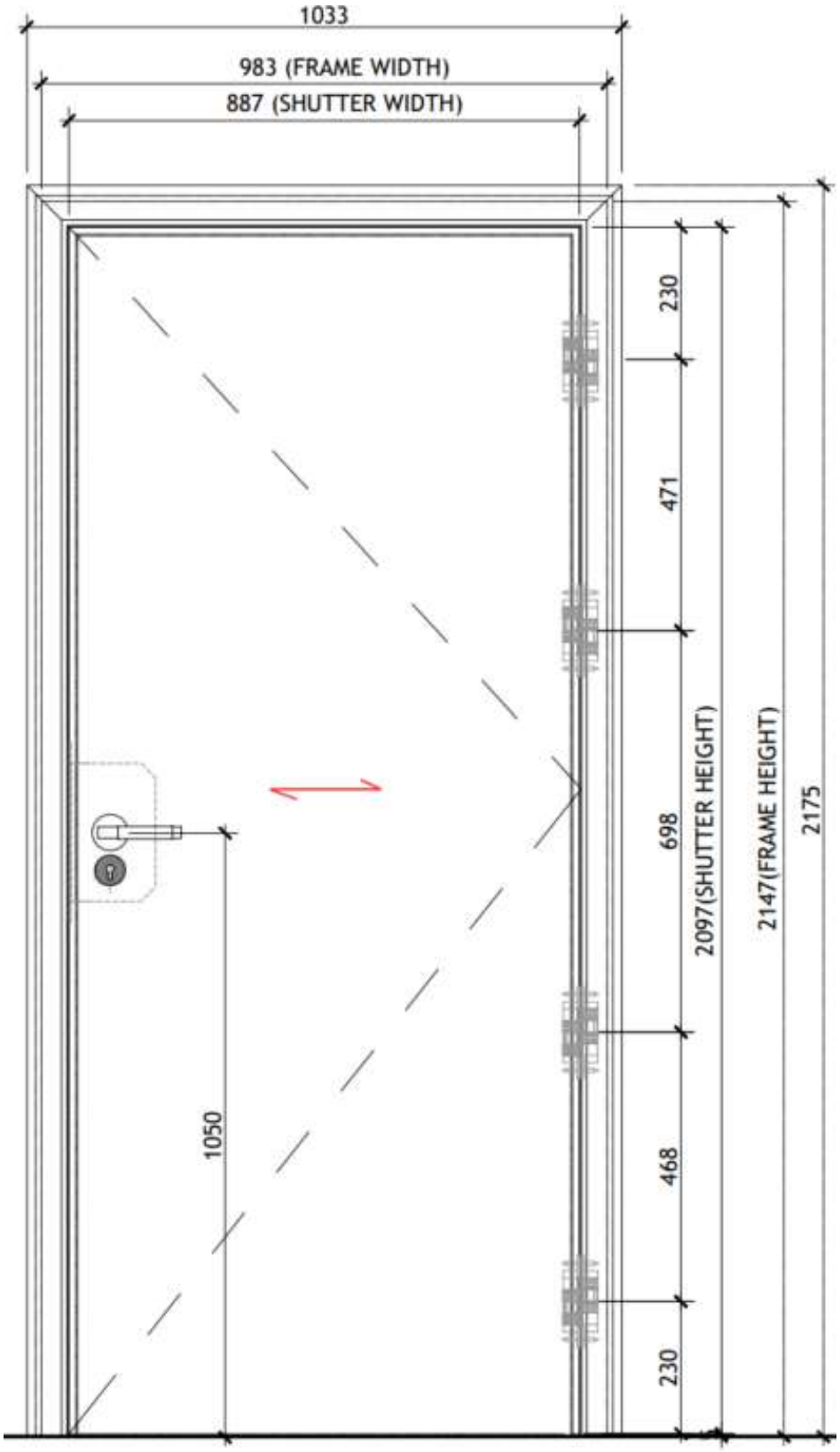


Figure 2. Elevation View of the Door 2 (unexposed)

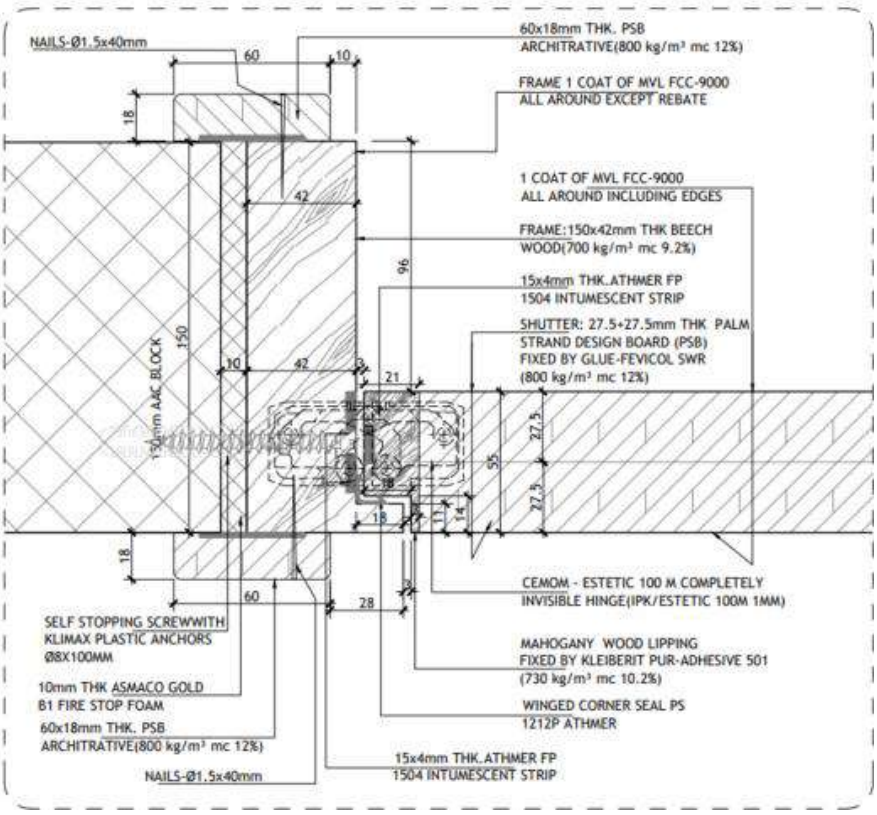


Figure 3. Vertical Jamb Details

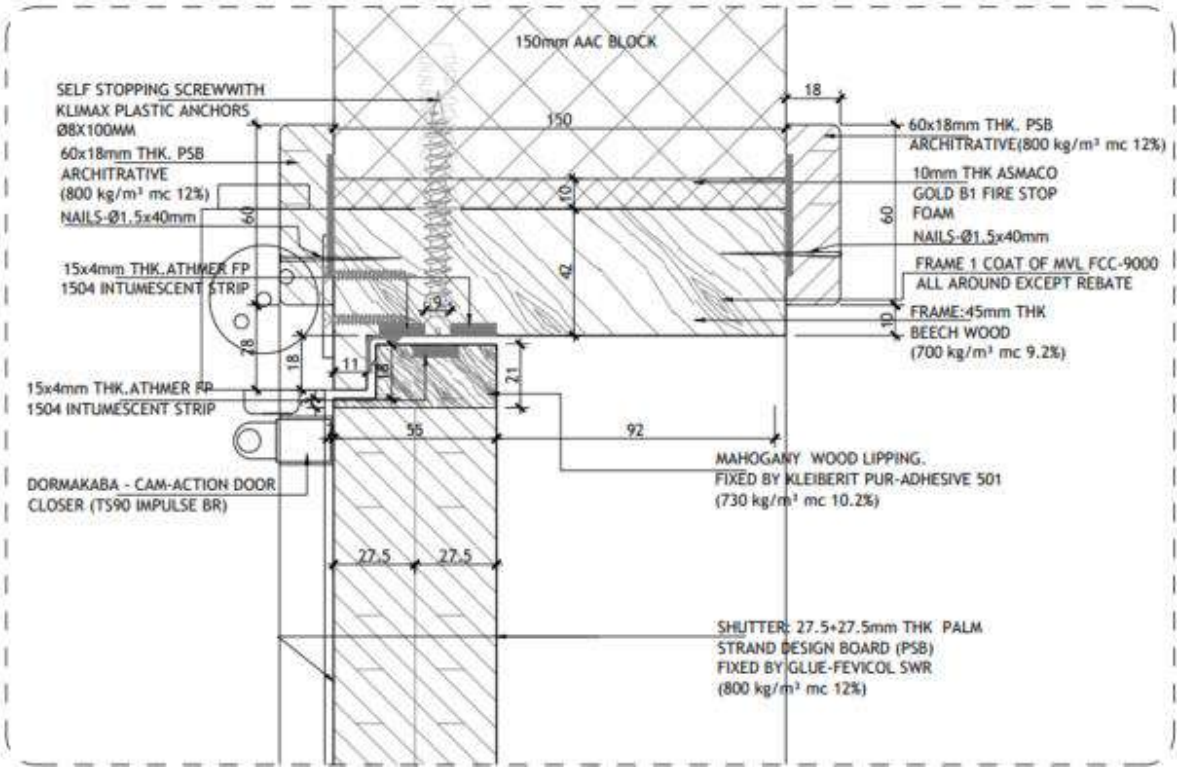


Figure 4. Horizontal Top Details

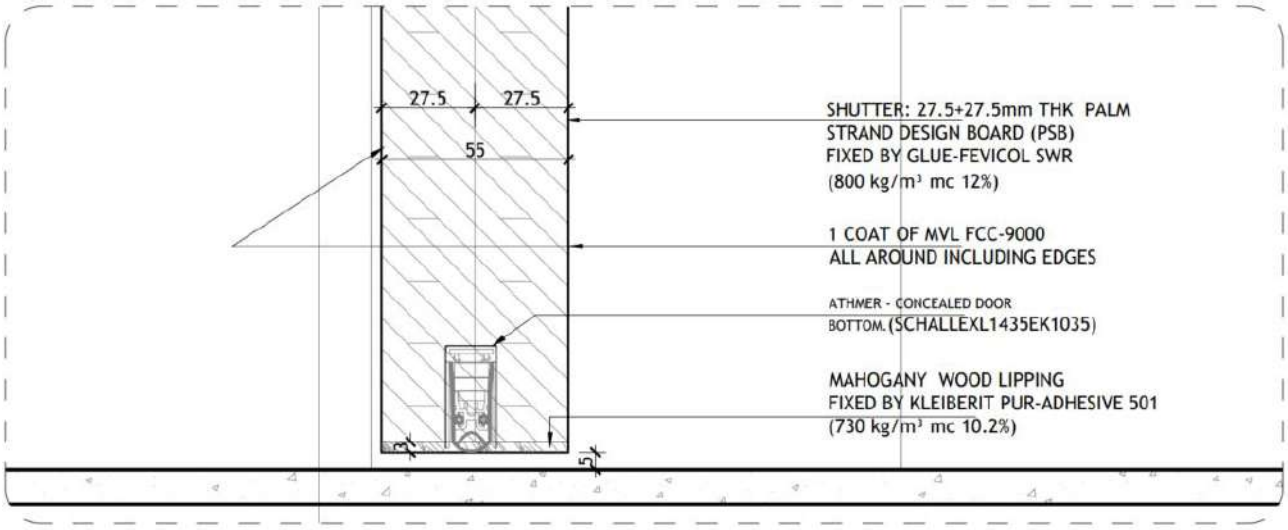


Figure 5. Bottom Door Leaf Detail

3.1.4 Door Hardware (Door 17 & Door 18)

Table 2

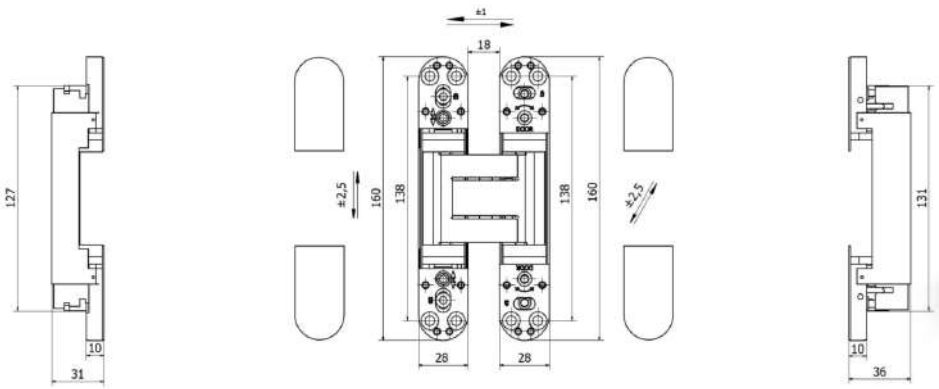
Hinge		
Manufacturer	Cemom, France	
Type	Concealed Hinge	
Reference	EStetic 100 M	
Dimensions	 160mm length x 28mm width	
Quantity	Four on each specimen	
Fixing (hinge CL)	230mm and 705mm from the top of the leaf. 230mm and 705mm from the bottom of the leaf (measured by ESL).	
Protection	Manufacturer	Athmer
	Reference	IPK/ESTETIC 100-1mm
	Thickness	1mm (2pcs)

Table 3

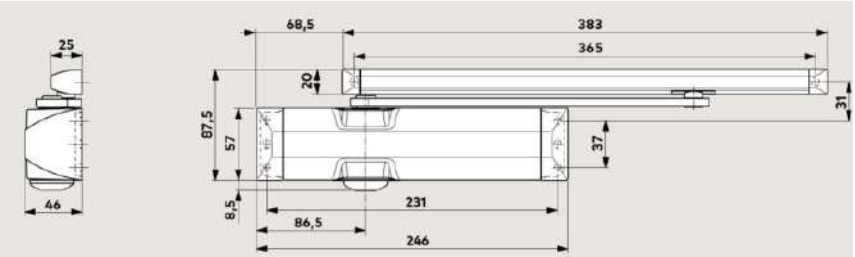
Door Closer	
Manufacturer	Dormakaba, UK
Type	Cam-Action Door Closer
Reference	TS 90 Impulse EN ¾ Door closer
Dimensions	 Body - 249mm length x 56mm width Track - 383mm length x 25mm width
Quantity	One on each specimen
Fixing	115mm from the top edge of each door leaf (measured by ESL).
Protection	N/A

Table 4

Door Handle & Escutcheon		
Manufacturer	Dormakaba, UK	Dormakaba, UK
Type	Lever Handle	Euro Profile Escutcheon
Reference	RLH-S-SY02	Comes in lever handle
Dimensions		50mm Dia
Quantity	One on each specimen	
Fixing (C/L)	1045mm from the bottom of the leaf (measured by ESL).	
Protection	N/A	

Table 5

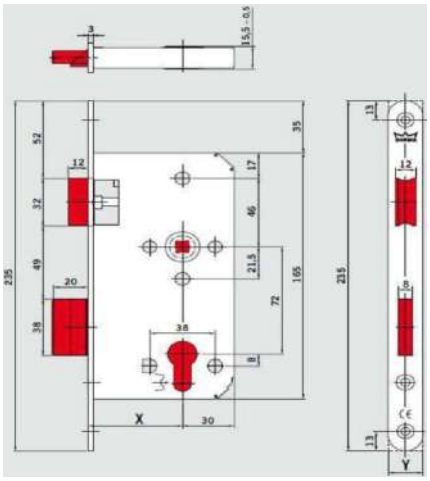
Door Lock		
Manufacturer	Dormakaba, UK	
Type	Euro Profile Mortise Sash Lock with square strikeplate	
Reference	281-a	
Latch Throw	13.04mm (verified by ESL)	
Dimensions		
Quantity	One on each specimen	
Fixing (CL)	1035mm from the bottom edge of each door leaf (measured by ESL).	
Protection	Manufacturer	Athmer
	Reference	IPK-LOCK-1mm
	Thickness	1mm

Table 6

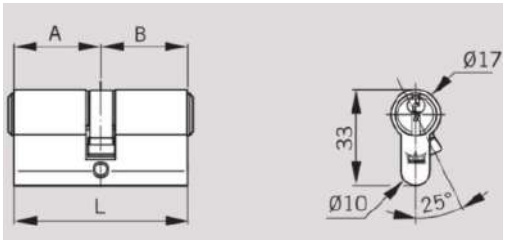
Door Lock Cylinder	
Manufacturer	Dormakaba, UK
Type	Double Cylinder
Reference	DEC60, 68000059
Dimensions	 70mm length
Quantity	One on each specimen
Fixing (C/L)	965mm from the bottom edge of each door leaf (measured by ESL).
Protection	N/A

Table 7

Drop Seal	
Manufacturer	Athmer, UK
Type	Single Action Automatic Drop Seal
Reference	AD-153-1030, Schall-EX-L-14/35-EK
Dimensions	887mm length x 14mm width x 35mm height
Quantity	One on each specimen
Fixing	At the bottom center of the leaf edge (measured by ESL).
Protection	N/A

3.2 Components Photographs

Door Handle and Lock Cylinder

Door Closer

Hinge

Corner Seal & Intumescent at Door Fame

Drop Seal at the Bottom of the Door Leaf

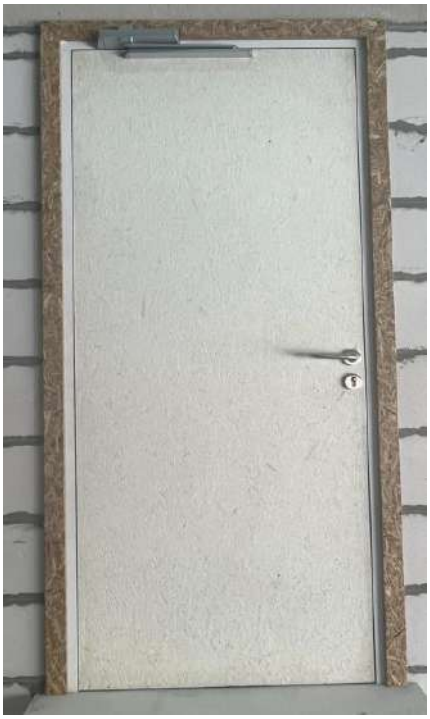
Intumescent at Door Leaf

Door Lock

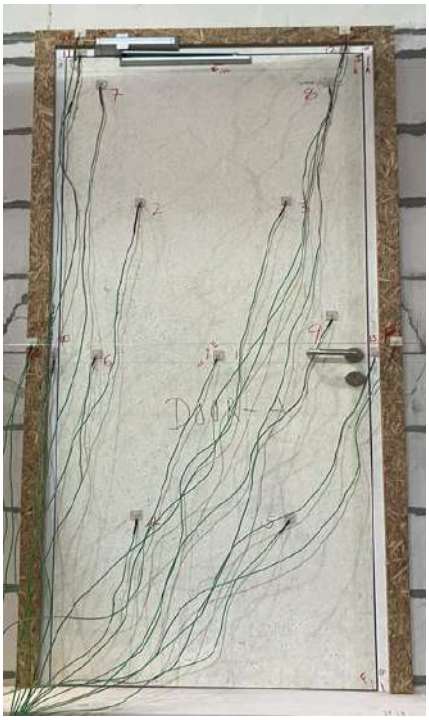
Strike Plate

Foam used to fill the gap between supporting construction and frame

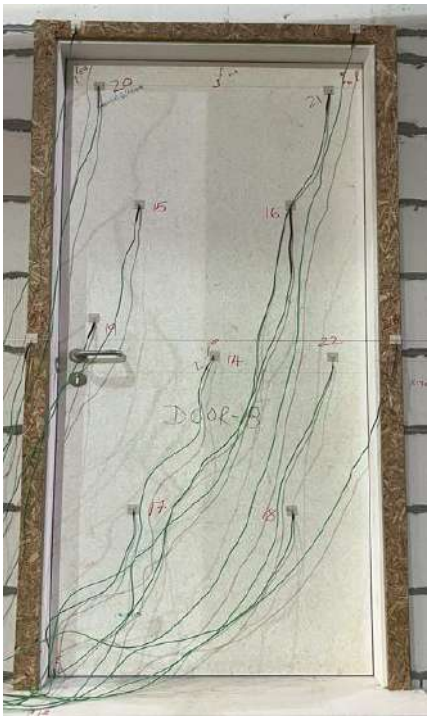
FCC-9000 Flame Core Coat at Door 17
(exposed side)



FCC-9000 Flame Core Coat at Door 18
(exposed side)



FCC-9000 Flame Core Coat at Door 17 (unexposed side)



FCC-9000 Flame Core Coat at Door 18 (unexposed side)

3.3 Installation

A 10mm gap between the door frame and the supporting structure was filled with Asmaco Gold Universal Multifoam (B1) Fire Retardant manufactured by Asmaco and supplied by Anchor Allied Factory LLC. Additionally, Ø8 x 100mm self-tapping screws with Klimax plastic anchors were installed approximately 480mm apart, in five (5) vertical locations on both jambs as shown in Figure 3.

Calcium silicate board of 12mm thickness constituted a simulation of the floor.

3.4 Description of the supporting construction

The doorset was installed in rigid standard supporting construction (according to EN 1363-1 standard). Supporting construction of 150mm thick autoclaved aerated concrete blocks with a nominal density of 500 ± 50kg/m^3 was filling the mounting frame of dimensions 4240 x 4240mm, made of a steel H-profile. The whole construction was used to close the furnace. Supporting construction was conditioned until it was deemed satisfactory by the Laboratory as per relaxation given in Appendix A of EN 1634-1.

3.5 Verification

Verification of the test elements was performed before the test, during the assembly and after the test. It included visual inspection of constructional details and its assembly method as well as assessment of dimensions' conformity with technical documentation.

Note: the information provided in section 3.1 has been compiled based on information received from the Test Sponsor unless stated differently. When the method of construction precluded a detailed survey of the test specimen then laboratory relied on verification by the Certification body which has overseen (during the sampling process) the manufacture of the doorset which is to be the subject of the test";"

4 PRE-TEST PREPARATION

4.1 Conditioning

The doorset was installed by the test sponsor from 22 to 23 April 2025 in the previously conditioned supporting construction. The test element was conditioned for 1 day afterwards under the following conditions:

- relative humidity: min RH (%): 25.4, max RH (%): 36.3
- temperature: min temp. (°C): 25.5, max temp. (°C): 32.1

4.2 Operability test

The test element prior to the fire resistance test and after conditioning was submitted to operability according to EN 16034:2014, by operating 25 cycles of opening to 90° and fully closed the door leaves.

4.3 Closing force measurements

The maximum closing force for each door leaf measured prior to the test, during the opening at a distance of 100mm was:

- Door 17: 134.7
- Door 18: 116.0N

4.4 Gaps measurements

Gaps measurements made in ESL laboratory are shown in Table 8.

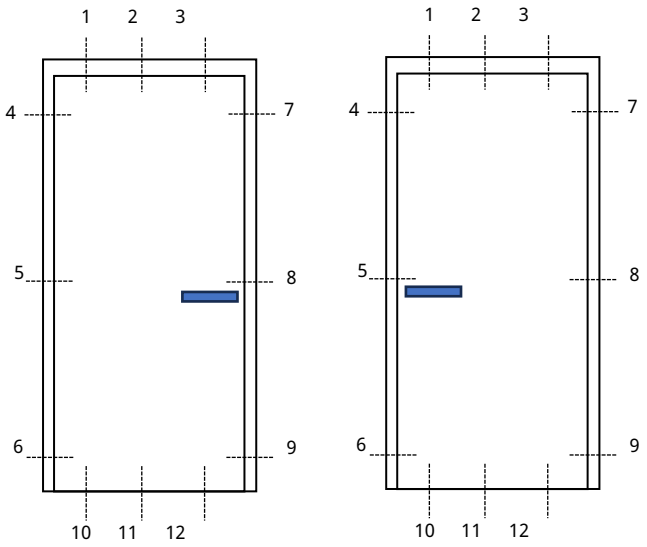


Figure 6. Gap measurement location

Table 8

No.	Door 17 Unexposed side (mm)	Door 18 Exposed side (mm)
1	2.42	3.01
2	4.94	3.4
3	3.91	2.98
4	2.08	2
5	2.82	2.53
6	1.86	2.64
7	2.95	2.86
8	3.33	2.85
9	3.55	2.88
10	5.82	5.29
11	5.52	5.62
12	5.68	5.24

Permitted gap sizes are shown in Table 9.

Table 9

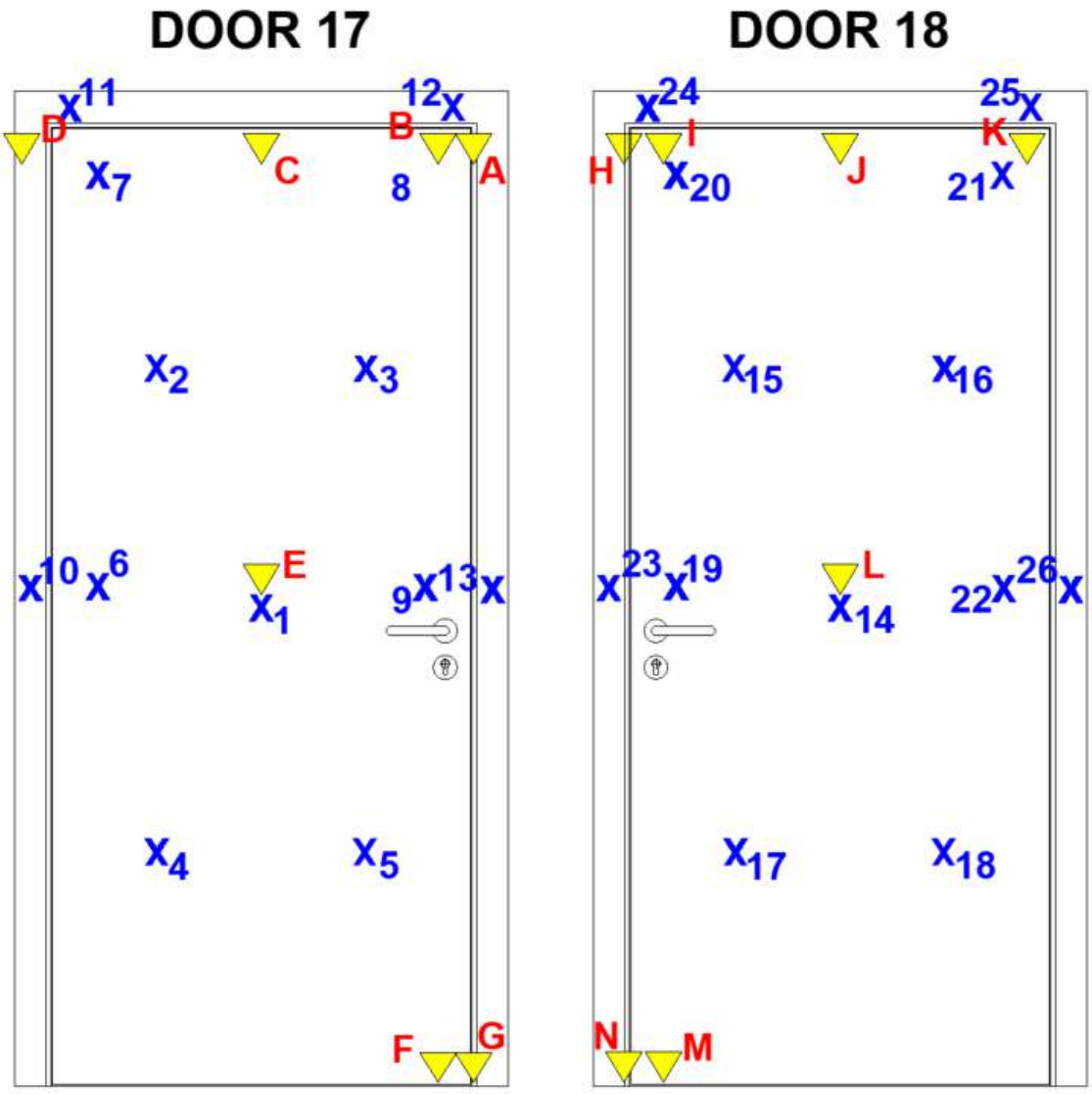
GAPS			***Measurements, mm***		
			Average	***Maximum***	***Permitted gap size***
Door 17 & 18	Along the horizontal edges	At the top	3.4	4.9	5.8
		At the bottom	5.5	5.8	7.6
	Along the vertical edges	Hinge side	2.6	2.9	4.7
		Lock side	2.8	3.6	5.0

4.5 Final settings

Prior to the fire resistance test, the test specimens were subjected to a final closing involving opening the leaves to a distance of approximately 300 mm and returning it to the closed position.
The doors were latched, and the key was removed from the lock. The door closer was connected.

4.6 Arrangement of temperature and defection measurement points

The positioning scheme of the temperature and deflection measuring points is shown in Figure 7.

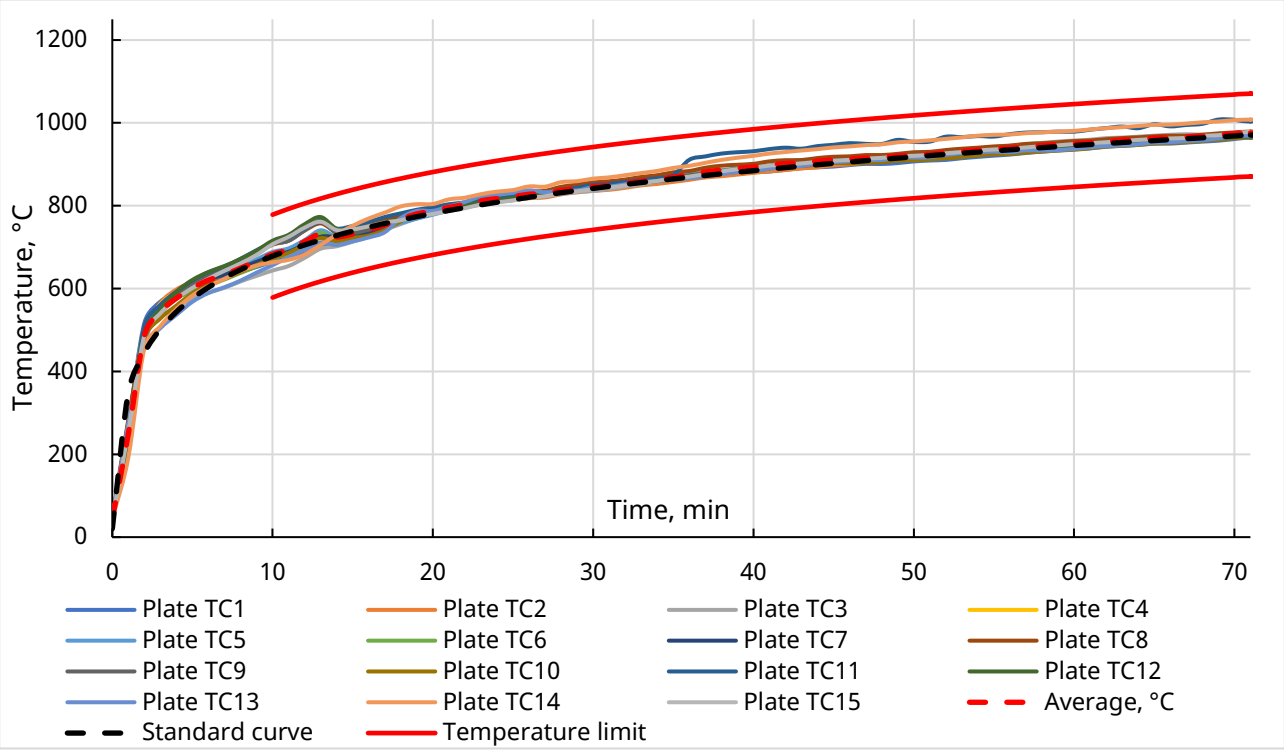


x – temperature measuring point (standard procedure)
▽ – deflection measuring point

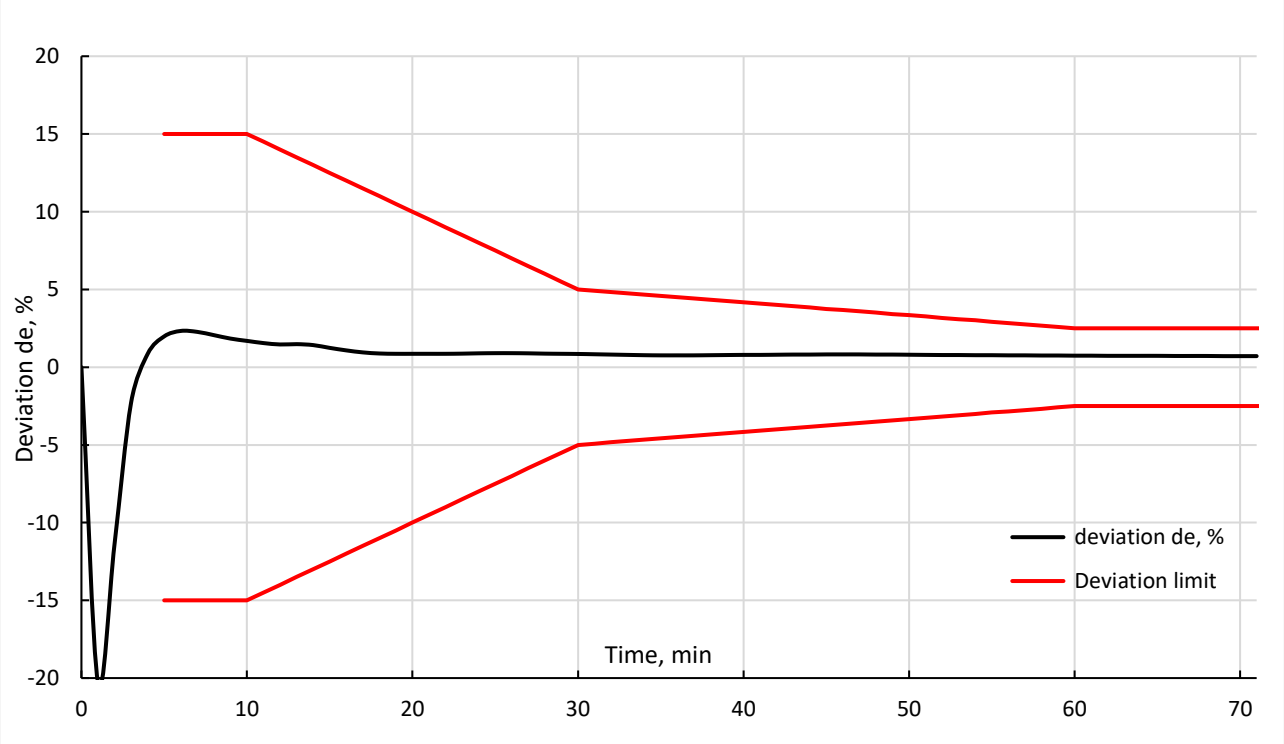
Figure 7. Scheme of the temperature and deflection measuring points on the unexposed side of the door

5 TEST RESULTS

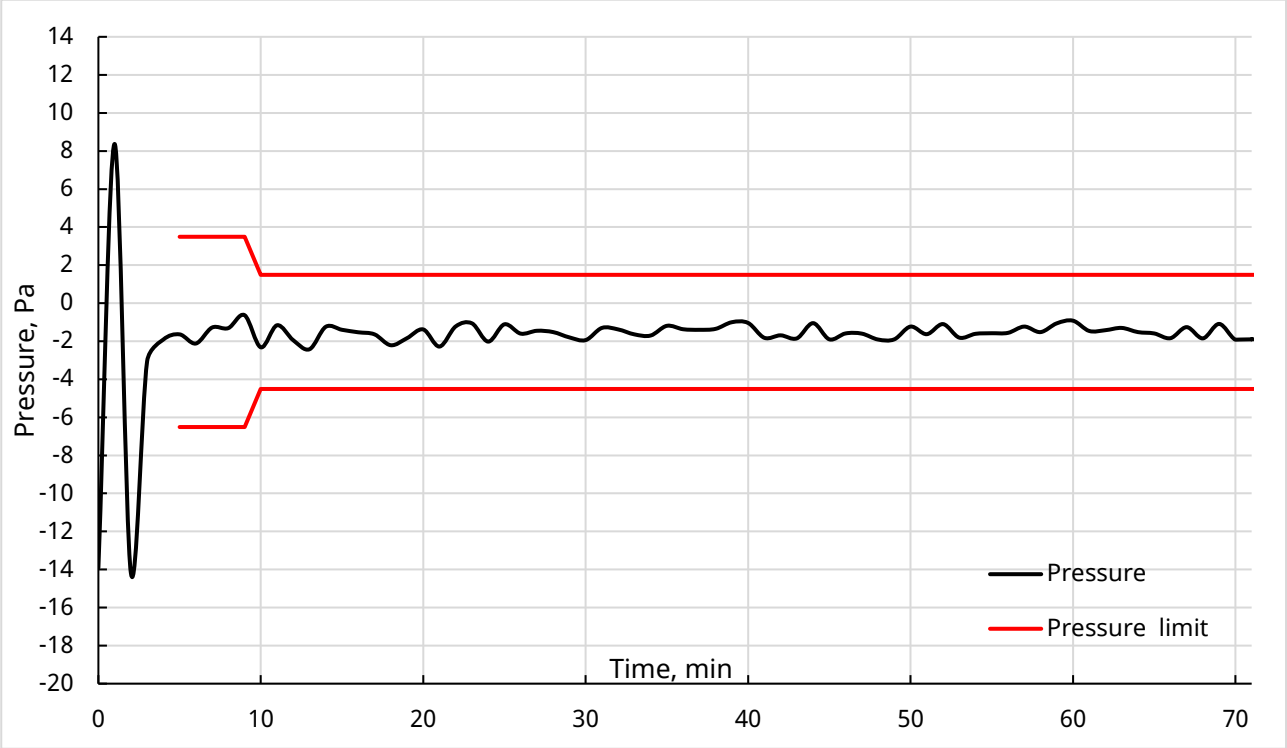
5.1 Furnace conditions



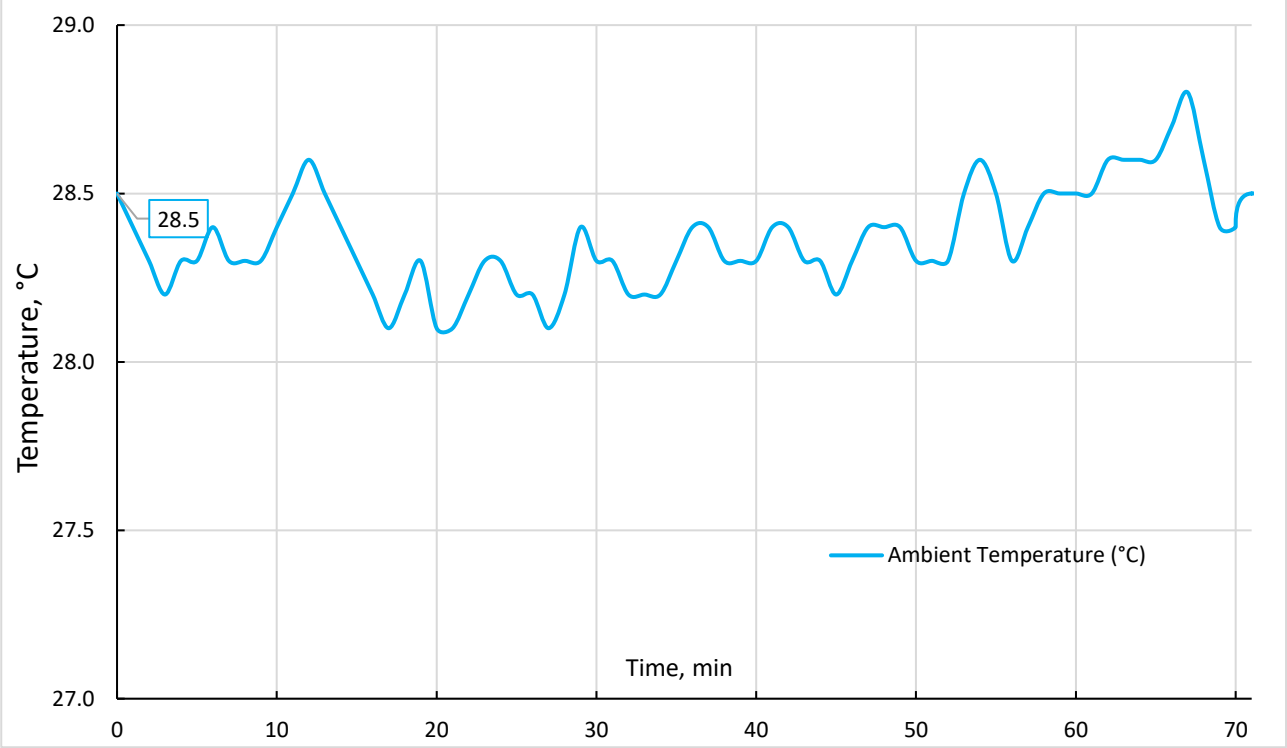
Graph 1. Temperature in the furnace during the test



Graph 2. Deviation d_e and tolerance limits of heating deviation during the test



Graph 3. Pressure inside the furnace during the test.



Graph 4. Ambient temperature during the test

5.2 Fire test results

5.2.1 Observations

Table 10

Elapsed time, min	OBSERVATION
0	Commencement of Test.
4	Smoke emanated from the corner of the leaf – Door 17.
6	Discoloration was observed at the top right corner of the leaf – Door 17.
13	Smoke emanated from the perimeter edge of the leaf – both doors.
24	Discoloration was observed on the lockset, all hinge locations, as well as the leaf and frame in these areas. – Door 18.
43	Discoloration was observed on the horizontal top of the leaf and frame – Door 18.
47	Glowing was observed near the location of the lower hinge – Door 18.
55	The melted components of the hinge have dripped onto the bottom board – Door 18.
58	Intumescent seals around the perimeter of the leaf were activated and protruded out from the leaf – Door 18.
62	Glowing was observed at the top right corner of the leaf – Door 18.
64^{06}	**Integrity failure. Sustained flaming at the top left corner of the leaf – Door 18.**
71	End of the test, as per test sponsor request.

5.2.2 Deflection measurements

Deflection measurements are shown in Table 11.

Table 11

	Time, min.	***Deflection at the measuring point, mm***													
		Door 17							**Door 18**						
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**
„+" Deflection towards the furnace *„-" Deflection outwards the furnace*	***0***	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	-3	+1	-3	0	0	-3	-2	-2	+2	0	0
	20	0	0	0	-1	+1	-1	0	+1	-3	-1	-2	+2	-2	0
	30	0	0	0	-1	-2	0	-2	0	-3	-2	-2	0	-1	0
	40	0	+3	0	+1	-6	+1	-1	+2	-1	+1	0	-2	+2	0
	50	0	+2	-2	+1	-11	+3	0	+2	+2	-1	+4	-9	+2	0
	55	0	+2	-2	+2	-15	+3	0	+2	+3	+1	+5	-13	+2	0
	60	0	+3	-3	+3	-20	+4	0	+3	+7	+1	+10	**-18**	+2	0
	70	0	+6	-7	+6	**-30**	+8	+2	*/1*	*/1*	*/1*	*/1*	*/1*	*/1*	*/1*

/1 – measurements omitted due to safety reasons.

5.2.3 Temperature rise on the unexposed side of the door

Temperature rise on the unexposed side of the Specimen in Table 12 & 13.

Table 12. Door 17

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 1-5,*	ΔT_{max} *pts.: Std. 1-9*	$\Delta T_{max\ frame}$ *pts.: 10-13*
	Standard procedure															
	Doorset									*Frame*						
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*°C*	*°C*	*°C*
0	0.3	0.1	0.2	-0.3	-0.1	-0.3	0.3	0.5	0.3	-0.4	0.0	0.1	-0.3	0.0	0.5	0.1
1	0.4	0.1	0.1	-0.3	-0.1	-0.2	0.3	0.4	0.2	-0.4	0.0	0.1	-0.3	0.0	0.4	0.1
2	0.4	0.1	0.1	-0.4	-0.1	-0.2	0.4	0.6	0.3	-0.3	0.1	0.1	-0.3	0.0	0.6	0.1
3	0.3	0.1	0.3	-0.2	0.0	-0.2	0.3	0.6	0.3	-0.3	0.1	0.2	-0.4	0.1	0.6	0.2
4	0.4	0.1	0.3	-0.2	0.0	-0.2	0.4	0.6	0.3	-0.3	0.0	0.1	-0.2	0.1	0.6	0.1
5	0.5	0.2	0.3	-0.1	0.0	-0.1	0.4	0.7	0.4	-0.2	0.0	0.1	-0.2	0.2	0.7	0.1
6	0.6	0.3	0.3	-0.1	0.1	0.0	0.5	0.7	0.5	-0.3	0.0	0.0	-0.2	0.2	0.7	0.0
7	0.5	0.3	0.3	-0.1	0.0	0.0	0.6	0.8	0.4	-0.3	0.1	0.0	-0.2	0.2	0.8	0.1
8	0.6	0.4	0.4	-0.1	0.1	0.1	0.6	0.8	0.5	-0.3	0.1	0.1	-0.2	0.3	0.8	0.1
9	0.7	0.4	0.5	0.0	0.2	0.0	0.6	0.8	0.6	-0.3	0.1	0.1	-0.2	0.4	0.8	0.1
10	0.8	0.4	0.5	0.0	0.1	0.1	0.6	1.0	0.7	-0.2	0.1	0.2	-0.1	0.4	1.0	0.2
11	0.7	0.5	0.5	0.0	0.2	0.1	0.7	0.9	0.7	-0.2	0.0	0.1	-0.1	0.4	0.9	0.1

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 1-5,*	ΔT_{max} *pts.: Std. 1-9*	$\Delta T_{max\ frame}$ *pts.: 10-13*
	Standard procedure															
	Doorset									*Frame*						
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*°C*	*°C*	*°C*
12	0.7	0.5	0.6	0.1	0.3	0.1	0.7	0.9	0.7	-0.2	0.0	0.1	0.0	0.4	0.9	0.1
13	0.7	0.6	0.7	0.2	0.3	0.2	0.8	1.1	0.7	-0.2	0.1	0.2	0.3	0.5	1.1	0.3
14	0.9	0.6	0.8	0.2	0.4	0.3	0.8	1.0	0.8	-0.2	0.0	0.2	0.6	0.6	1.0	0.6
15	1.0	0.7	0.8	0.2	0.3	0.3	1.0	1.3	1.0	-0.2	0.2	0.2	0.4	0.6	1.3	0.4
16	1.1	0.8	0.9	0.3	0.4	0.4	1.0	1.2	1.2	-0.2	0.2	0.2	0.5	0.7	1.2	0.5
17	1.1	0.9	1.0	0.4	0.4	0.5	1.0	1.4	1.2	-0.3	0.1	0.2	0.5	0.8	1.4	0.5
18	1.3	1.2	1.1	0.6	0.6	0.7	1.3	1.5	1.2	-0.3	0.2	0.3	0.4	1.0	1.5	0.4
19	1.5	1.4	1.3	0.8	0.7	0.9	1.4	1.8	1.3	-0.3	0.2	0.4	0.2	1.2	1.8	0.4
20	1.7	1.6	1.5	1.0	1.0	1.2	1.7	2.2	1.4	-0.2	0.3	0.4	0.4	1.4	2.2	0.4
21	2.1	2.2	1.8	1.5	1.3	1.6	2.0	2.3	1.8	-0.3	0.4	0.4	0.7	1.8	2.3	0.7
22	2.5	2.6	2.1	1.7	1.5	2.1	2.4	2.9	2.0	-0.2	0.7	0.4	0.6	2.1	2.9	0.7
23	2.9	3.1	2.5	2.1	1.8	2.5	2.8	3.2	2.3	-0.2	0.9	0.6	0.4	2.5	3.2	0.9
24	3.5	3.9	3.0	2.7	2.2	3.0	3.2	3.7	2.6	-0.2	1.3	1.1	0.3	3.1	3.9	1.3
25	4.0	4.6	3.4	3.3	2.7	3.8	3.9	4.5	3.0	-0.2	1.2	1.4	0.4	3.6	4.6	1.4
26	4.6	5.4	4.0	3.8	3.1	4.4	4.5	5.0	3.7	-0.2	1.4	2.0	0.4	4.2	5.4	2.0

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 1-5,*	ΔT_{max} *pts.: Std. 1-9*	$\Delta T_{max\ frame}$ *pts.: 10-13*
	Standard procedure															
	Doorset									*Frame*						
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*°C*	*°C*	*°C*
27	5.3	6.5	4.7	4.5	3.8	5.1	5.3	5.8	4.2	-0.1	1.7	2.5	0.4	5.0	6.5	2.5
28	6.0	7.4	5.4	5.1	4.4	6.0	6.0	6.4	4.8	-0.1	2.0	3.4	0.6	5.7	7.4	3.4
29	6.8	8.6	6.1	5.9	5.1	6.8	6.9	7.2	5.5	-0.1	2.5	4.8	0.7	6.5	8.6	4.8
30	7.4	9.7	6.8	6.5	5.7	7.5	7.9	8.2	6.3	-0.1	2.9	5.1	0.7	7.2	9.7	5.1
31	8.3	10.9	7.7	7.3	6.5	8.5	8.8	9.0	6.9	-0.1	3.7	6.9	1.0	8.2	10.9	6.9
32	9.1	12.2	8.7	8.1	7.5	9.4	9.8	9.8	8.0	0.1	3.9	8.0	1.1	9.1	12.2	8.0
33	10.0	13.6	9.6	8.9	8.2	10.3	10.8	10.9	8.9	0.0	4.8	8.4	1.1	10.1	13.6	8.4
34	10.9	15.0	10.6	9.7	9.1	11.2	11.9	11.8	9.8	0.0	4.9	10.2	1.2	11.1	15.0	10.2
35	11.7	16.5	11.8	10.6	10.1	12.2	13.0	12.7	10.9	0.1	4.8	10.0	1.5	12.2	16.5	10.0
36	12.7	18.0	12.8	11.4	11.0	13.2	14.1	13.9	12.0	0.2	4.8	10.0	1.6	13.2	18.0	10.0
37	13.6	19.7	14.0	12.4	12.1	14.4	15.3	15.1	13.2	0.3	4.1	9.5	1.7	14.4	19.7	9.5
38	14.5	21.4	15.3	13.1	13.0	15.5	16.5	16.4	14.4	0.4	3.7	9.2	1.9	15.5	21.4	9.2
39	15.4	23.0	16.6	14.0	14.0	16.6	17.7	17.7	15.7	0.5	3.8	8.8	2.1	16.6	23.0	8.8
40	16.4	24.8	17.9	15.0	15.1	17.8	19.2	19.2	17.0	0.5	4.5	8.7	2.3	17.9	24.8	8.7
41	17.4	26.6	19.3	15.9	16.0	19.0	20.3	20.6	18.6	0.5	4.9	8.9	2.4	19.0	26.6	8.9

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 1-5,*	ΔT_{max} *pts.: Std. 1-9*	$\Delta T_{max\ frame}$ *pts.: 10-13*
	Standard procedure															
	Doorset									*Frame*						
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*°C*	*°C*	*°C*
42	18.6	28.4	20.8	16.8	16.9	20.2	21.6	22.1	20.1	0.4	5.2	9.2	2.7	20.3	28.4	9.2
43	19.5	30.3	22.2	17.8	18.0	21.7	23.0	23.9	21.8	0.6	5.4	9.1	2.9	21.6	30.3	9.1
44	20.7	32.3	23.8	18.8	19.2	23.0	24.5	25.8	23.4	0.6	6.2	9.5	3.2	22.9	32.3	9.5
45	21.8	34.2	25.4	19.8	20.3	24.5	26.0	27.6	25.1	0.7	7.2	9.3	3.1	24.3	34.2	9.3
46	22.9	36.2	27.0	20.8	21.3	26.1	27.5	29.7	27.1	0.7	8.5	9.6	3.3	25.6	36.2	9.6
47	24.1	38.3	28.8	22.0	22.4	27.7	29.2	31.8	29.1	0.7	9.8	9.8	3.5	27.1	38.3	9.8
48	25.1	40.5	30.5	23.0	23.4	29.6	31.1	34.0	31.2	0.9	11.4	11.0	3.8	28.5	40.5	11.4
49	26.5	43.0	32.4	24.0	24.5	31.6	32.9	36.6	33.4	1.0	12.8	12.6	3.9	30.1	43.0	12.8
50	27.9	45.4	34.3	25.2	25.8	33.7	34.8	39.0	35.7	1.1	15.4	13.2	4.2	31.7	45.4	15.4
51	29.2	48.0	36.3	26.3	26.9	36.0	37.1	41.6	38.0	1.1	18.4	15.4	4.6	33.3	48.0	18.4
52	30.8	50.5	38.7	27.7	28.3	38.7	39.3	44.6	40.5	1.1	21.3	16.4	4.8	35.2	50.5	21.3
53	32.5	52.7	40.8	29.0	29.5	41.1	41.9	47.3	43.0	1.2	24.1	15.2	5.0	36.9	52.7	24.1
54	34.2	54.7	43.3	30.3	30.7	43.9	44.4	50.0	45.3	1.5	24.7	16.3	5.4	38.6	54.7	24.7
55	36.1	56.3	45.9	31.8	32.0	46.8	47.4	52.9	47.5	1.8	24.0	17.5	5.6	40.4	56.3	24.0
56	38.1	57.6	48.6	33.7	33.4	49.2	50.5	55.0	49.6	1.9	26.0	17.8	5.9	42.3	57.6	26.0

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 1-5,*	ΔT_{max} *pts.: Std. 1-9*	$\Delta T_{max\ frame}$ *pts.: 10-13*
	Standard procedure															
	Doorset									*Frame*						
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*°C*	*°C*	*°C*
57	39.9	58.6	51.1	35.5	34.8	51.3	53.8	57.2	51.4	2.1	27.9	18.3	6.2	44.0	58.6	27.9
58	42.0	59.1	53.6	37.3	36.2	53.1	56.9	58.8	53.2	2.3	29.5	18.2	6.5	45.6	59.1	29.5
59	43.8	59.5	55.6	39.5	37.6	54.4	59.2	59.7	54.5	2.5	30.5	18.4	6.9	47.2	59.7	30.5
60	45.7	59.9	57.5	41.7	39.1	55.6	61.0	60.6	55.6	2.6	31.7	18.0	7.3	48.8	61.0	31.7
61	47.2	59.7	58.9	44.2	40.6	56.3	62.1	60.8	56.2	2.9	30.8	18.3	7.5	50.1	62.1	30.8
62	49.0	59.8	59.9	46.4	42.0	56.9	62.8	61.1	56.6	3.0	32.5	18.7	8.1	51.4	62.8	32.5
63	50.4	59.8	60.5	48.8	43.3	57.3	63.1	61.0	57.0	3.4	33.4	18.9	8.2	52.6	63.1	33.4
64	51.6	59.8	61.0	51.0	44.5	57.6	63.2	60.9	57.2	3.8	32.1	19.1	8.5	53.6	63.2	32.1
65	52.6	59.9	61.2	52.9	45.6	57.6	63.5	60.8	57.3	4.2	32.2	21.2	9.1	54.5	63.5	32.2
66	53.6	60.0	61.5	54.4	46.6	57.9	63.8	60.9	57.7	4.4	31.8	21.4	9.4	55.2	63.8	31.8
67	54.6	60.3	61.7	55.7	47.6	57.7	64.0	60.8	58.0	4.7	31.4	21.7	9.8	56.0	64.0	31.4
68	55.5	60.4	62.1	56.9	48.5	57.8	64.0	60.6	58.5	5.0	31.8	21.7	10.5	56.7	64.0	31.8
69	56.2	60.4	62.0	58.3	49.3	57.6	63.9	60.6	58.7	5.5	32.6	22.0	11.2	57.3	63.9	32.6
70	56.8	60.4	62.1	59.1	50.1	57.4	63.6	60.2	59.0	5.8	33.9	22.9	12.1	57.7	63.6	33.9
71	57.2	60.2	62.1	59.3	50.5	57.0	63.5	59.8	59.2	6.3	35.0	24.3	13.0	57.9	63.5	35.0

Table 13. Door 12

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 14-18,*	ΔT_{max} *pts.: Std. 14-22*	$\Delta T_{\max}{}_{frame}$ *pts.: 23-26*
	Standard procedure															
	Doorset									*Frame*						
	14	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*°C*	*°C*	*°C*
0	-0.2	0.3	0.4	0.1	-0.4	-0.1	0.3	0.0	-0.1	-0.4	-0.1	0.1	-0.5	0.0	0.4	0.1
1	-0.2	0.4	0.5	0.1	-0.3	-0.1	0.3	0.0	-0.2	-0.5	-0.2	0.1	-0.4	0.1	0.5	0.1
2	0.0	0.3	0.4	0.2	-0.3	-0.1	0.3	0.0	-0.2	-0.5	-0.1	0.2	-0.4	0.1	0.4	0.2
3	0.0	0.4	0.5	0.2	-0.3	0.0	0.4	0.1	-0.1	-0.5	-0.1	0.2	-0.4	0.2	0.5	0.2
4	-0.1	0.3	0.4	0.2	-0.3	-0.1	0.3	0.1	-0.1	-0.6	-0.1	0.3	-0.3	0.1	0.4	0.3
5	0.0	0.5	0.6	0.2	-0.3	0.0	0.5	0.1	-0.1	-0.5	0.0	0.2	-0.3	0.2	0.6	0.2
6	0.0	0.6	0.6	0.3	-0.2	0.1	0.7	0.1	0.0	-0.5	0.4	0.1	-0.4	0.3	0.7	0.4
7	0.0	0.6	0.5	0.3	-0.1	0.3	0.7	0.1	0.0	-0.5	1.0	0.2	-0.3	0.3	0.7	1.0
8	0.2	0.7	0.7	0.2	-0.1	0.3	0.9	0.3	0.2	-0.3	1.4	0.2	-0.4	0.3	0.9	1.4
9	0.2	0.7	0.6	0.3	-0.1	0.4	0.9	0.2	0.0	-0.6	0.9	0.1	-0.4	0.3	0.9	0.9
10	0.2	0.7	0.8	0.3	0.0	0.6	1.2	0.2	0.1	-0.5	1.1	0.3	-0.3	0.4	1.2	1.1
11	0.2	0.7	0.7	0.4	0.0	0.5	1.3	0.3	0.1	-0.4	1.0	0.3	-0.3	0.4	1.3	1.0
12	0.3	0.8	0.8	0.4	0.0	0.4	1.3	0.3	0.2	-0.5	1.7	0.2	-0.3	0.5	1.3	1.7
13	0.3	0.8	0.9	0.5	0.1	0.6	1.4	0.5	0.2	-0.4	1.4	0.3	-0.2	0.5	1.4	1.4

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 14-18,*	ΔT_{max} *pts.: Std. 14-22*	$\Delta T_{\max\ frame}$ *pts.: 23-26*
	Standard procedure															
	Doorset									*Frame*						
	14	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*°C*	*°C*	*°C*
14	0.3	0.9	0.9	0.6	0.1	0.6	1.3	0.4	0.3	-0.4	1.1	0.2	-0.3	0.6	1.3	1.1
15	0.4	1.0	1.1	0.6	0.1	0.6	1.5	0.5	0.4	-0.4	0.7	0.2	-0.2	0.6	1.5	0.7
16	0.4	0.9	1.0	0.7	0.3	0.7	1.5	0.5	0.4	-0.5	0.5	0.4	-0.3	0.7	1.5	0.5
17	0.5	1.1	1.1	0.8	0.4	1.0	1.7	0.7	0.6	-0.4	0.4	0.3	-0.3	0.8	1.7	0.4
18	0.5	1.2	1.2	0.9	0.6	1.1	1.9	0.7	0.6	-0.5	0.7	0.4	-0.2	0.9	1.9	0.7
19	0.8	1.4	1.4	1.0	0.6	1.4	2.0	0.8	0.9	-0.4	0.6	0.3	-0.3	1.1	2.0	0.6
20	1.0	1.7	1.7	1.3	0.9	1.8	2.3	1.0	1.1	-0.3	0.8	0.3	-0.2	1.3	2.3	0.8
21	1.1	1.9	1.8	1.5	1.1	2.3	2.6	1.0	1.4	-0.4	1.0	0.3	-0.3	1.5	2.6	1.0
22	1.4	2.3	2.1	1.8	1.5	2.9	2.9	1.2	1.8	-0.4	1.0	0.4	-0.2	1.8	2.9	1.0
23	1.7	2.8	2.5	2.2	1.8	3.6	3.5	1.7	2.3	-0.4	1.1	0.4	-0.2	2.2	3.6	1.1
24	2.1	3.4	2.9	2.6	2.3	4.3	3.7	1.9	2.8	-0.4	1.2	0.9	-0.2	2.7	4.3	1.2
25	2.6	3.9	3.2	3.2	2.9	5.3	4.3	2.4	3.5	-0.4	1.2	1.5	-0.1	3.2	5.3	1.5
26	3.2	4.6	3.7	3.7	3.4	6.2	4.7	2.8	4.2	-0.3	1.3	2.2	-0.2	3.7	6.2	2.2
27	3.7	5.5	4.4	4.3	4.2	7.4	5.3	3.4	4.9	-0.3	1.6	2.6	-0.1	4.4	7.4	2.6
28	4.4	6.2	4.9	4.9	4.9	8.4	5.9	3.7	5.4	-0.4	1.6	3.0	-0.1	5.1	8.4	3.0

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 14-18,*	ΔT_{max} *pts.: Std. 14-22*	$\Delta T_{\max\ frame}$ *pts.: 23-26*
	Standard procedure															
	Doorset									*Frame*						
	14	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*°C*	*°C*	*°C*
29	5.2	7.1	5.6	5.7	5.6	9.5	6.5	4.0	6.1	-0.4	1.9	3.1	-0.1	5.9	9.5	3.1
30	5.9	8.0	6.2	6.4	6.5	10.7	7.3	4.4	6.8	-0.4	2.1	3.3	0.0	6.6	10.7	3.3
31	6.8	8.9	6.9	7.2	7.3	11.9	7.9	4.5	7.4	-0.3	2.3	3.2	0.0	7.4	11.9	3.2
32	7.7	9.8	7.6	7.9	8.3	13.1	8.6	5.1	8.2	-0.3	2.5	2.9	0.3	8.3	13.1	2.9
33	8.5	10.9	8.4	8.7	9.3	14.3	9.1	5.3	8.9	-0.3	2.6	3.2	0.6	9.2	14.3	3.2
34	9.5	11.8	9.0	9.4	10.4	15.7	9.9	5.6	9.7	-0.3	2.7	3.6	0.8	10.1	15.7	3.6
35	10.4	13.0	9.8	10.2	11.5	17.0	10.6	6.0	10.6	-0.2	3.1	4.0	0.5	11.0	17.0	4.0
36	11.5	14.0	10.5	11.3	12.8	18.3	11.2	6.4	11.3	-0.2	3.0	3.9	0.5	12.1	18.3	3.9
37	12.5	15.1	11.4	12.1	14.0	19.7	12.0	6.9	12.1	-0.2	3.1	4.4	0.3	13.1	19.7	4.4
38	13.6	16.4	12.3	13.1	15.1	21.0	12.7	7.3	12.8	-0.2	3.1	4.2	0.2	14.1	21.0	4.2
39	14.6	17.5	12.9	13.9	16.3	22.4	13.4	7.8	13.7	-0.1	3.2	4.6	0.3	15.1	22.4	4.6
40	15.5	18.6	13.8	14.7	17.8	23.8	14.0	8.0	14.4	-0.2	3.5	4.9	0.3	16.1	23.8	4.9
41	16.7	19.8	14.5	15.7	19.0	25.3	14.9	8.3	15.0	-0.1	3.5	5.3	0.3	17.1	25.3	5.3
42	18.0	21.1	15.3	16.8	20.5	27.0	15.6	8.6	15.9	-0.1	3.7	5.2	0.3	18.3	27.0	5.2
43	19.1	22.3	16.2	17.7	21.9	28.3	16.2	9.2	16.9	0.0	3.8	5.1	0.6	19.4	28.3	5.1

Elapsed time	TEMPERATURE RISE AT POINTS, °C													ΔT_{avg} pts.: 14-18,	ΔT_{max}, pts.: Std. 14-22	$\Delta T_{\max\ frame}$ pts.: 23-26
	Standard procedure															
	Doorset									Frame						
	14	15	16	17	18	19	20	21	22	23	24	25	26	°C	°C	°C
44	20.3	23.6	17.2	18.8	23.3	29.7	17.0	9.7	17.8	0.0	3.9	4.9	0.6	20.6	29.7	4.9
45	21.5	24.9	18.0	19.9	24.8	31.3	17.7	10.1	18.5	0.0	3.9	4.8	0.6	21.8	31.3	4.8
46	22.6	26.1	18.9	21.1	26.2	33.1	18.6	10.3	19.2	0.0	4.0	4.8	0.5	22.9	33.1	4.8
47	23.8	27.4	19.6	22.2	27.7	34.7	19.3	10.5	20.1	0.1	4.4	4.9	0.6	24.1	34.7	4.9
48	25.0	28.6	20.6	23.3	29.2	36.7	20.2	11.1	20.9	0.1	4.5	4.6	0.7	25.3	36.7	4.6
49	26.4	30.0	21.5	24.5	30.7	39.1	21.0	11.3	21.6	0.1	4.7	4.7	0.6	26.6	39.1	4.7
50	27.4	31.3	22.4	26.0	32.6	41.3	21.8	11.6	22.5	0.1	4.8	4.5	0.8	27.9	41.3	4.8
51	28.8	32.7	23.6	27.3	34.5	43.3	22.9	12.2	23.6	0.4	5.2	4.4	0.8	29.4	43.3	5.2
52	30.2	34.3	24.7	29.0	36.6	45.2	24.3	12.8	24.4	0.4	5.5	4.7	0.8	30.9	45.2	5.5
53	31.3	35.7	25.7	30.6	38.7	46.9	26.2	13.3	25.8	0.5	5.6	4.8	1.1	32.4	46.9	5.6
54	32.6	37.4	26.9	32.5	40.5	48.7	28.9	13.6	27.0	0.6	5.9	5.0	1.0	34.0	48.7	5.9
55	34.1	39.2	28.4	34.3	42.7	50.1	32.9	14.6	28.6	0.9	6.1	5.3	1.0	35.7	50.1	6.1
56	35.5	40.9	29.6	36.4	44.5	51.2	37.8	14.6	30.6	1.0	6.4	5.5	1.1	37.4	51.2	6.4
57	37.1	42.6	31.4	38.7	46.5	52.0	43.0	16.0	33.1	1.0	6.4	5.8	1.1	39.3	52.0	6.4
58	38.7	44.5	33.4	41.1	48.1	53.0	48.1	17.4	36.1	1.2	6.8	5.9	1.3	41.2	53.0	6.8

Elapsed time	*TEMPERATURE RISE AT POINTS, °C*													ΔT_{avg} *pts.: 14-18,*	ΔT_{max}, *pts.: Std. 14-22*	$\Delta T_{max\ frame}$ *pts.: 23-26*
	Standard procedure															
	Doorset									*Frame*						
	14	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*°C*	*°C*	*°C*
59	40.4	46.1	35.8	43.3	49.7	53.6	52.3	19.1	40.0	1.2	6.9	6.3	1.4	43.1	53.6	6.9
60	42.1	47.8	38.4	45.4	50.9	53.9	56.3	20.8	44.2	1.5	7.5	6.6	1.5	44.9	56.3	7.5
61	43.8	49.6	41.2	47.5	51.8	55.1	59.7	21.9	48.1	1.4	8.0	6.8	1.5	46.8	59.7	8.0
62	45.6	51.4	44.4	49.6	52.8	55.3	62.1	23.9	52.3	1.7	8.7	7.3	1.7	48.8	62.1	8.7
63	47.4	53.3	47.7	51.5	53.6	55.3	63.7	25.1	55.3	1.8	9.5	7.7	1.8	50.7	63.7	9.5
64	49.2	55.0	51.2	53.4	54.1	55.8	65.2	26.7	57.4	2.1	17.4	8.1	1.7	52.6	65.2	17.4
65	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/
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71	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/	*/

*Note: */ - Thermocouples were disconnected at 65 minutes due to integrity failure.*

6 PHOTOGRAPHS

6.1 Unexposed side view of the test specimens

Photo 1. Before the test.

Photo 2. Test specimen at 10-minutes

Photo 3. Test specimen at 20-minutes

Photo 4. Test specimen at 30-minutes

Photo 5. Test specimen at 40-minutes

Photo 6. 50-minutes of the test

Photo 7. 60-minutes of the test

Photo 8. 64^{06} minutes of the test. Integrity failure. Sustained flaming at the top left corner of the leaf – Door 18.

Photo 9. 70-minutes of the test

Photo 10. End of the test

6.2 Exposed side view of the test specimens

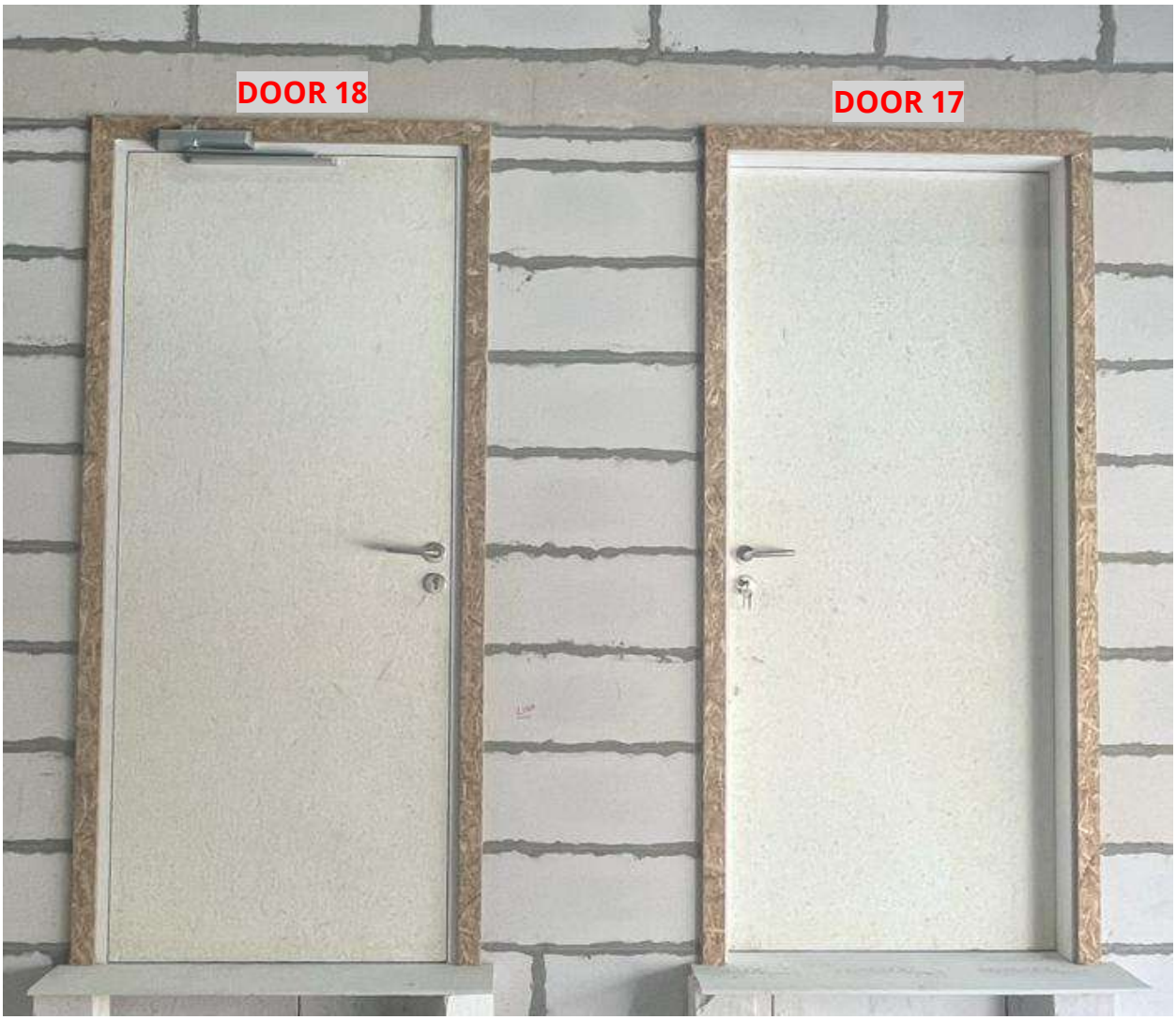


Photo 11. Before the test

7 SUMMARY OF TEST RESULTS

Results of fire resistance test of the "Latched, Single Action, Single Door Fire-Rated PSB Wooden Door with hardwood non-rebated frame" type presented in Tables 1-14, Graphs 1-4, Figures 1-7, and Photo 1-11 refer only to the construction described in clause 3 of herein test report.

Table 14. Summary of the test results

Performance criteria	Description of the criterion requirements	Time and location of criterion failure		Test result	
		Door 17	Door 18	Door 17	Door 18
Integrity	Sustained flaming	No failure	**64[06] Sustained flaming at the top left corner of the leaf**	**71 minutes**	**64 minutes**
	Gaps disqualifying the product	No failure	No failure		
	Ignition of the cotton pad	No failure	No failure		
Insulation *(Standard procedure)*	Average temperature rise (≤140 °C)	No failure	No failure	**71 minutes** [(1)]	**64 minutes** [(1)]
	Maximum temperature rise (≤180°C)	No failure	No failure		
	Maximum temperature rise at the door frame (≤360°C)	No failure	No failure		
Maximum Deflection				**-30mm in Point E at 70th minute**	**-18mm in Point L at 60th minute**
Duration of the test: 71 minutes					

[(1)] *EN 1363-1 describes the privilege of the integrity failure against the insulation: insulation" shall automatically be assumed not to be satisfied when the "integrity" criterion ceases to be satisfied (EN 1363-1; Clause 11.4.2.).*

Because of the nature of fire resistance testing and the consequent difficulty in quantifying the uncertainty of the measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.

This report details the method of construction, the test conditions, and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1363-1. Any significant deviation with respect to size, constructional details, loads, stresses, edge, or end conditions other than those allowed under the field of direct application contained in the EN 1634-1 standard is not covered by this test report.

8 FIELD OF DIRECT APPLICATION OF TEST RESULTS

8.1 General

This is valid for the direct field of application of the test results for the "Latched, Single Action, Single Door Fire-Rated PSB Wooden Door with hardwood non-rebated frame", in which the following changes can be made, according to clause 13 of EN1634-1:2014+A1: 2018. The field of direct application defines the allowable changes to the test specimens following a successful fire resistance test. These variations can be applied automatically without the need for the sponsor to seek additional evaluation, calculation, or approval.

8.2 Materials and construction

8.2.1 General

Unless otherwise stated in the following text, the materials and construction of the doorset or openable window shall be the same as that tested. The number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.

8.2.2 Specific restrictions on materials and construction

8.2.2.1 Timber construction

The thickness of the door panels shall not be reduced but may be increased.

The door panel thickness and/or density may be increased provided the total increase in weight is not greater than 25 %.

For timber-based board products (e.g. particle board, blockboard, etc), the composition (e.g. type of resin) shall not change from that tested.

The cross-sectional dimensions and/or the density of the timber frames (including rebates) shall not be reduced but may be increased.

8.2.3 Decorative finishes

8.2.3.1 Paint

Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested. Where the paint finish contributes to the fire resistance of the door (e.g. intumescent paints) then no change shall be permitted.

8.2.3.2 Decorative laminates

Decorative laminates and timber veneers up to 1,5 mm thickness may be added to the faces (but not the edges) of doors that satisfy the insulation criteria (normal or supplementary procedure).

Decorative laminates and timber veneers applied to door leaves that do not satisfy the insulation criteria (normal or supplementary procedure) and/or those in excess of 1,5 mm thickness shall be tested as part of the test specimen. For all doorsets tested with decorative laminate faces, the only variations possible shall be within similar types and thicknesses of material (e.g., for color, pattern, and supplier).

8.2.3.3 Fixings

The number of fixings per unit length used to attach doorsets to supporting constructions may be increased but shall not be decreased and the distance between fixings may be reduced but shall not be increased.

8.2.4 Building hardware

The number of hinges may be increased but shall not be decreased.
NOTE 1: The number of movement restrictors such as locks and latches are not covered by direct application.

The doorset may be installed only with the door closer fixed to each door leaf.
NOTE 2: Interchange of building hardware is not covered by the field of direct application.

8.3 Permissible size variations

8.3.1 General

Doorsets of sizes different from those of tested specimens are permitted within certain limitations, but the variations are dependent on product type and the length of time that the performance criteria are fulfilled.

The increase and decrease of dimensions permitted by the field of direct application are applicable to the overall size and to each door leaf, each side panel and each over panel independently.

The dimensions (width and height) of any glass pane cannot be increased.

8.3.2 Test periods

The amount of variation of size permitted is dependent on whether the classification time was just reached (Category 'A') or whether an extended time (Category 'B') in accordance with the values shown Table 15.

Table 15 —Overrun time requirements

Classification time **Category A**	**Overrun time** *(all criteria must be fulfilled)* **Category B**
60min.	68min.

The Test Element fulfilled integrity criteria for **64 minutes only** (as a product tested from both sides). The tested doorset was opening inside and outside the furnace.

Therefore, the Test Specimen achieved Category A classification time and did not fulfill the criteria Category B as per Table 15.

8.3.3 Size variation of hinged and pivoted doorsets and openable window

Unlimited size reduction is permitted for all types except insulated metal doors where a reduction to 50 % width and 75 % height of the tested specimen is the limit of variation.

Size increase is not permitted.

8.3.4 Other changes

For smaller doorset sizes, the relative positioning of movement restrictors (e.g., hinges and security pin) shall remain the same as tested, or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size.

8.3.5 Timber constructions

The number, size, location and orientation of any joints in the timber framing shall not be changed.

Where decorative veneers of 1,5 mm or greater thickness, or other claddings which themselves provide constructive benefits, are part of the test specimen, they shall not be substituted with alternatives of lesser thickness or strength.

8.3.6 Gaps

The maximum size of the primary gaps is restricted to the following sizes in practice:

Table 16

GAPS			*Measurements, mm*		
			Average	*Maximum*	*Permitted gap size*
Door 17 & Door 18	Along the horizontal edges	At the top	3.4	4.9	5.8
		At the bottom	5.5	5.8	7.6
	Along the vertical edges	Hinge side	2.6	2.9	4.7
		Latch edge	2.8	3.6	5.0

8.4 Supporting constructions

8.4.1 General

The Fire resistance of a doorset tested in 150mm thick low-density rigid standard supporting construction (autoclaved aerated concrete blocks), as specified in EN 1363-1, can be applied to a doorset mounted in the same manner in a wall provided the density and the thickness of the wall are equal to or greater than that in which the door was tested.

8.4.2 Specific rules for hinged or pivoted doorsets

For timber door leaves hung in timber frames, the result of a test in a rigid standard supporting construction applies to that door assembly mounted in a flexible construction.

Note: The rules above assume that the fixing methods used in each type of supporting construction are appropriate to that construction.

Further details of the field of direct application of test results are described in EN 1634-1:2014+A1:2018.

9 DRAWINGS

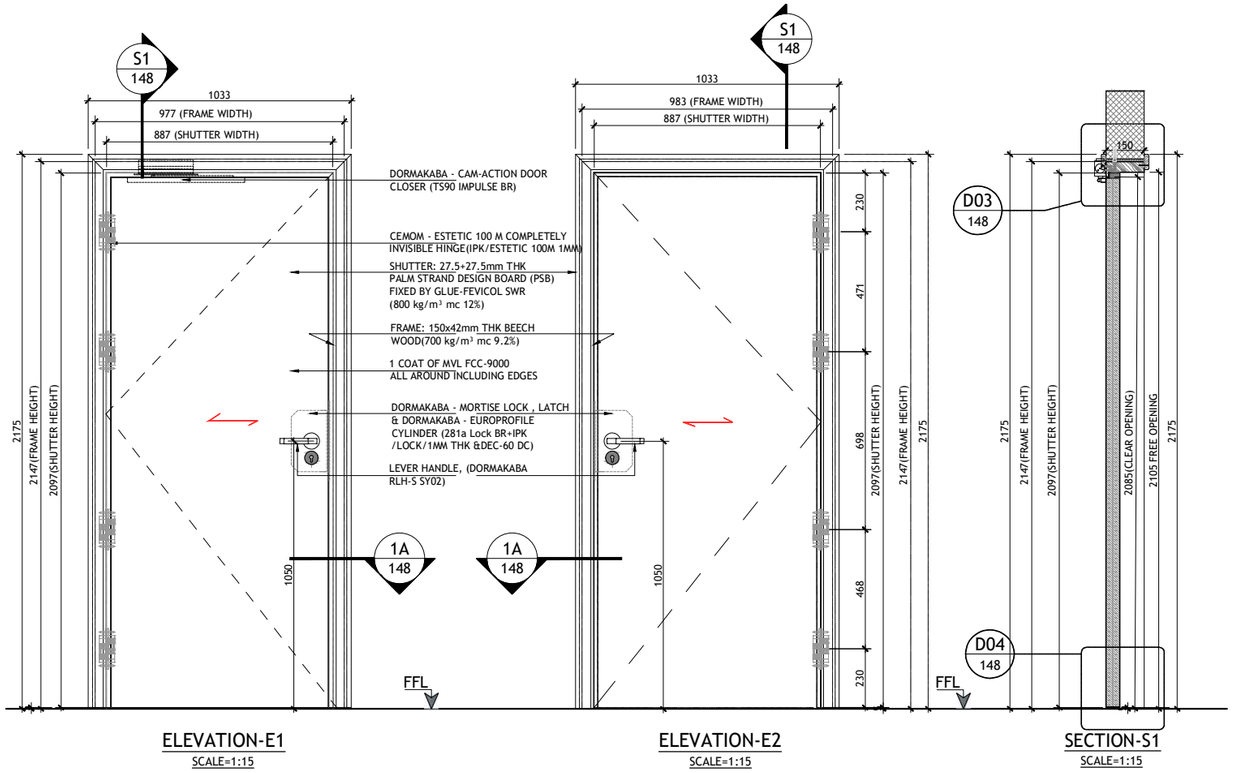
The unpaginated document is a copy of the drawings from Abanos Furniture & Decoration Industry LLC, specifically the drawing reference ID:

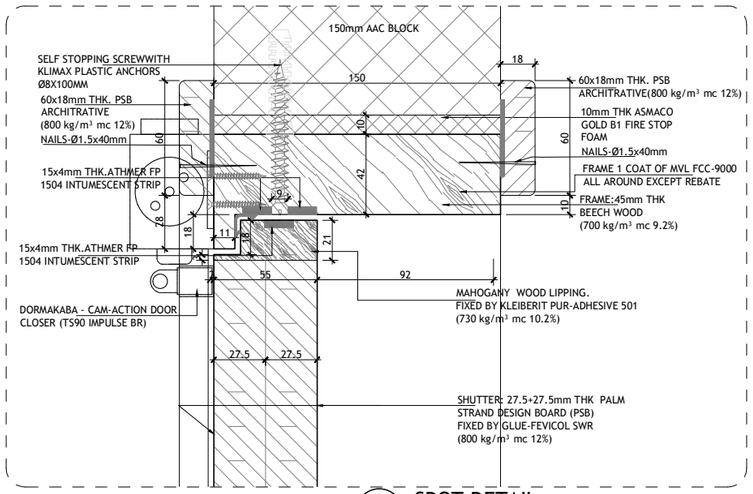
- No. ABS00094-STD-FR-60-PSB-148 R00 (dated 03-04-2025)

10 ATTACHMENTS

Technical documentation

- Beechwood Hardwood
- African Mahogany Wood
- 27.5mm thick, Desert Board, PSB
- Pidilite Fevicol SWR
- FCC-9000 Flame Core Coat
- Kleiberit 501.0 PUR adhesive
- Ritver wood glue
- Athmer FP 1504
- Athmer PS1212P - Corner seal
- Asmaco Gold B1Fire Retardant Foam
- MT WERKZ - Screws
- Ironmongery





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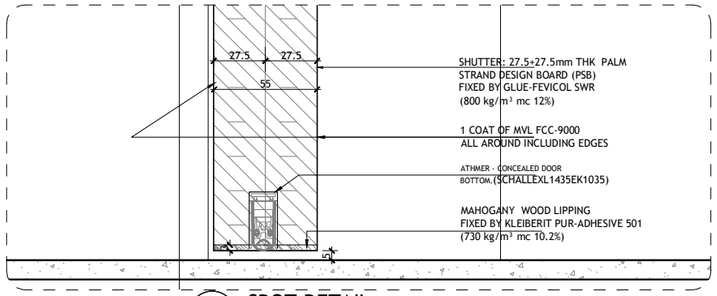

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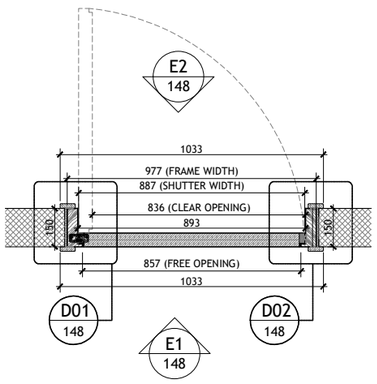

SECTIONAL PLAN-1A
TYPE D.12_P.E1
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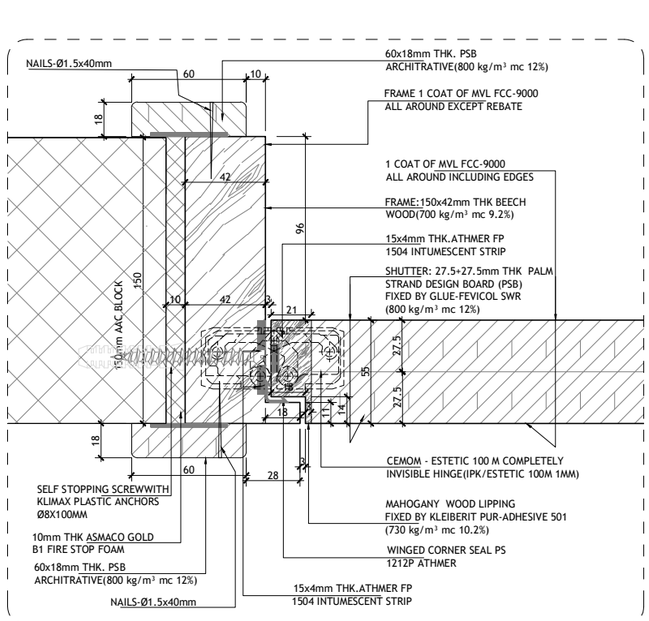
NOTE:-MUL FCC-9000
FLAME COAT TO BE APPLIED
FRAME&SHUTTER



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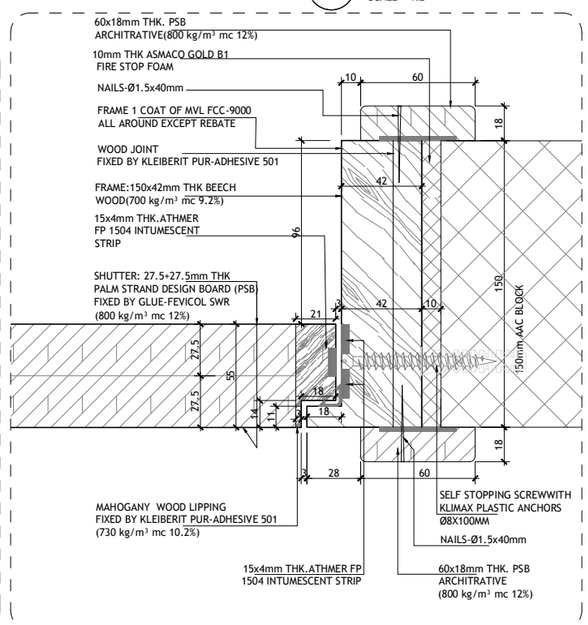

D02 148 SPOT DETAIL
SCALE = 1:2

NOTES:-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
2. FINISH AS PER APPROVED SAMPLE.

Rev.	Date	Description.	By
00	11.03.25	FOR APPROVAL	-

CLIENT

ABANOS

CONSULTANT

.

MAIN CONTRACTOR

.

PROJECT

CERTIFICATION/TEST REPORT FOR EN1634-1

SUB- CONTRACTOR

ABANOS
INTERIOR FIT-OUT & JOINERY

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DRAWING TITLE

FIRE RATED DOOR DETAIL
TYPE-D.12_P.E1,
(60 Min FIRE RATED DOOR)

DRAWN BY	CHK.	APPD.	DATE
AJ	SJ	.	03.04.2025

SCALE	DRAWING NO.	REV.
1:15 @ A3	ABS00094-STD-FR-60-PSB-148	00

FLORIAN

PRODUCT SHEET

SAWN LUMBER

BEECH

GENERAL DESCRIPTION	
Merchandize Category	Lumber
Timber Species	Beech (Fagus Sylvatica L.)
Unit of Measurement	Cubic Metre (CBM)
Hardness	From medium to high for the green one, medium for the dried one (Brinell: 71 N/mm2 II to the grain, 28 N/mm2 T to the grain)
Dimensional Stability	Medium
Oxidation	Low
Tonality	White yellowish for the green one, more or less intense pinkish to light-brown for the dried one
Histological Structure	Straight and sometimes helicoidal grain, fine and uniform texture

ESSENTIAL FEATURES	PERFORMANCE
Density	730 kg/m³ dried- 1050 kg/m³ green
Shrinkage	Radial 5,5%, Tangential 11,9 %
Modulus of Elasticity	8350- 19400 MPa
Tensile Strength	130-160 MPa
Compressive Strength	38-78,5 MPa
Shear Strength	7-10,3 MPa
Flexural Strength	68-149 MPa
Biological Durability	Classes: 5 Fungi, S Anobium, S Termite
Impregnation	Classes: 1v Heartwood, 1 Sapwood

Source: G. Giordano-Tecnologie del legno; Lignum; CTBA. Wood humidity: between 10 and 20% dried Reference Regulations: UNI EN 942 Timber in joinery-General requirements, UNI EN 350 Durability of wood and wood-based products

QUALITY DESCRIPTION:

Appearance class: Special S, Special One Face, Special CDN, Special Cabinet, Special Cabinet CND.

- Special S: top-quality, low knottiness allowed, uniform evaporation
- Special One Face: top-quality for single face applications, with a very high yield, no restrictions on the back face for colour and knots
- Special CDN : high-quality, without colour restrictions, low knottiness allowed on one face
- Special Cabinet: ideal product to get medium- and short-length elements, uniform colour, high knottiness allowed
- Special Cabinet CND: ideal product to get medium and short-length elements, non-uniform colour, high knottiness allowed

A and A/B quality un-edged boards (Without trimming) are also available.

DIMENSION:

- Random widths and lengths
- Thicknesses: 26 mm / (23,8 mm); 33 mm / (30,5 mm); 38 mm / (36 mm); 47 mm / (45 mm); 52 mm /(48,5 mm); 65 mm / (61,5 mm); 76-80 mm (on demand) and other depending on the availability

FLORIAN

PRODUCT SHEET

MAIN USES:

It is extremely versatile and can be used for solid and laminated furniture, flooring, ceiling, doors. Additionally, it can be used for musical instruments, domestic wood ware, packages, crates and boxes.

WORKING PROPERTIES:

Sawing is easy, drying is slow, with special attention to wrap; with a humid environment it is more flexible and subject to fungi attacks that might alter the color; planning is easy, gluing, nailing and screwing are trouble free; finishing confers excellent results and can adopt almost every tone.

CERTIFICATIONS:

There is the possibility to ask for FSC® certified products.

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Richiedi i prodotti certificati FSC®

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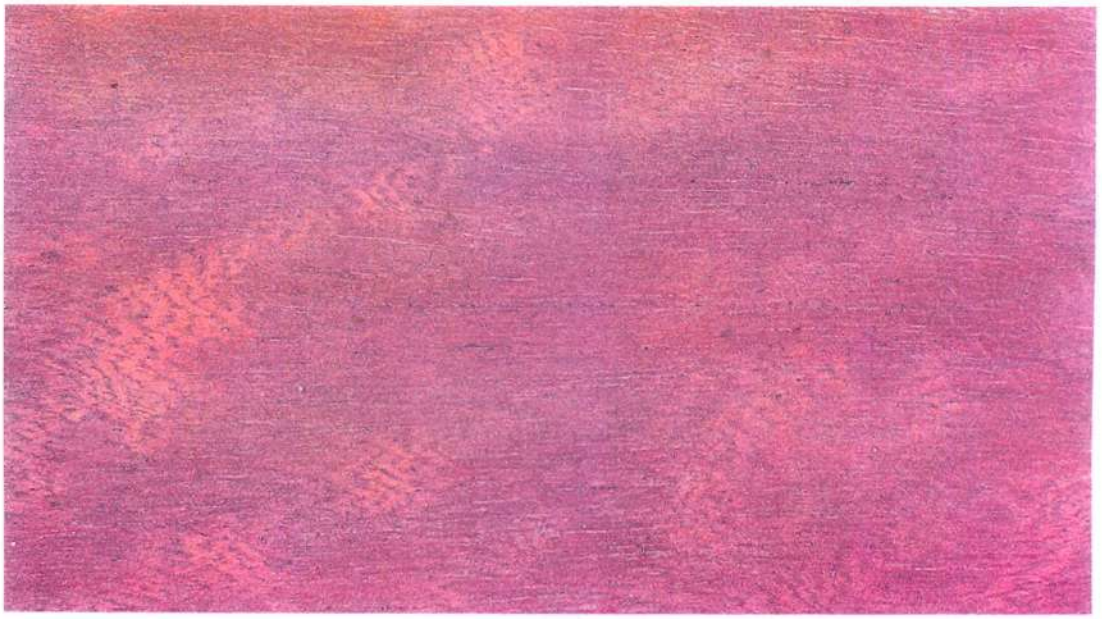
DANUBE
BUILDING MATERIALS FZCO

SPECIFICATION OF AFRICAN MAHOGANY WOOD



MAHOGANY, AFRICAN (H) (1) *Khaya ivorensis*, A. Chév., W. Africa
(2) *K. anthotheca*, Welw. C.DC., W. and E. Africa
(3) *K. nyasica*, Stapf. ex Baker.f., E. Africa
Family: *Meliaceae*

Other names: (1) Nigerian, Benin, Lagos or Degema mahogany; (1) and (2) Ghana, Ivory Coast, Takoradi or Grand Bassam mahogany; (2) krala (Ivory Coast), mangona (Cameroon), munyama (Uganda); mbaua (Mozambique), mbawa (Malawi), mkangazi (Tanzania).
Distribution: Tropical West, Central and East Africa.
General description: Heartwood varies from light to deep reddish-brown. Grain straight to interlocked, moderately coarse textured to medium. Logs may have brittleheart or softheart and cross fractures or heartbreaks. Weight 540–590 kg/m^3 (34–36 lb/ft^3); s.g. .54 to .59.
Mechanical properties: *K. anthotheca* has moderately good wood bending properties, the other types cannot be bent without severe buckling or fibre rupture. The bending strength is low, stiffness and resistance to shock loads is very low and the crushing strength is medium.
Seasoning: Dries rapidly with little degrade except where tension wood occurs, causing serious distortion. Small movement in service.
Working properties: There is a moderate blunting effect on tools, and tension wood or brittleheart and interlocked grain can cause woolliness. To avoid tearing the grain a reduced cutting angle of from 15° to 20° is desirable. Nailing, screwing and gluing properties are good and it may be stained and polished to an excellent finish.
Durability: Liable to insect attack. The heartwood is moderately durable but extremely resistant to preservative treatment and the sapwood is moderately resistant.
Uses: Widely used for furniture and cabinetmaking, office, shop and bank fitting, interior joinery, boatbuilding and vehicle bodies. It is extensively used for laminations especially in cold moulded processes. Rotary cut logs are used for plywood and sliced veneers for decorative work.
Note: Related spp. include *K. grandifoliola*, C.DC., and *K. senegalensis*, (Desr) A. Juss, both sold as **heavy African mahogany** and sometimes mixed with shipments of lighter species.

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DesertBoard.

PALM STRAND BOARD (PSB®)
TECHNICAL DATA

PSB® PRIME - TECHNICAL DATA

Discover PSB® Prime, zero-formaldehyde, high-strength moisture resistant PSB® Board, engineered to withstand moisture-prone environments. Perfect for various construction needs, including wall partitions, furniture, and cabinets, where durability against moisture is essential.

PSB® Prime

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²
9	850	20	2500	10	1200	0.34	20	2 - 12%	NA
10	850	20	2500	10	1200	0.34	20	2 - 12%	NA
12	800	18	2500	9	1200	0.32	20	2 - 12%	NA
15	800	18	2500	9	1200	0.32	20	2 - 12%	NA
16	800	18	2500	9	1200	0.32	20	2 - 12%	NA
18	800	16	2500	8	1200	0.30	20	2 - 12%	NA
20	800	16	2500	8	1200	0.30	20	2 - 12%	NA
22	800	16	2500	8	1200	0.30	20	2 - 12%	NA
25	800	16	2500	8	1200	0.30	20	2 - 12%	NA

PSB® ECO CORE - PRIME - TECHNICAL DATA

Experience PSB® EcoCore, zero-formaldehyde, highstrength, moisture-resistance Door Core offering structural integrity and durability. Ideal as a core material in doors where high strength and formaldehyde-free composition are prerequisites.

PSB® ECO CORE - PRIME

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²
30	800	14	2500	7	1200	0.29	20	2 - 12%	NA
32	750	12	2500	6	1200	0.29	20	2 - 12%	NA
33	750	12	2500	6	1200	0.26	20	2 - 12%	NA
35	750	12	2500	6	1200	0.26	20	2 - 12%	NA
38	750	12	2500	6	1200	0.26	20	2 - 12%	NA
39	700	12	2500	6	1200	0.26	20	2 - 12%	NA
40	700	12	2500	6	1200	0.26	20	2 - 12%	NA
42	700	10	2500	5	1200	0.23	20	2 - 12%	NA
44	650	10	2500	5	1200	0.23	20	2 - 12%	NA
45	650	10	2500	5	1200	0.23	20	2 - 12%	NA

PSB® SUPREME - TECHNICAL DATA

Introducing PSB® Supreme, zero-formaldehyde, high-strength board with high moisture resistance. Tailored for areas susceptible to moisture, such as kitchens and bathrooms, it's an ideal choice for interior and select exterior applications where reliable moisture protection is paramount.

PSB® SUPREME

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²
9	850	22	3500	11	1400	0.34	15	2 - 12%	0.15
10	850	22	3500	11	1400	0.34	15	2 - 12%	0.15
12	800	20	3500	10	1400	0.32	15	2 - 12%	0.13
15	800	20	3500	10	1400	0.32	15	2 - 12%	0.13
16	800	20	3500	10	1400	0.32	15	2 - 12%	0.13
18	800	18	3500	9	1400	0.30	15	2 - 12%	0.12
20	800	18	3500	9	1400	0.30	15	2 - 12%	0.12
22	800	18	3500	9	1400	0.30	15	2 - 12%	0.12
25	800	18	3500	9	1400	0.30	15	2 - 12%	0.12

PSB® ECO CORE - SUPREME- TECHNICAL DATA

Discover PSB® EcoCore, zero-formaldehyde, high-strength,high-moisture resistance Door Core offering structural integrity and durability. Ideal as a core material in doors where high strength and formaldehyde-free composition are prerequisites.

PSB® ECO CORE - SUPREME

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²
30	800	16	3500	8	1400	0.29	15	2 - 12%	0.06
32	750	14	3500	7	1400	0.29	15	2 - 12%	0.06
33	750	14	3500	7	1400	0.26	15	2 - 12%	0.05
35	750	14	3500	7	1400	0.26	15	2 - 12%	0.05
38	750	14	3500	7	1400	0.26	15	2 - 12%	0.05
39	700	14	3500	7	1400	0.26	15	2 - 12%	0.05
40	700	14	3500	7	1400	0.26	15	2 - 12%	0.05
42	700	12	3500	6	1400	0.23	15	2 - 12%	0.04
44	650	12	3500	6	1400	0.23	15	2 - 12%	0.04
45	650	12	3500	6	1400	0.23	15	2 - 12%	0.04

PSB® ULTRA / CONFORM - TECHNICAL DATA

Introducing PSB® Conform, zero-formaldehyde, high-strength, durable Concrete Formwork (Shuttering) designed for multiple usages. Used in construction for concrete formwork systems, its resilience reduces replacement frequency, providing longterm reliability.

PSB® ULTRA / CONFORM

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²
9	900	22	3500	11	1400	0.50	12	2 - 12%	0.17
10	900	22	3500	11	1400	0.50	12	2 - 12%	0.17
12	900	20	3500	10	1400	0.45	12	2 - 12%	0.15
15	900	20	3500	10	1400	0.45	12	2 - 12%	0.15
16	900	20	3500	10	1400	0.45	12	2 - 12%	0.15
18	900	18	3500	9	1400	0.40	12	2 - 12%	0.13
20	850	18	3500	9	1400	0.40	12	2 - 12%	0.13
22	850	18	3500	9	1400	0.40	12	2 - 12%	0.13
25	850	18	3500	9	1400	0.40	12	2 - 12%	0.13

PSB® FR - INTERTEK CERTIFIED - TECHNICAL DATA

Explore PSB® EcoCore FR, zero-formaldehyde, high-strength, high-moisture resistant Fire Rated Door Core. Engineered for fire-rated-door applications, this certified core material meets EN and UL10C standards, ensuring fire safety in commercial, industrial, and fire-critical structures.

PSB® FR - INTERTEK CERTIFIED

THICKNESS	UP to DENSITY	MOR (major)	MOE (major)	MOR (minor)	MOE (minor)	IB	TS 24H	MC	IB AFTER BOILING TEST	INTERTEK WN NUMBER	CERTIFIED STANDARD
(MM)	KG/M³	N/mm²	N/mm²	N/mm²	N/mm²	N/mm²	(%)	(%)	N/mm²		
9	880	20	2500	10	1200	0.30	20	2 - 12%	NA	WN No. 24630	UL10C & EN1634-1
16	880	20	2500	10	1200	0.28	20	2 - 12%	NA	WN No. 24631	UL10C & EN1634-1
18	880	16	2500	8	1200	0.28	20	2 - 12%	NA	WN No. 24631	UL10C & EN1634-1
21.8	880	16	2500	8	1200	0.26	20	2 - 12%	NA	WN No. 24419	UL10C
21.8	800	16	2500	8	1200	0.26	20	2 - 12%	NA	WN No. 244301	EN1634-1
27.5	800	16	2500	8	1200	0.26	20	2 - 12%	NA	WN No. 24294	EN1634-1
44	650	10	2500	5	1200	0.23	20	2 - 12%	NA	WN No. 24729	UL10C

GENERAL TECHNICAL DATA

General Requirements For All OSB Types

No.	Property	Test Method	Requirement
1 [ab]	**Tolerances on nominal dimesions:** -thickness sanded within and between boards -thickness un-sanded within and between boards -length and width	EN 324-1	± 0,3mm ± 0,8mm ± 3,0mm
2 [ab]	Edge Straightness Tolerance	EN 324-2	1,5mm/m
3 [ab]	Square Tolerance	EN 324-2	2,0mm/m
4 [a]	Moisture Content	EN 322	2% to 12%
5 [b]	Tolerance on the mean desity within a board	EN 323	± 15%

GENERAL TECHNICAL DATA

PHYSICAL PROPERTIES	TEST	UNIT	VALUE
Screw Withdrawal - Face	BS EB 320	N	1100
Screw Withdrawal - Edge	BS EB 320	N	1300
Formaldehyde Release	BS EN 717-1	mg/m3	(E0)<0.005
Formaldehyde Concentration	ASTM D5582-14	mg/ml	<0.03
Sound Transmission Test (Operable)	ASTM E90-90	dB	36
Sound Transmission Test (Inoperable)	ASTM E90-90	dB	40
Fire-Resistance Classifications	ASTM-E84	Class	Class B
Fire-Resistance Classifications	EN13501-1	Class	C-s1,d0

PIDILITE INDUSTRIES LIMITED

Marketing Division: P.B. No. 17411, Andheri (East), Mumbai 400 059 (India)

TECHNICAL DATA SHEET

Fevicol SWR

FOR INFORMATION ONLY

Fevicol SWR is a premium quality synthetic resin based self cross-linking adhesive conforming to DIN EN 204/ D3 class water resistance.

It is a technologically superior product in its class suitable for all types of wood work and provides excellent bonding on all types of hard wood and soft wood.

Product technical's

• Appearance	Milky white emulsion
• Viscosity at 30 °C	100-150 Poise
• (By B.F. RVT Spl.-4, RPM – 20.)	
• pH	3 to 6
• Density at 30degc:	1.07-1.10 gm/ml
• Flow	Continuous

Technical Details:

For wood bonding

Clamp time - 2-3hrs (varies depending upon wood moisture, temperature, and humidity in air)

Final bonding time- 24hrs

For Laminate pasting:

- Pressure: 100-150 bar
- Temperature: 50-60 ^{0}C
- Time:- 10-20 min

ADVANTAGES

- Clear glue line which can be sanded easily
- Cross linkable PVAc adhesive
- Water resistance conforms to DIN EN 204/D3
- Contains no asbestos, lead, mercury or mercury compounds.

- Complies with VOC requirement of LEED EQ 4.1
- Contains no Urea formaldehyde

Area of usage:

- Recommended as adhesive for bonding wood and wooden articles of all types and provides excellent bonding on all types of hard wood and soft wood. Because of its very high resin content and special formulation, it offers much better durability to furniture & handicrafts being used in high humidity areas.
- Fevicol SWR is also recommended for finger jointing, parquet flooring applications.
- Fevicol SWR is suitable for post forming, and hot press application
- Best suitable for FR doors (30 and 60 min)for facing and lipping)

APPLICATION METHOD

General application:

- Clean both the surface to be bonded
- Surface to be bonded should be dry, clean, and free from oil or grease.
- Stir the adhesive properly before use. Do not dilute.
- Apply thing coat of adhesive on both the surface
- Press the surface together for at least 2-3 hrs.
- To get best result press the substrates for 24 hrs.

For Hot press bonding:

- Dilute the glue with 10-15% water for roller application
- Apply uniformly and cover the edges with equal deposition.
- Depending upon the thickness of bonding substrates, set the hot press temperature
- Plate pressure between 100- 150 Bar
- Press time to be adjusted with the thickness of the material from 10-20 minutes

PRECAUTIONS

- When not in use, the container should be kept closed. Skin formation if any, should be removed from the surface before use.
- Apply between 5 ^{0}C and 40 ^{0}C. Protect from freezing until dry.
- Always test the substrates for acceptable adhesion before using.

COVERAGE (Subject to type of surface)

Approx. 5.0 – 6.0 m^2/Kg at the rate of 150 g/m^2

SHELF LIFE

24 months from the date of manufacturing.

STORAGE

Store under dry condition. Keep the tin away from heat and direct sunlight. Close the lid tightly after taking out the material from container.

HANDLING

Wear suitable protective clothing, rubber gloves and eye protective while handling. Keep out of reach of children.

CLEAN-UP

Use clean fresh water for cleaning brushes and equipment before the product dries. Dry product may be removed with hot water.

NOTE

We recommend that before using our product, the customer should make his own tests to determine the suitability of the product for his own purpose under his operating conditions. As the circumstances under which our product is stored, handled and used, are beyond our control, we cannot assume any responsibility for their use by the customer.

FCC - 9000
FLAME CORE COAT

TECHNICAL DATA SHEET

DESCRIPTION

FCC-9000 is an advanced, high-performance water-based intumescent coating designed to enhance the fire resistance of wooden doors and substrates, as well as improve the flame resistance of non-fire-rated wood surfaces. Applied directly as a base coat, FCC-9000 expands when exposed to high temperatures, forming a protective charred layer that insulates the wood. It adheres directly to wood substrates, creating a robust fire-resistant barrier. After drying, it allows for subsequent treatments such as veneering, laminating, and painting. The product is easy to apply using standard tools and is suitable for interior use. Ensure the wood surface is clean and dry before application, and follow safety guidelines including adequate ventilation and protective gear.

APPLICATIONS

- Fire Doors
- Wooden Surfaces
  - Wooden Paneling and Trim
  - Wooden Furniture
  - Wooden Ceilings and Beams
  - Wooden Partitions and Dividers
- Wooden Surfaces
  - Residential Buildings
  - Healthcare Facilities
  - Public Buildings
  - Commercial Buildings
  - Hospitality Sector
  - Industrial Facilities

PRODUCT CHARACTERISTICS

- Water-borne and environmentally friendly
- Very low odor, non-toxic, hypoallergenic, and non-carcinogenic
- Reduces fire spread and smoke by up to 90%
- Coverage: 27.9 Sq.m per Gallon as Class A
- Passed strict EPA – V.O.C. and AQMD standards
- Low cost and high efficiency
- Can be applied by spray, roll, or brush
- Compatible with any paintable surface
- Fast drying with excellent durability and rapid recoating properties
- It can be further treated with veneering, laminating, and painting directly on the surface

PACKAGING

Available in White colour.

Packaging	Qty. Per Case	Weight (KG)
1 Gallon Pail	1	5
5 Gallon Pail	1	25

FCC - 9000
FLAME CORE COAT

TECHNICAL DATA SHEET

USAGE METHOD

Applying FCC-9000 coating can be achieved with either a brush or spray technique, based on the project's specific needs and environmental conditions.

INSTALLATION GUIDE

STEP 1 TThe substrate must be sound, clean, and free from voids, bug holes, gaping cracks, honey combs, or ridges and open pored (like medium grit sand paper).
Remove bond breakers, such as oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings

STEP 2 Mixing FCC-9000 coating thoroughly by a power agitator before application. Thinner is normally not required. If necessary, use potable water (3% max.) to adjust viscosity. Water is also for tools and spray machine cleaning

STEP 3 The FCC-9000 coating can be applied using a brush, roller, or spray system, providing versatility in application methods. A brush allows for precise application on detailed or intricate areas, a roller ensures even coverage over larger, flat surfaces, and a spray system delivers a smooth, uniform finish with minimal effort, ideal for extensive or complex surfaces

STEP 4 Do not allow the coating material to remain in hoses, gun or spray equipment. Clean all equipment with water immediately in work stoppages or after use.

STEP 5 All unused coating should be stored in tightly closed container. Surface skinning may show in a partially filled container. Filter the material prior touse.

STEP 6 Thickness measurement – thickness of painted layer can be checked by wet film thickness gauge. The DFT can be checked by caliper for fully cured.

TESTING DATA

Contact **MVL Firestop** for suitable system recommendation.

Material properties:	
Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Brush, Roller, Spraying Machine
Application Temperature	5˚C - 40˚C (40˚F - 104˚F)
In-service Temperature	-25˚C - 80˚C (-13˚F - 176˚F)
Shelf life	18 Months

Physical properties:	
Expansion begins	375˚F (190˚C)
Expansion greatest	750˚F -840˚F (400˚C - 450˚C)
Expansion	80 Times
VOC	56 g/L
Drying Time	Dry to touch after 3~4hours,10 days
Density	1.2 ~1.4 g/cm3
Intumescent	Yes
PH value	7±1.0
Paintable	Yes
Viscosity	15000~25000cps (25 ˚C),adjustable
Used Solvent	Water
Typical thickness	WFT 1mm & DFT 0.63mm

Performance	
HOAC tested	50+ years

FCC - 9000
FLAME CORE COAT

TECHNICAL DATA SHEET

INSPECTION & REPAIR

Thickness measurement – thickness of painted layer can be checked by wet film thickness gauge.The DFT can be checked by caliper. Whenever destructive sampling needed during inspection, all damaged area must be reinstalled immediately using same product at the recommended thicknesses according to the approved listing, destructive tests must take place after full cure of material.

STORAGE & SHELF-LIFE

FCC-9000 shall be stored in normal conditions away from direct sun light for long periods. Shelf-life is 18 months if stored properly in well-closed containers. Should be stored between 50˚F (10˚C) and 86˚ F (30˚C) to obtain 18 months shelf life.

LIMITATIONS

Installer is responsible for proper product application. Site visits by MVL Firestop personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control.

SAFETY

Refer to SDS.

FCC-9000 contains no hazardous materials. Use rubber gloves and goggles during application. Avoid contact with eyes and skin. After contact with skin, wash with plenty of water. In case of eye contact, rinse immediately with plenty of water and seek medical advice.

KEEP OUT OF REACH OF CHILDREN .

CLEAN-UP

Clean tools and equipment with water immediately after use. Cured material can only be removed mechanically.

CAUTIONS

FCC-9000 is non-toxic, non-hazardous during handling, storage and use.

- For Ecology: Do not dispose directly to water or soil. Mix with plenty amount of sand before this to comply with the local regulations.
- Splashes on skin will be washed with water and soap


Fire Protection


Smoke Seal


Paintable


Veneered


Laminated

KLEIBERIT®
KLEBSTOFFE • ADHESIVES

PUR-Adhesive 501

One component, polyurethane adhesive for very strong bonds with high temperature resistance. With certified bond quality D4 according to DIN/EN 204, Window Institute ift Rosenheim Germany (PZ-No. 505 26095, 08.10.2002).

501.0
0736

Bonding in Shipbuilding
(according to IMO FTPC Part 5 & Part 2/ Approval per SeeBG test certificate for international use according to Module B)

Adhesive for water resistant bonding according to **DIN/EN 204**
D4

The handy bottle with the patented dispensing lid.

- self cleaning
- easy to dispense
- precise adhesive application

KLEIBERIT
KLEBSTOFFE • ADHESIVES

KLEIBERIT 501 PUR is a moisture curing single component adhesive based on polyurethane. For strong bonds with very high strength values. High temperature resistance according to DIN EN 14257 (WATT 91) and D4 water resistance according to DIN EN 204. Flame resistant adhesive according to IMO Resolution.

FIELDS OF APPLICATION

Bonding windows and doors, stairs, plywood to be used inside or outside (outside use with surface protection). Bonding mineral building boards, ceramic materials, concrete materials and hard foams.

Please see warnings on the bottle before using!

PREPARATION

The surfaces to be bonded must be climatised, clean, dry and free from dust and grease. It could be necessary to remove release agent.

APPLICATION

- Single-sided application using a spatula or hand roller to the surface which is least porous
- Assemble the two pieces to be bonded
- The product cures to a water-resistant, solvent-resistant and semi-rigid adhesive film when subjected to the influence of humidity (air, material). The cross-linking process can be accelerated by means of a targeted moisture supply (fine water spray, approximately 20 g/m²), or by higher temperatures (40°C up to max. 60°C).
- The cross-linking process should take place with a pressure that guarantees sufficient contact of the glued surfaces. In order to protect exposed surfaces from being contaminated with glue, apply e.g. a silicone paper to this area.
- The necessary pressure is dependent upon the type and size of materials. A good closed joint should be achieved. Minimum pressure for bonding laminated wood: **0.6 N/mm²**. The more intensive the cross linking of the adhesive under pressure, the higher the subsequent load ability.

PROPERTIES OF THE ADHESIVE

• **Base**	polyurethane
• **Specific gravity (20°C)**	approx. 1.13 g/cm³
• **Consistency**	medium viscosity
• **Temperature**	+20°C ideal, not below +5°C
• **Wood Moisture**	8-10 % ideal for interior 10-14 % for exterior
• **Coat weight**	100-200 g/m² Depending on the condition of the material
• **Open time**	see table
• **Press time**	see table
• **Curing time**	see table
• **Final strength**	after approx. 24 hours with sufficient moisture
• **Colour**	yellowish-brown

CLEANING

- Immediately clean spilled glue with a towel and **KLEIBERIT Cleaner 820 toluene-free**.
- Clean application tools with **KLEIBERIT Cleaner 820 toluene-free** immediately after use.
  Hardened adhesive must be mechanically removed.

ADHESIVE AND PACKAGING DISPOSAL

Disposal code 080501

PACKAGING

cartons containing 12 plastic bottles, 0.5 kg each
metal canister 6,0 kg net
metal can 32,0 kg net
metal drum 220,0 kg net

STORAGE

KLEIBERIT PUR Adhesive 501 can be stored in original factory sealed containers at 20°C for approx. 9 months. Keep in cool and dry place and protect from humidity. Opened containers should be used as soon as possible. Product is not frost sensitive.

EX 0211; replaces previous versions

Identification:

identification required according to the German hazardous substances regulations GefStoffV, contains 4.4 diphenylmethane diisocyanate.
See our safety data sheet 501
For professional use only.

TECHNICAL DATA

PUR-ADHESIVE 501

SERVICE

Our application department may be consulted at any time without obligation. The statements herein are based on our experience gained to date. They are to be considered as information without obligation. Please test and establish for yourself the suitability of our products for your particular purposes. No liability exceeding the value of our product can be derived from the foregoing statements. This also applies to the technical consultancy service, which is rendered free of charge and without obligation.

Product Overview 501

KLEIBERIT Products	Viscosity mPa·s	Open time (20 °C)	Press time (20 °C)	40 °C	60 °C	Curing time
KLEIBERIT 501.0	8000	20-25 min	60 min	30 min	10 min	2-3 hours
KLEIBERIT 501.6	7000	65-70 min	6-7 hours	2-3 hours	1-2 hours	1 day
KLEIBERIT 501.8	8000	approx. 8-10 min	30 min	15 min	7 min	1 hour

RITVER PAINTS & COATINGS where paints come to life

WOOD FINISHES DATA SHEET

WOOD GLUE Product No. PW1612

A water based wood glue based on polyvinyl acetate polymer, designed with excellent high tack and bond strength ,developed for various wood carpentry application uses , such as :[bonding timber, MDF, doors, windows in high speed assembly lines at joineries]
Product is not suitable for perpetual wet areas like toilets, kitchen sink etc.,
Virtues: It is a nontoxic and non-flammable water based, environmental friendly single component product.

USE

Product is also useful for decorative bonding, cold and hot pressing of decorative laminates, wood veneers to ply, block boards, tiles in dry condition. Etc.

SPECIFICATIONS

Properties

Color	: milky white
Specific gravity	: 1.01 Kg/lit [± 0.025]
Viscosity 4/25°C	: 180 sec. [± 1]
Weight Solids	: 43% Kg/Kg [± 1]
PH	: 5-7
Drying Interval	
Open Tack	: 5-10 min.
Curing	: 60 hrs. [Temperature, humidity, air movement, film thickness and number of coats all affect the drying time.]

SURFACE PREPARATION

All timber species must be fully aged with a moisture content of less than 15%. Surface must be dry, clean and free from contaminations. Natural oil or gum must be removed by solvent cleaning.
Exclusions for successful application include perpetually wet surfaces and also large cavities on wood surfaces.

APPLICATION METHODS

RITVER Wood glue is generally recommended to be applied without any thinning and as such. During application use a mechanical glue spreader or a convenient spatula. Ensure that the surface is free from dust and oil moieties. Spread the adhesive evenly and leave it for 5 to 10 minutes as per the wood surfaces. Press the surface to be bonded and squeeze out the excess. Remove the non-dried portion with warm water or resort to mechanical removal when dry.
Do not apply when wet as there will be no bondage to the substrate.
Once used keep the container closed immediately. It is also important to see that the tools used for application is cleaned before the glue dries off.

WOOD GLUE Product No. PW1612

PRODUCT PREPARATION

Stir well before use. Thin to the required viscosity ensuring the product is homogeneous.

Dilution

By brush, roller
Normally ready to use but we can dilute the product up to 15 % by water.

SUBSEQUENT TREATMENT

After drying this product, it does not need any subsequent treatment.

PACKING & STORING

Available in 1Lit, 4Lit ,20Lit and 200Lit .
Store in a cool and well ventilated place. Keep away from direct sunlight. Minimum one year in unopened container, stored in a cool and dry condition at 25°C.

SAFETY & FLAMMABLE

Do not expose product to direct sun light.

In case of contact with eyes rinse immediately with plenty of sweet water and seek medical
Keep away from sources of ignition. Keep out of reach of children.

FP Series

- athmer's FP Series fire and smoke seals provide fire protection closing off the gap between the fire door and frame in the event of a fire. Extreme heat during fire activates the intumescent strip to expand and seal the gap preventing spread of fire and smoke to other parts of the building allowing enough time for people to evacuate, reducing the risk to life and protecting property.
- Encapsulated in a PVC sleeve with heavy duty self-adhesive tape backing.
- The high-performance intumescent core contains intercalated graphite that expands multi-directionally with a higher expansion ratio.
- Ideal for sealing perimeter of doors including meeting stiles/astragals on double doors.
- Available in a variety of sizes to cover 30, 60, 90 & 120 mins Fire door configurations.

FIELD OF APPLICATION

Rebates in timber door leaves or door frames
Approved for use on single or double action leaf doors
Can be used on latched and unlatched doors
New build and retrofit application

PRODUCT FEATURES

Rapid multi directional expansion
Activates from 180°C
Identification on each product ensures full traceability
Laboratory age testing indicates a life expectancy in excess of 100 years
Unaffected by moisture
Mineral based, safe to handle containing no fibrous materials

TEST STANDARDS & CERTIFICATES

BS476 Part 20, BS476 Part 22
BS EN 1634-1, BS EN 1634-3
Certifire Approved CF6057

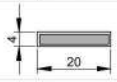
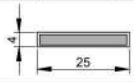
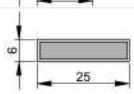
COLORS*

White	Brown	Dark brown
Black	Grey	Red
Cream		

PRODUCT DIMENSIONS

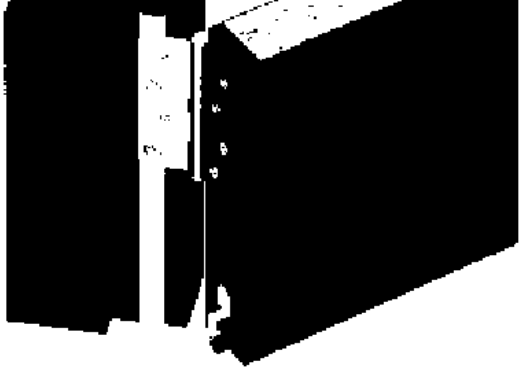
Standard lengths: 1050mm, 2100mm, 2200mm
other lengths available on request

Sizes

10 x 4 mm	
15 x 4 mm	
20 x 4 mm	
25 x 4 mm	
15 x 6 mm	
25 x 6 mm	

* Actual product colour may vary from images shown

athmer oHG / Sophienhammer / 59757 Arnsberg / Germany
T +49 2932 477-500 / info@athmer.de / **athmer.com**



FP Series

/ plain, rigid box graphite fire seal

/ provides fire protection for doors

/ equipped with a durable self-adhesive backing tape

/ supplied in lengths

TECHNICAL DATA

Application	fire rated timber doors & frames
Material	PVC encapsulated graphite

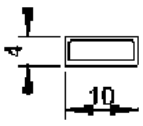
PERFORMANCE & CERTIFICATES

Fire	EN 1634-1*

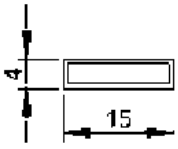
DIMENSIONS

Standard lengths	2100, 2400, 3000 mm

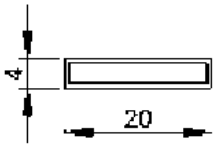
FP 1004



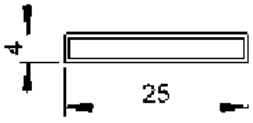
FP 1504



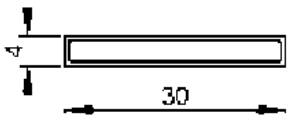
FP 2004



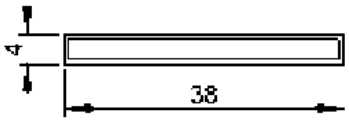
FP 2504



FP 3004

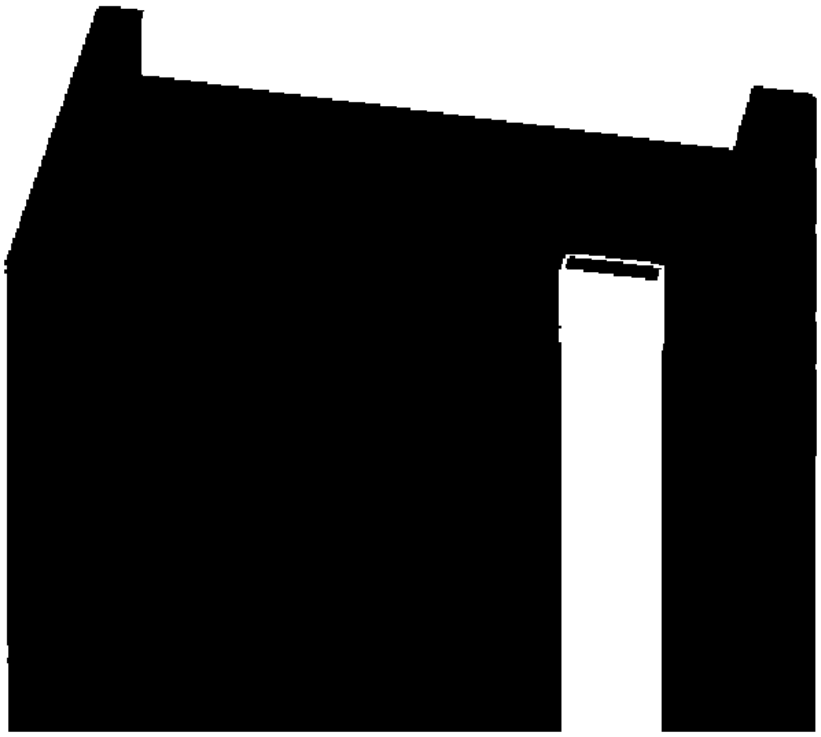


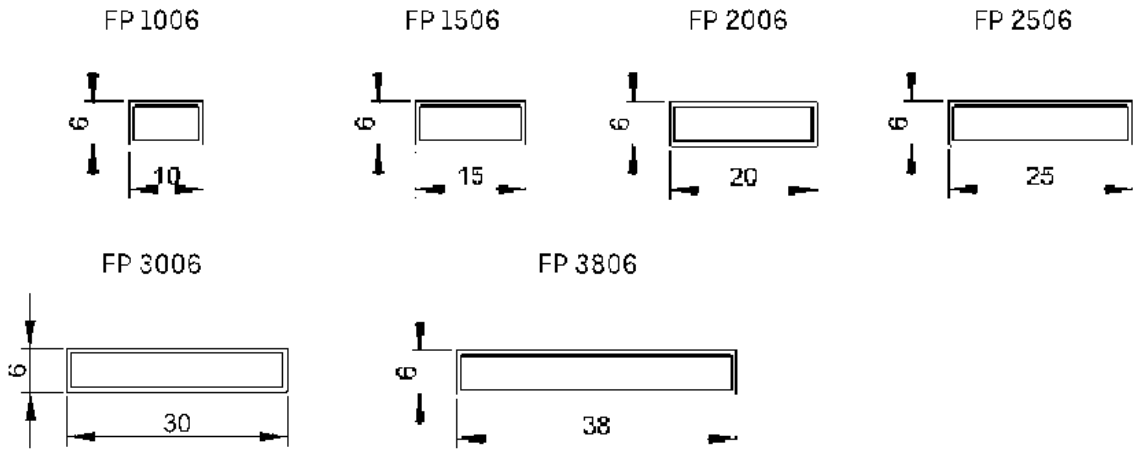
FP 3804



COLORS/ART.NO.	FP 1004	FP 1504	FP 2004	FP 2504	FP 3004	FP 3804
Red	F160052	F160055	F160058	F160150	F160061	F160064
Black	F160105	F160106	F160107	F160153	F160109	F160108
Brown	F160053	F160056	F160059	F160151	F160062	F160065
White	F160054	F160057	F160060	F160152	F160063	F160066

*The test value may differ according to the EN 1634-1 test, as the complete door system must be checked

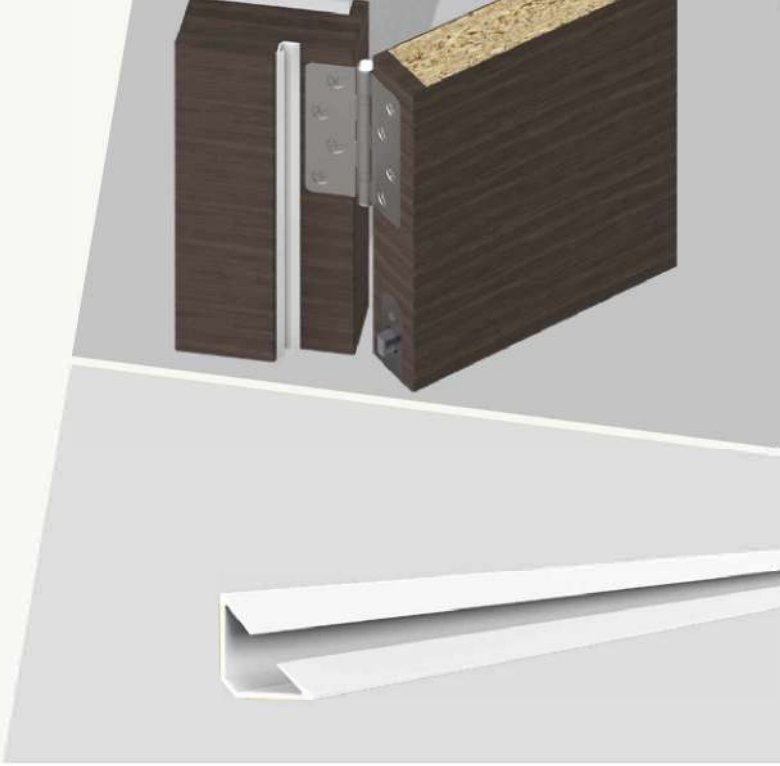




COLORS/ART.NO.	FP 1006	FP 1506	FP 2006	FP 2506	FP 3006	FP 3806
Black	F160197	F160201	F160205	F160199	F160203	F160207
Brown	F160124	F160125	F160126	F160127	F160128	F160129
While	F160196	F160200	F160204	F160198	F160202	F160206

PS 1010 P Flex
PS 1212 P Flex
PS 1515 P Flex

- / winged corner seal with flexible base
- / equipped with two rows of durable self-adhesive backing tape
- / flexible base offers more flexibilty during installation
- / ensures soft closing of the door
- / also suitable for retro-fit applications



TECHNICAL DATA

Application	timber and metal door frames
Gasket material	rigid and flexible PVC co-extrusion
Working temperature range	-15°C to +60°C

DIMENSIONS

Standard lengths	2100, 2200, 2400, 2500, 3000 mm

FIXING

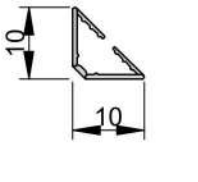
Fixing	stuck to the door stop with self-adhesive backing tape

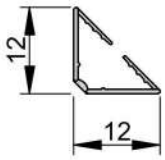
PERFORMANCE & CERTIFICATES

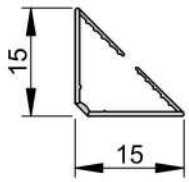
UL	UL 10C (R38166)

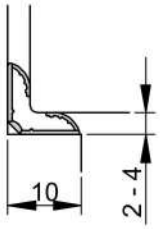
COLORS/ART.NO.	PS 1010 P Flex	PS 1212 P Flex	PS 1515 P Flex
Black	P160130	P160136	P160138
Dark brown	P160132	P160137	P160139
White	P160131	P160135	P160140
Grey	P160159	P160147	P160151

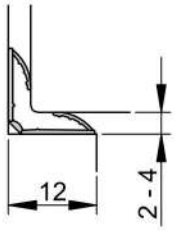
	PS 1010 P Flex	PS 1212 P Flex	PS 1515 P Flex
Fitting tolerance range	2 - 4 mm	2 - 4 mm	2 - 4 mm
Width x height	10 x 10 mm	12 x 12 mm	15 x 15 mm

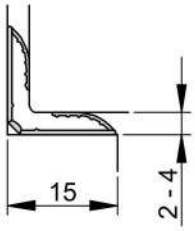












Product Data Sheet

ASMACO GOLD UNIVERSAL MULTIFOAM (B1) (FIRE RETARDANT)

ASMACO GOLD UNIVERSAL MULTIFOAM (B1) (FIRE RETARDANT)

Product Description:

ASMACO GOLD UNIVERSAL MULTI FOAM B1 is quick setting single component polyurethane foam with fire retardant properties. It meets the extremely stringent requirements of DIN 4102 Part 1 for Construction Materials; Class B1 where fire ratings up to 240 minutes are achievable. Once cured, the foam can be cut, sawn or plastered over after only one hour providing the working temperatures (can and surfaces) are between +5 to +30oC, ideally 20oC. (Tested according to BS 476 part 22)

Key Performance Properties:

- High degree of fire rating: slows down the passage of flames and smoke.
- Quick setting - can be cut, sawn or plastered in 1 hour.
- Economical in use – 300% Triple Expanding foam.
- Fills irregular and broad gaps where most conventional fillers would fail.
- Possesses insulating and sound deadening properties.
- Nonflammable propellant.
- Excellent adhesion & filling capacity and high thermal & acoustical insulation valve.
- Excellent mounting capacity and stability.
- Adheres to almost all building materials with the exception of surfaces such as polyethylene, Teflon, silicone and surface contaminated with oils and greases, mold release agents and similar materials.
- Mould proof, water proof, over paintable.
- Quick drying, moisture curing.
- Closed cell structure, resistant to water absorption.
- Cured foam dries rigid and can be trimmed, shaped and sanded.
- Suitable for sealing high volume low moment gaps.
- It does not contain any propellant gases that are harmful to the ozone layer.

Applications:

- Fixing and insulation of door and window frames.
- Filling and sealing gaps, joints and cavities.
- Filling of penetrations in walls.
- Insulating electrical outlets and water pipes.

Typical Properties:

Curing system	--	Moisture cure
Tack Free time	Minutes	15 Max.
Cutting Time	Minutes	40-50
Complete curing	Hours	24
Foam color	--	Pink

Product Data Sheet

Density	Kg/m3	15 -22
Adhesion Strength	kPa	PVC to PVC 143,Alumimum plates 133
Elongation at break	%	8-20
Shear Strength	kPa	22-50
Compression strength	kPa	35-100 at 10% compression
Water absorption	%	Max. 0.03 volume
Thermal conductivity	35°C W/(m.K)	<0.035
Foam Yield	Liters	35-50
Building Material Class	--	B1 DIN 4102 part 1
Fire Rating	--	Up to 240 min.
Can temperature	°C	Min.-5, Max.+35
Application temperature	°C	+5 to +35
Temperature Resistance	°C	-40 to +90 when cured

Instructions:

Optimal can temperature is +20 °C. Application (ambient) temperature is between +5 °C to +30 °C. Shake the can well before use. Screw the tube on the valve. Moisturizing the surfaces and the foam improves adhesion and shortens curing time. Hold the can upside down and activate the foam by pressing the valve. When spray please pay attention to the speed. Fill vertical joints from the bottom up when half- filled enough. When fill gaps in ceiling, uncured foam may drop because of gravity, Fresh foam can be cleaned by acetone immediately. Please support properly after filling until foam cure and adhere to the gap. Foam is tack free after about 10 minutes, can be cut after 60 minutes. Use a knife to smooth the cured foam and treated surface with cement, paint or silicone.

Restrictions:

- Storage above +30 °C and below -5 °C shortens shelf life.
- Should be stored and transported in vertical position.
- Should be kept in room temperature for at least 12 hours before the application.
- Cured foam will discolor if exposed to ultraviolet light.
- Paint or coat the cured foam for best results in outdoor applications.

Storage and Shelf Life:

12 months when stored at 20°C / 50% relative humidity out of direct sunlight.

Packaging:

ASMACO GOLD UNIVERSAL MULTIFOAM B1 (Straw Type & Gun Type) 750 ML - 12 CANS/CTN

Safety:

Contains Diphenylmethane-4,4'-Diisocyanate. Harmful by inhalation. Irritating to eyes, respiratory system and skin. Do not breathe spray/Vapour. Wear suitable protective clothing and gloves. Use only in well-ventilated areas. Pressurized container. Keep away from direct sunlight and do not expose temperatures over 50 °C. Do not pierce or burn, even after use. Keep away from sources of ignition, no smoking. Keep out of the reach of child.

Shipping Limitations: None

Note

The information and data contained in the product data sheet is believed to be accurate and reliable; however, it is the user's responsibility to determine suitability of the product for usage. Since the supplier cannot know all the uses, or the conditions of use to which the product may be exposed, no warranties concerning the fitness or suitability for particular use or purpose are made. It is the user's responsibility to thoroughly test any proposed use of our products and independently conclude satisfactory performance in the application Likewise if the application, product specifications or manner in which our products are used require government approval or clearance, it is the sole responsibility of the user to obtain sure authorization.

Non – Warranty: Because the storage, handling and application of the material is beyond Anchor Allied Factory Ltd's control, we can accept no liability for the result obtained. Anchor Allied Factory Ltd's sole limited warranty is the product meets the manufacturing specifications in effect at the time of shipment. There is no warranty or merchantability or fitness for use, nor any expressed or implied warranty. Anchor Allied Factory Ltd will not be liable for any incidental and consequential damage of any kind. The exclusive remedy for breach of such limited warranty is a replacement of any product shown to be other than warranted. Suggestions of uses should not be taken as inducement to infringe any patents.

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SILICONE SEALANTS • WATERPROOFING COATINGS • PU SEALANTS • POLYSULPHIDE SEALANTS • ACRYLIC & DUCT SEALANTS
POLYURETHANE FOAM • SPRAY PAINT • SILVER CLOTH DUCT TAPE • CREPE PAPER MASKING TAPE • ALUMINIUM FOIL TAPE
P.E. PROTECTION TAPE • PVC PIPE WRAP TAPE • CONTACT ADHESIVE • EPOXY STEEL • PVC CEMENTS • SUPER GLUE

TAINJIN LUJIO TRADING CO.,LIMITED
TEST REPORT

DATE: 2024 5TH DEC
BUYER NAME: ICONIC TOOLS TRADING LLC
P/I NO: CJ2023
TEST STANDARD: Q/ASB 610.1-2024
BRAND: MT WERKZ

PRODUCT DESCRIPTION	CONSTRUCTION	ROD DIA	ROD LENGTH		
C1022A / SWRCH22A	STEEL ROD	6.5MM	280 MTR / ROLL		
CHEMICAL ANALYSIS					
CARBON	SI	Mn	P	S	Cr
0.185	0.06	0.75	0.01	0.013	0.02
TEST DESCRIPTIONS		STANDARD	RESULT		
TEST ITEMS (T/S)	SPEC	TENSILE STRENGTH	TENSILE STRENGTH		
LOAD CAPACITY ROD	6.5MM ROD	>450	498		PASS
PULL OUT DIA LENGTH 3.5MM	#6	>120	132		PASS
PULL OUT DIA LENGTH 4.2MM	#8	>185	200		PASS
PULL OUT DIA LENGTH 4.8MM	#10	>250	270		PASS
TEST DESCRIPTIONS		STANDARD	RESULT		
TEST ITEMS (Y/S)	SPEC	YIELD STRENGTH	YIELD STRENGTH		
LOAD CAPACITY ROD	6.5MM ROD	>280	310		PASS
PULL OUT DIA LENGTH 3.5MM	#6	>65	75		PASS
PULL OUT DIA LENGTH 4.2MM	#8	>100	115		PASS
PULL OUT DIA LENGTH 4.8MM	#10	>140	159		PASS
SCREWS SIZE #6 - 1/2" 3/4" 1" 1-1/4" 1-1/2" 2" 2-1/2" 3" 4"					
SCREWS SIZE #8 - 1/2" 3/4" 1" 1-1/4" 1-1/2" 2" 2-1/2" 3" 4"					
SCREWS SIZE #10 - 1/2" 3/4" 1" 1-1/4" 1-1/2" 2" 2-1/2" 3" 4"					

钟银标

TECHNICAL DATA SHEET

32 mm Fire Rated PSB® Door Core

PHYSICAL PROPERTIES	TEST	UNIT	RESULTS
Length		mm	2440
Width		mm	1220
Thickness		mm	32

TOLERANCE OF NOMINAL DIMENSIONS	TEST	UNIT	RESULTS
Length & Width	BS EN 324-1	mm	+/- 3
Thickness – Sanded Boards	BS EN 324-1	mm	+/- 0.3
Thickness – Un-Sanded Boards	BS EN 324-1	mm	+/- 0.8
Edge Straightness Tolerance	BS EN 324-2	mm/m	1.5
Squareness Tolerance	BS EN 324-2	mm/m	2

MECHANICAL PROPERTIES	TEST	UNIT	RESULTS
Thickness Swelling - 24 H	BS EN 317	%	≤20
Moisture Content	BS EN 322	%	2-12%
Density	BS EN 323	kg/m³	800
Formaldehyde Concentration	ASTM D5582-22	mg/L	(E0) <0.3
Bending Strength	BS EN 310	N/mm²	14
Modulus Of Elasticity In Bending	BS EN 310	N/mm²	2500
Internal Bond	BS EN 319	N/mm²	0.26
Screws Withdrawal - Face	BS EN 320	N	1100
Screws Withdrawal - Edge	BS EN 320	N	1300
Reaction To Fire	ASTM E84-22		CLASS B
Sound Transmission Test (Operable)	ASTM E90-09	dB	35

DesertBoard.

MADE IN THE UAE

ESTETIC
100 M

EN

- completely invisible hinge for left- and right-handed doors
- load capacity 100 kg/2 hinges
- for use in wooden, steel and aluminum profiles
- for non-rebated doors
- lubrication-free bearing
- 3D adjustment (side +/-2.5mm, height +/- 2.5mm, compression +/- 1mm)
- steel front covers (magnetic fixing)
- 180° opening angle

IT

- cerniera a scomparsa totale per porte destre e sinistre
- capacità di carico 80 kg/2 cerniere
- per l'impiego in profili di legno, acciaio e alluminio
- per porte senza battuta
- cuscinetti senza necessità di lubrificazione
- regolazione 3D (laterale +/- 2mm, altezza +/- 2mm, compressione +/- 1mm)
- coperture frontali in acciaio (fissaggio magnetico)
- angolo di apertura 180°

ES

- bisagras completamente ocultas diseñadas para puerta izquierdas y derecha
- capacidad de carga de 100 kg por par
- para su uso en perfiles de madera, acero y aluminio
- para puertas no batientes
- rodamiento sin lubricación
- ajuste 3D (lateral +/-2,5mm, altura +/- 2,5mm, compresión +/- 1mm)
- cubiertas frontales de acero (fijación magnética)
- ángulo de apertura de 180º

FR

- charnière invisible pour portes droite et gauche
- résistance 100 kg/2 charnières
- pour profilés en bois, acier et aluminium
- pour portes affleurantes
- palier sans lubrification
- réglage 3D (côté +/-2,5mm, hauteur +/- 2,5mm, compression +/- 1mm)
- caches avant en acier (fixation magnétique)
- angle d'ouverture de 180 °

FINISHING / FINITURE / ACABADO / FINITIONS

customised finishes on request / finiture personalizzate su richiesta
acabados personalizados a petición / finitions personnalisées en option

8031
Brass
Ottone
Latón
Cuivre

8040
Chrome
Cromato
Cromo
Chrome

8046
Satin brass
Ottone satinato
Latón satinado
Cuivre satiné

8050
Nickel
Nichel
Níquel
Nickel

e8054
Satin nickel epoxy
Nichel satinato epossidico
Níquel satinado epoxy
Nickel satiné époxy

e8060
Satin chrome epoxy
Cromato satinato epossidico
Cromo satinado epoxy
Chrome satiné époxy

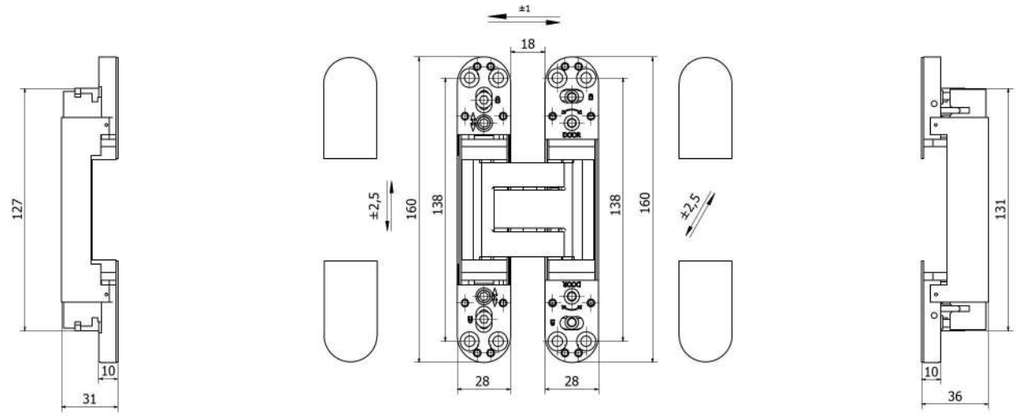
e9005s
Black matte epoxy
Nero opaco epossidico
Negro mate epoxy
Noir mat époxy

e9016s
White matte epoxy
Bianco opaco epossidico
Blanco mate epoxy
Blanc mat époxy

Covered by European Technical Assessment / coperti dalla Valutazione Tecnica Europea / cubiertos por la Evaluación Técnica Europea / ont reçu l'Évaluation Technique Européenne **ETA-23/0190.** Classification according to / classificazione in base a / clasificación según / classification selon la **EN 1935** and **EAD 020001-01-0405.**

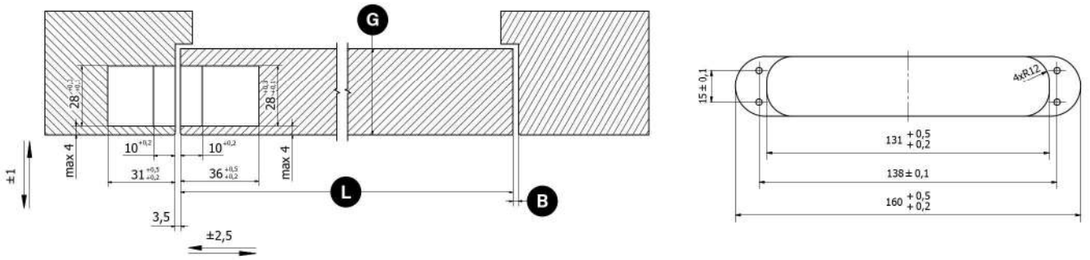
4	7	5	1	1	*	0	12

* corrosion resistance depending on the finish / la resistenza alla corrosione dipende dalla finitura / resistencia a la corrosión, dependiendo del tipo de acabado / résistance à la corrosion suivant par la finition



LOAD CAPACITY / CAPACITÀ DI CARICO / CAPACIDAD DE CARGA / RÉSISTANCE

Hinges number Numero cerniere Nombre de bisagras N° charnières	Door width Larghezza porta Ancho de la puerta Largeur porte	700 mm	800 mm	900 mm	1000 mm
2		129 Kg	113 Kg	100 Kg	90 Kg
3		145 Kg	127 Kg	113 Kg	101 Kg
4		161 Kg	141 Kg	125 Kg	113 Kg



HINGE POSITION / POSIZIONE CERNIERA / POSICIÓN DE LA BISAGRA / POSITION CHARNIÈRE

	G Door thickness Spessore porta Grosor de la puerta Épaisseur porte	L Door width Largezza porta Ancho de la puerta Largeur porte	700 mm	800 mm	900 mm	1000 mm
Minimum gap Distanza minima Espacio mínimo Espace minimum B	40 mm		2 mm	2 mm	2 mm	2 mm
	50 mm		3 mm	2 mm	2 mm	2 mm
	60 mm		4 mm	3 mm	3 mm	3 mm

dormakaba

Door closer
TS 90 Impulse
EN 3/4

Technical product brochure

High-Tech for the global Market

The TS 90 Impulse combines technical superiority with outstanding value, and unites advanced design with convenient functionality – all on the basis of its heart-shaped cam.

With its installation versatility and inherent functional reliability, it is ideal for virtually any application.

Certified to ISO 9001

Benefits

For the trade
- Unique cam action technology for the entry-level segment, compliant with EN 1154.
- Complete package for easy stocking.
- Sets new standards to open up new markets.

For the installer/fabricator
- Easy to fix without mounting backplate.
- Non-handed.
- Four installation arrangements with one model.
- Proven quality for long service life

For the architect/specifier
- Proven technology of the heart-shaped cam.
- Cost-efficient slide channel door closer for interior doors.

For the user
- Convenient, low-resistance opening with fully controlled closing.
- Two regulating valves for precise adjustment of closing speed.
- Available with hold-open and cushioned limit stay options..

Data and features		TS 90 Impulse
Closing force	Size	EN 3/4
Standard doors[1)]	≤ 1100 mm	●
Fire and smoke check doors[1)]		●
Non-handed		●
Slide channel		●
Two independent valves for closing speed adjustment		●
Cushioned limit stay (mechanical)		O
Delayed action		–
Hold-open		O
Weight in kg		1,7
Dimensions in mm	Length	246
	Overall depth	46
	Height	57
Door closer compliant with EN 1154		●
CE-mark or contruction products		●

● yes – no O Option

[1)] In the case of particularly heavy doors and doors that have to close against wind pressure, we recommend the dormakaba TS 93.

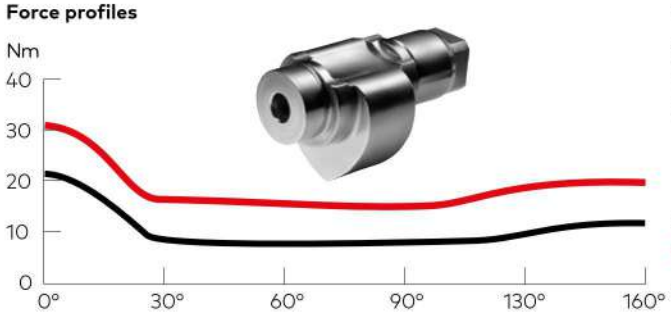
easy open

certifire

The TS 90 Impulse is CERTIFIRE approved (Certificate No. CF119) for door types ITT 120

Cam Action

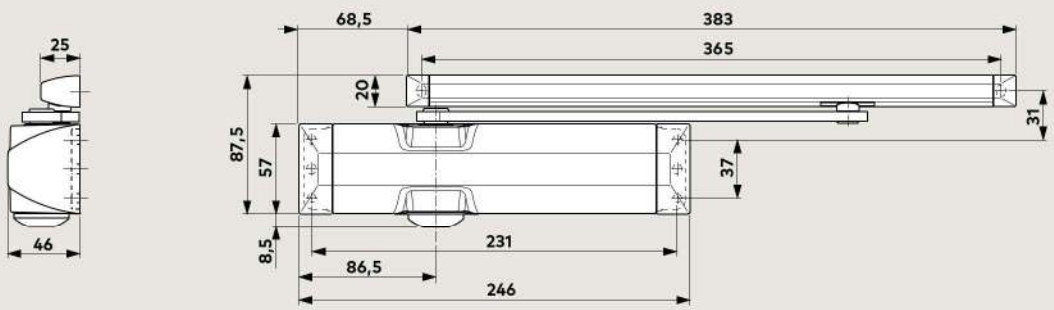
Force profiles



The unique heart-shaped cam and the linear drive mechanism ensure that the resistance encountered decreases almost instantly with the door opening action.
User-friendly and reliable closing is also ensured by the delayed increase in the actuating torque at the "latching" end of the sweep.

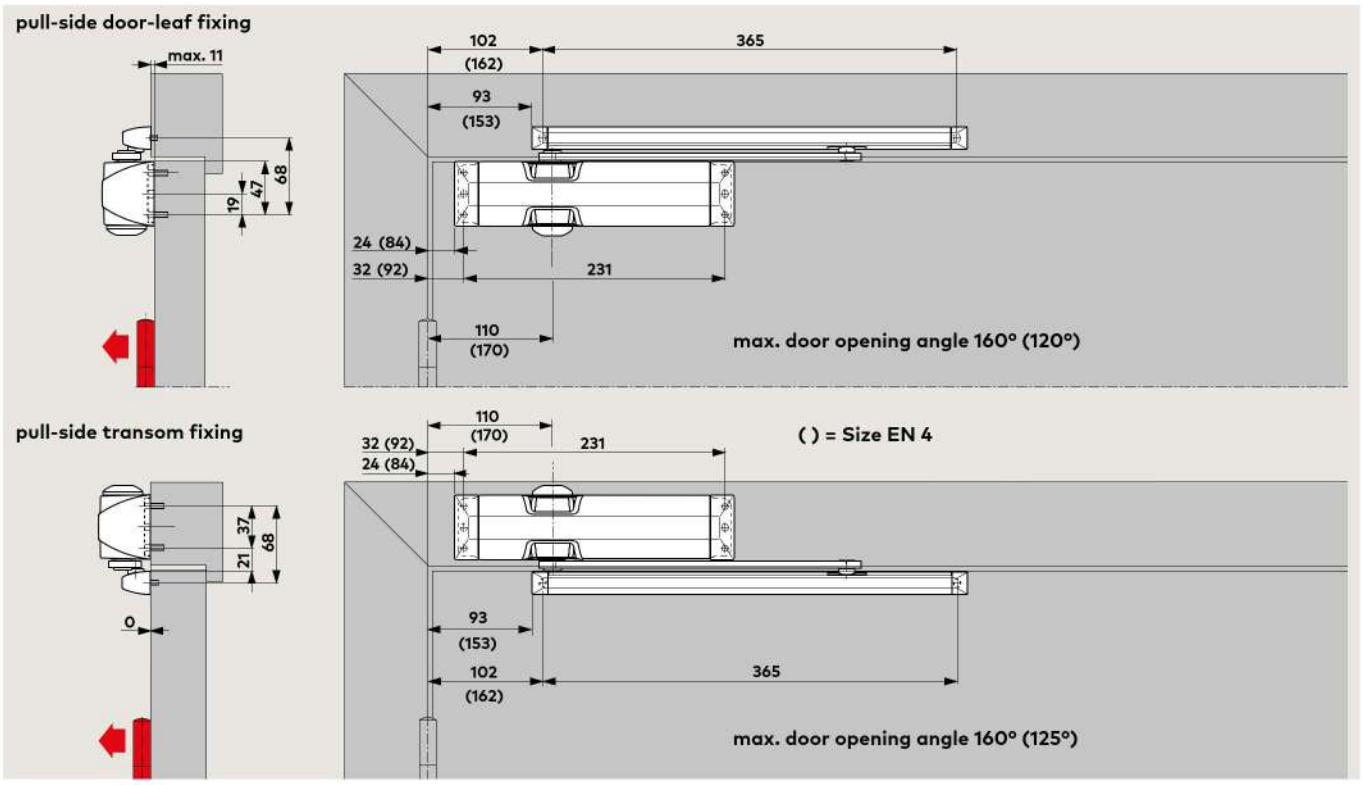
Force profile
Opening force
Closing force

(Spring strength: EN 3)



Pull-side fixing

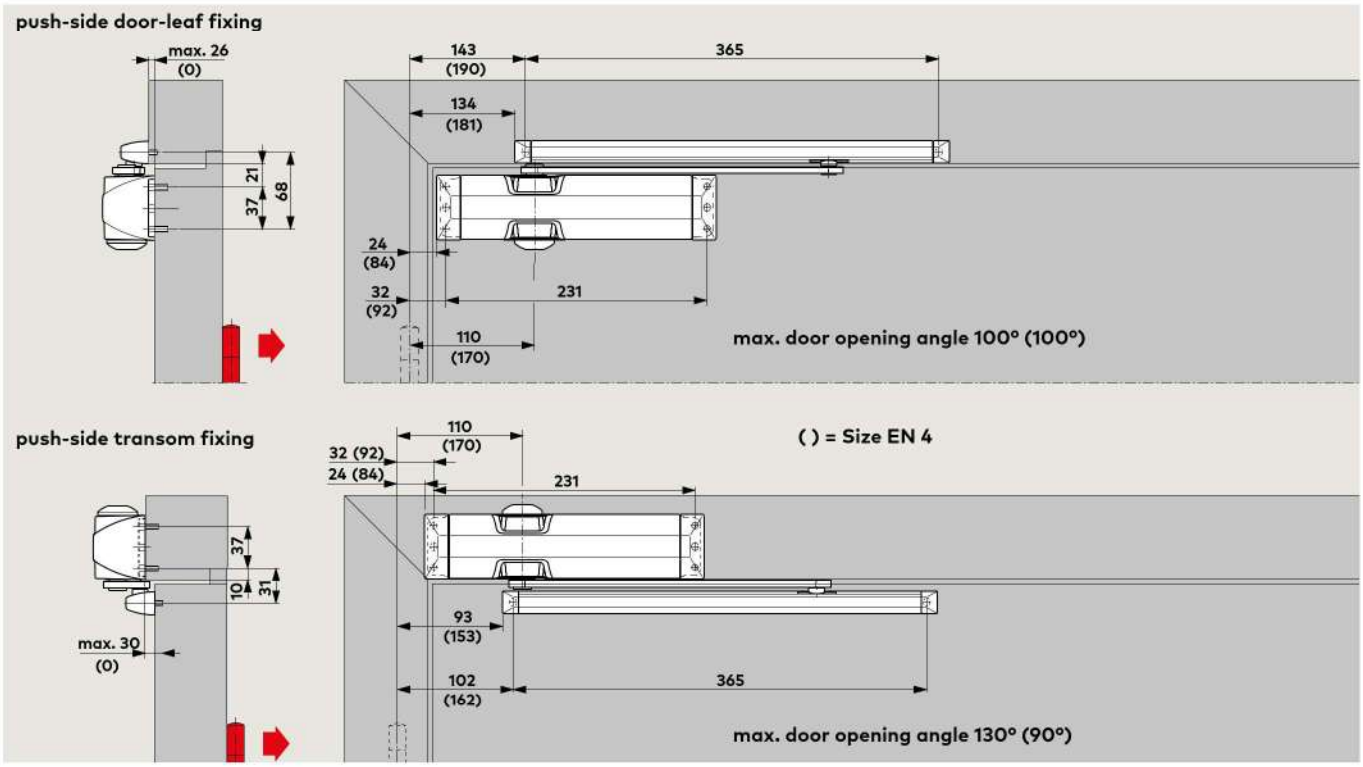
(example: LH/iso 6 door; mirror image for RH/iso 5 door)



Depending on the structural conditions, the door opening angle is likely to be limited. It is recommended to install the cushioned limit stay or position a door stop at this point. **A door stop must be installed in the case of fire and smoke check doors.**

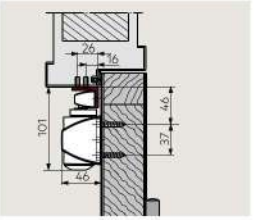
Push-side fixing

(example: RH/ISO 5 door; mirror image for LH/ISO 6 door)

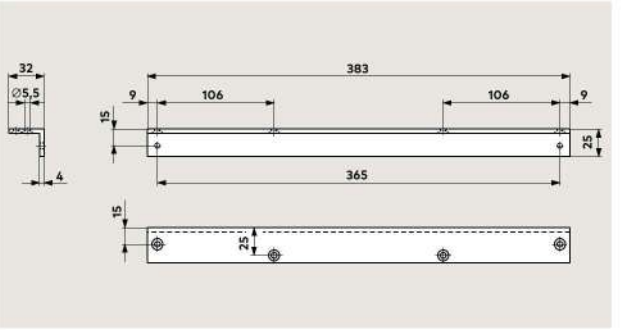


Depending on the structural conditions, the door opening angle is likely to be limited to approx. 95°. It is recommended to install the cushioned limit stay or position a door stop at this point. As the door opening is limited to 95° the TS90 is not CE marked on the push side of the door. BS EN1154 requires minimum closing from 105°.

Accessories



Angle bracket
For push-side fixing of the slide channel to door frames with a deep reveal.



Standard equipment and accessories

	Cam-sction door closer TS 90 Impulse	Angle bracket	Cushioned limit stay	Mechanical hold-open device
				
	Size EN 3/4	100030xx	10002000	10002100
Slide channel 	◧ 102004xx	△	△	△

Order No:

		Colour	xx
◧ =	Closer body with slide channel, complete	silver	01
		white (sim. RAL 9016)	11
△ =	Accessory		

Specification text

Universal cam-action door closer with linear drive and rapidly de-creasing opening torque; closing speed adjust•able in two independent ranges.
Closing force = size en 3/4. Non-handed.

Compliant with EN 1154.

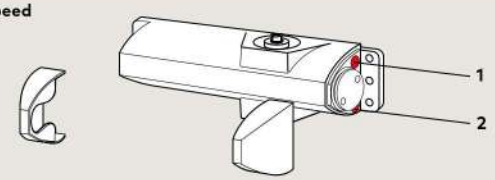
Accessories
☐ Angle bracket
☐ Hold-open device
☐ Cushioned limit stay

Colour
☐ silver
☐ white (sim. RAL 9016)

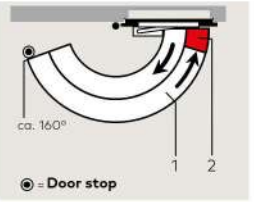
☐ **Make**
TS 90 Impulse EN 3/4

Standard and optional Functions

Closing speed

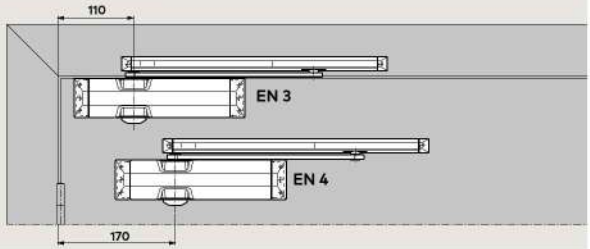


The closing speed of the TS 90 Impulse is adjustable in two independent ranges at the valves indicated.



1 Infinitely variable closing speed in the range 160° – 15°
2 Infinitely variable closing speed in the range 15° – 0°

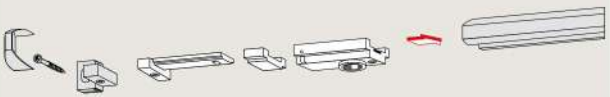
Closing force settings EN 3/4

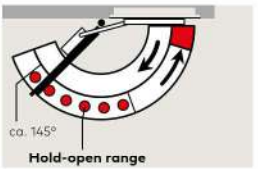


Door width	size setting
≤ 950 mm	EN 3
≤ 1100 mm	EN 4

The TS 90 Impulse size setting is selected for the door width by the closer.

Mechanical hold-open device



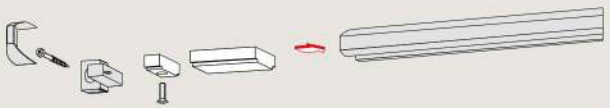


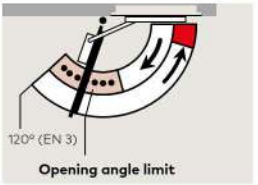
The hold-open device enables doors to be precisely held without any fall-back up to an opening angle of approx. 145°.

The hold-open device is suitable for both LH and RH doors and is designed for retrofitting to the slide channel.

Not for fire and smoke doors

Cushioned limit stay





Cushioned limit stay for retro fitting by insertion in the slide channel. Adjustable between 80° and max. 120°.

Use of the cushioned limit stay helps to prevent a normally opened door from colliding with adjacent walls.

The cushioned limit stay is not an overload protection device and in many cases is no substitute for a door stop.
Only for the use with TS 90 Impulse size EN 3

Lever handles

Stainless Steel Lever Handles RLH-S Series

Images	Material Description	Article No.
Common Specifications	Stainless steel Tubular lever handle 50 mm dia Rose & Euro profile escutcheon Grade 304 Stainless Steel Made in China	
	**RLH-S SY01** Length: 135 mm	0000
	**RLH-S SY02** Length: 140 mm	0000
	**RLH-S SY03** Length: 135 mm	0000

Aluminum Lever Handles RLH-D Series

MOQ-1000 Pairs

	**RLH-D AL217-ZR23** Matt Satin Black / Chrome Plated finish.	0000

Note:
-Product in the package may not be exactly same as the image due to continuous development by dormakaba. The finish shown in the images may differ and are for illustration purpose only.
-Lever handles are sold in pairs. Price above are per pair.

LEGENDS
MOQ - Minimum Order Quantity

Home

dormakaba

PRODUCT : Locks

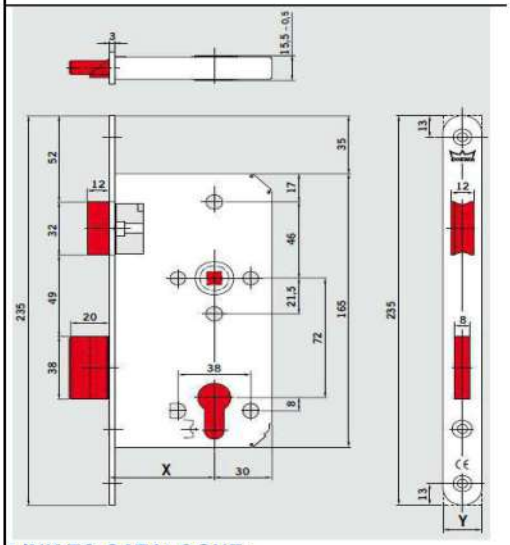
MODEL : 281 Lock

DESCRIPTION : Mortise lock for Fire rated doors, LATCH and DEADBOLT, non-handed, 8mm spindle follower, for Euro profile cylinder, 24 mm square forend, 55mm backset, 20mm double throw bolt projection. Conforms to DIN 18251-1, Conforms to EN 12209 - Grade 2, with 020 square strike plate. CE Marked. Grade 304 satin stainless steel.

FINISH : SSS

MANUFACTURER : dormakaba

DATA AND FEATURES :



Mortice lock 281

Locks for interior and exterior doors, e.g. in office buildings

Features

Grade 2 – EN 12209
approved for fire-rated doors with CE certificate
- Lock case size DIN 18251-1, closed case, zinc plated
- lock case prepared for Euro profile cylinder (DIN18252) and standard fittings
- latch handing is reversible
- latch and dead bolt, stainless steel, satin
- follower, stainless steel, 8 mm square hole, mounted in drawn steel bushes
- centred forend, satin stainless steel 1.4301 / AISI 304

Recommended Strike plate: 20 **side: non-handed**

X Backset

LINK TO CATALOGUE:

https://www.dormakaba.com/ae-en

CERTIFICATIONS:

Certificate of Approval No. CF 267

certifire

Classification Code

2	S	8	1	0	G	3	H	C	2	0

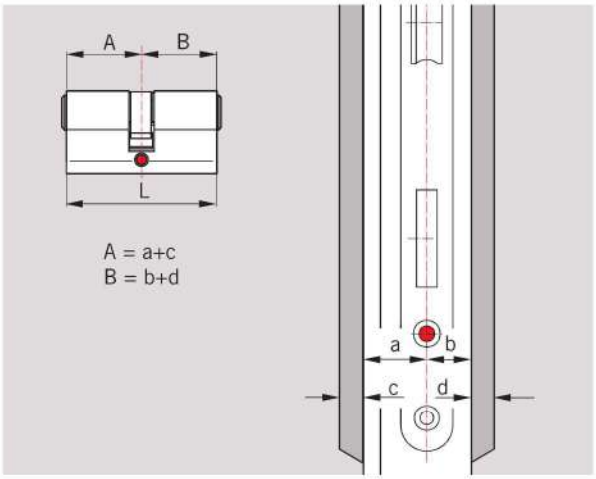
CE mark for building products

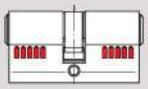
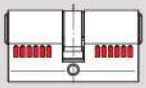
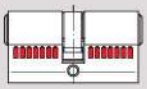
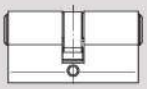
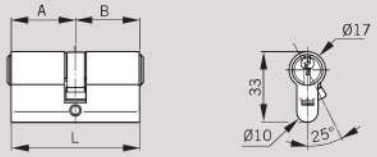
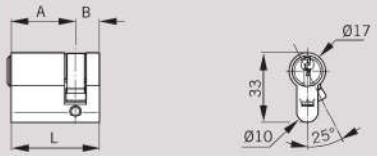
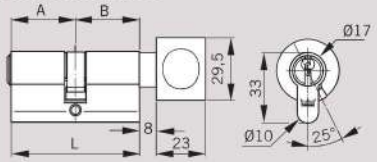
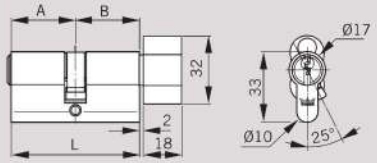
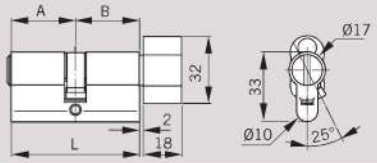
CE

The DORMA DEC series is a fully suited, comprehensive range of economical euro profile cylinders across a broad range of applications. Available in 5-pin, 6-pin and 7-pin variants with DORMA design keys. The high-performance DEC series offers security, durability and flexibility.

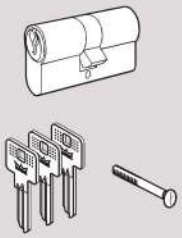
Benefits

- An economical alternative to the architectural cylinders.
- 5-pin, 6-pin and 7-pin variants available.
- Protected DORMA design keys.



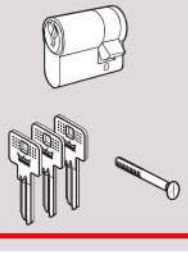
Profile cylinder	DEC 50 Series	DEC 60 Series	DEC 70 Series	DEC Toilet cylinder
	 5 pins	 6 pins	 7 pins	
Double profile cylinder 	●	●	●	
Half profile cylinder 	●	●	●	
Double profile cylinder with round knob 	●	●	●	
Double profile cylinder with peanut shape knob 	●	●	●	
Toilet profile cylinder with peanut shape knob 				●

DEC 60				Order Nr.
DEC 60 Double Profile Cylinder				
Pin: 6, Keying: KD, including 3 keys and fixing screw				
	L	**(A+B)**	**Finish**	
Symmetric	60	(30+30)	satin nickel	6800055
			satin brass	6800056
	65	(32,5+32,5)	satin nickel	6800057
			satin brass	6800058
	70	(35+35)	satin nickel	6800059
			satin brass	6800060
	71	(35,5+35,5)	satin nickel	6800061
			satin brass	6800062
Asymmetric	65	(30+35)	satin nickel	6800065
			satin brass	6800066



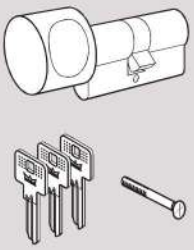
DEC 60 Half Profile Cylinder
Pin: 6, Keying: KD, including 3 keys and fixing screw

L	**(A+B)**	**Finish**	
40	(30+10)	satin nickel	6800067
		satin brass	6800068
43	(33+10)	satin nickel	6800069
		satin brass	6800070
45	(35+10)	satin nickel	6800071
		satin brass	6800072
50	(40+10)	satin nickel	6800073
		satin brass	6800074



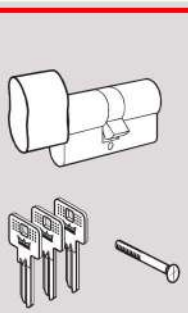
DEC 60 Double Profile Cylinder with Round Knob
Pin: 6, Keying: KD, including 3 keys and fixing screw

L	**(A+B)**	**Finish**	
60	(30+30)	satin nickel	6800075
		satin brass	6800076
65	(32,5+32,5)	satin nickel	6800077
		satin brass	6800078
70	(35+35)	satin nickel	6800079
		satin brass	6800080
71	(35,5+35,5)	satin nickel	6800081
		satin brass	6800082
75	(37,5+37,5)	satin nickel	6800083
		satin brass	6800084
81	(40,5+40,5)	satin nickel	6800085
		satin brass	6800086



DEC 60 Double Profile Cylinder with Peanut Shape Knob
Pin: 6, Keying: KD, including 3 keys and fixing screw

L	**(A+B)**	**Finish**	
60	(30+30)	satin nickel	6800087
		satin brass	6800088
65	(32,5+32,5)	satin nickel	6800089
		satin brass	6800090
70	(35+35)	satin nickel	6800092
		satin brass	6800091
71	(35,5+35,5)	satin nickel	6800094
		satin brass	6800093
75	(37,5+37,5)	satin nickel	6800096
		satin brass	6800095
81	(40,5+40,5)	satin nickel	6800098
		satin brass	6800097



KD = keyed to differ

Interdens® by athmer

Intumescent hardware protection kits

Interdens® is a multi-purpose intumescent material made from mono ammonium phosphate that enhances the thermal insulation and fire resistance of timber and timber-based materials. When exposed to fire Interdens® provides a pressureless expansion, growing to a multiple of its original volume and forming a highly heat-insulating foam layer. Joints, cavities and other openings are sealed, preventing or delaying the spread of flames and fumes effectively. Timber nearby to the heat-insulating foam layer will effectively be protected from the impact of fire and heat.

In relation to fire rated doors and door hardware, Interdens® can be used to protect weaknesses created during the door processing phase. Removal of core fire door material and the introduction of door hardware with a higher thermal conductivity are both factors that can lead to early fire door failure. Having been included in hundreds of fire door tests globally, Interdens® is proven to provide fire resistance performances up to 120 minutes when tested in accordance with BS 476-22 & EN 1634-1.

athmer can provide Interdens® in sheet form or as an added service, precut to suit specific ironmongery. Our in-house team can work with you to create precut shapes that align with your fire test evidence and ironmongery requirements. athmer supplies Interdens® in white and with a self-adhesive backing as standard.

Applications:
Interdens® can be used in a variety of fire door applications to protect hardware. Bespoke pre-cut kits can be used to protect butt hinges, concealed hinges, mortice locks, concealed door closers, automatic drop seals, flush bolts, door viewers, etc.
These protection kits can provide fire resistance of 30, 60, 90 or 120 minutes when tested with full size door assemblies and tested in accordance with BS 476-Part 20 & 22 and BS EN 1634-1.

athmer oHG / Sophienhammer / 59757 Arnsberg / Germany
T +49 2932 477-500 / info@athmer.com / **athmer.com**

Drop Seals

/ precut kits to suit all common auto drop seal sizes

/ std. sizes (mm): 14 x 35, 15 x 30, 20 x 30

  – other sizes available on request

/ Supplied as 1 part wrap around kit around mortise drop down seal with full self adhesive tape back.

/ thickness: 1 mm (type 15) & 2 mm (type 36)

Flush bolts

/ precut kits to suit all common flush bolts

/ std sizes (mm): to suit 200 x 19, 200 x 25, 300 x 25

  – other sizes available on request

/ special kits available for manual rod extension flush bolts as well as automatic flush bolts.

/ supplied as full wrap around kit to suit flush bolt/ door cutout with full self adhesive tape back

/ thickness: 1 mm (type 15) & 2 mm (type 36)

Locks - single & multi-point

/ precut kits to suit all types of lock bodie

/ DIN55/72, DIN60/72, DIN80/72 etc.

/ bespoke kits can be supplied for electrified locks, hotel guest room card locks, multipoint locks, budget locks etc.

/ supplied as full wrap around kit around lock body as well as under strike plate with full self adhesive tape back

/ thickness: 1 mm (Type 15) & 2 mm (Type 36)

Hinges - standard, concealed & continous

Precut kits for

- butt hinges (radius and square edges)
  - sizes (mm): 102 x 76, 102 x 89, 102 x 102, 114 x 102, 114 x 114
- concealed Hinges: Simonswerk/Tectus TE-340, TE-527,TE540 & TE-0640
- bespoke kits to suit special application hinges, continuous hinges, pivots, floor spring accessories etc available on request
- thickness: 1 mm (type 15) & 2 mm (type 36)

Concealed door closers

- precut kits for all concealed door closers models
- size 1 ~ 3, size 2 ~ 4, size 2 ~ 5 & size 3 ~ 6
- supplied as 2 or 3 part wrap around kit around door closer body as well as top channel with full self adhesive tape back
- special kits for electromagnetic hold open closers with longer track arms available on request
- thickness: 1 mm (type 15) & 2 mm (type 36)

Door viewers

- bespoke kits for all common door viewers
- precut and scored kits supplied to wrap around the barrel with full self adhesive tape back
- thickness: 1 mm (type 15) & 2 mm (type 36)

	Interdens® Type 5	Interdens® Type 15	Interdens® Type 36
Chemical basis	phosphate	phosphate	phosphate
Matrix	thermoset, glass-fibre reinforced	thermoset, glass-fibre reinforced	thermoset, glass-fibre reinforced
Consistency	semi-rigid	semi-rigid	semi-rigid
Thickness	0.6 mm	1.0 mm	2.0 mm
Colour	white	white	white
Service conditions	for interior use	for interior use	for interior use
Activation temperature	approx. 150 °C (phase 1) approx. 300 °C (phase 2)	approx. 150 °C (phase 1) approx. 300 °C (phase 2)	approx. 150 °C (phase 1) approx. 300 °C (phase 2)
Intumescence factor (400°C)	up to 50	up to 50	up to 75
Expanding pressure (300 °C)	pressureless	pressureless	pressureless

Dimensions (standard)			
Sheets/ sheetings	2.000 x 1.000 mm	2.000 x 1.000 mm	2.000 x 1.000 mm
Strips	Widths of 10, 15, 20, 25, 30 mm	Widths of 10, 15, 20, 25, 30 mm	Widths of 10, 15, 20, 25, 30 mm
Precut shapes	Hinges	Hinges, locks, door closers and all other mortised door hardware	Hinges, locks, door closers and all other mortised door hardware

athmer oHG / Sophienhammer / 59757 Arnsberg / Germany
T +49 2932 477-500 / info@athmer.com / **athmer.com**

Interdens® by athmer

Intumescent hardware protection kits

Interdens® is a multi-purpose intumescent material made from mono ammonium phosphate that enhances the thermal insulation and fire resistance of timber and timber-based materials. When exposed to fire Interdens® provides a pressureless expansion, growing to a multiple of its original volume and forming a highly heat-insulating foam layer. Joints, cavities and other openings are sealed, preventing or delaying the spread of flames and fumes effectively. Timber nearby to the heat-insulating foam layer will effectively be protected from the impact of fire and heat.

In relation to fire rated doors and door hardware, Interdens® can be used to protect weaknesses created during the door processing phase. Removal of core fire door material and the introduction of door hardware with a higher thermal conductivity are both factors that can lead to early fire door failure. Having been included in hundreds of fire door tests globally, Interdens® is proven to provide fire resistance performances up to 120 minutes when tested in accordance with BS 476-22 & EN 1634-1.

athmer can provide Interdens® in sheet form or as an added service, precut to suit specific ironmongery. Our in-house team can work with you to create precut shapes that align with your fire test evidence and ironmongery requirements. athmer supplies Interdens® in white and with a self-adhesive backing as standard.

Applications:
Interdens® can be used in a variety of fire door applications to protect hardware. Bespoke pre-cut kits can be used to protect butt hinges, concealed hinges, mortice locks, concealed door closers, automatic drop seals, flush bolts, door viewers, etc.
These protection kits can provide fire resistance of 30, 60, 90 or 120 minutes when tested with full size door assemblies and tested in accordance with BS 476-Part 20 & 22 and BS EN 1634-1.

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Drop Seals

/ precut kits to suit all common auto drop seal sizes

/ std. sizes (mm): 14 x 35, 15 x 30, 20 x 30

  – other sizes available on request

/ Supplied as 1 part wrap around kit around mortise drop down seal with full self adhesive tape back.

/ thickness: 1 mm (type 15) & 2 mm (type 36)

Flush bolts

/ precut kits to suit all common flush bolts

/ std sizes (mm): to suit 200 x 19, 200 x 25, 300 x 25

  – other sizes available on request

/ special kits available for manual rod extension flush bolts as well as automatic flush bolts.

/ supplied as full wrap around kit to suit flush bolt/ door cutout with full self adhesive tape back

/ thickness: 1 mm (type 15) & 2 mm (type 36)

Locks - single & multi-point

/ precut kits to suit all types of lock bodie

/ DIN55/72, DIN60/72, DIN80/72 etc.

/ bespoke kits can be supplied for electrified locks, hotel guest room card locks, multipoint locks, budget locks etc.

/ supplied as full wrap around kit around lock body as well as under strike plate with full self adhesive tape back

/ thickness: 1 mm (Type 15) & 2 mm (Type 36)

Hinges - standard, concealed & continous

Precut kits for

- butt hinges (radius and square edges)
  - sizes (mm): 102 x 76, 102 x 89, 102 x 102, 114 x 102, 114 x 114
- concealed Hinges: Simonswerk/Tectus TE-340, TE-527,TE540 & TE-0640
- bespoke kits to suit special application hinges, continuous hinges, pivots, floor spring accessories etc available on request
- thickness: 1 mm (type 15) & 2 mm (type 36)

Concealed door closers

- precut kits for all concealed door closers models
- size 1 ~ 3, size 2 ~ 4, size 2 ~ 5 & size 3 ~ 6
- supplied as 2 or 3 part wrap around kit around door closer body as well as top channel with full self adhesive tape back
- special kits for electromagnetic hold open closers with longer track arms available on request
- thickness: 1 mm (type 15) & 2 mm (type 36)

Door viewers

- bespoke kits for all common door viewers
- precut and scored kits supplied to wrap around the barrel with full self adhesive tape back
- thickness: 1 mm (type 15) & 2 mm (type 36)

	Interdens® Type 5	Interdens® Type 15	Interdens® Type 36
Chemical basis	phosphate	phosphate	phosphate
Matrix	thermoset, glass-fibre reinforced	thermoset, glass-fibre reinforced	thermoset, glass-fibre reinforced
Consistency	semi-rigid	semi-rigid	semi-rigid
Thickness	0.6 mm	1.0 mm	2.0 mm
Colour	white	white	white
Service conditions	for interior use	for interior use	for interior use
Activation temperature	approx. 150 °C (phase 1) approx. 300 °C (phase 2)	approx. 150 °C (phase 1) approx. 300 °C (phase 2)	approx. 150 °C (phase 1) approx. 300 °C (phase 2)
Intumescence factor (400°C)	up to 50	up to 50	up to 75
Expanding pressure (300 °C)	pressureless	pressureless	pressureless

Dimensions (standard)			
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11 WITNESSES THE TEST

Test sponsor and/or other representative(s) witnessing the test.	Mr. Nitin Kumar– representative of the Test Sponsor Mr. Sarath P.S – representative of the Test Sponsor

12 SIGNATORIES

Prepared by	***Reviewed by***	***Authorized by***
Ginalyn Mauricio *Testing Engineer*	Dr. Sebastian Ukleja *Testing Manager*	Dr. Sebastian Ukleja *Testing Manager*
 Signature		Signature

--END OF REPORT--