

Test report

DMT-DO-50-992

Document no.	DMT-DO-50-992
case worker	Kanjahn
Order no.	8119422517
Customer	Elton B.V. 2e Energieweg 5 9301 LL Roden Netherlands
Content of order	Test of three single-leaved wooden composite doors in steel corner frame with a thickness of 64 mm, with automatic floor seals of Elton B.V., embedded to a standard supporting construction with low density rigid with a thickness of 175 mm, for fire resistance
Test method	EN 1634-1:2014+A1:2018 in conjunction with EN 1363-1:2020 Further standards according to section 3.1
Fire exposed side	Door 1: opening face / opening into the furnace Door 2, 3: closing face / opening away from the furnace

Test results	Integrity E	Thermal insulation EI ₁	Thermal insulation EI ₂	Radiation EW
door 1	65 min.	45 min.	65 min.	65 min.
door 2	91 min.	22 min.	61 min.	91 min.
door 3	92 Min.	34 Min.	74 Min.	92 Min.

Date of order	Test specimen receipt	Date of test	Date of report	Period of validity
07.01.2021	11.01.2021	26.01.2021	29.09.2021	unlimited

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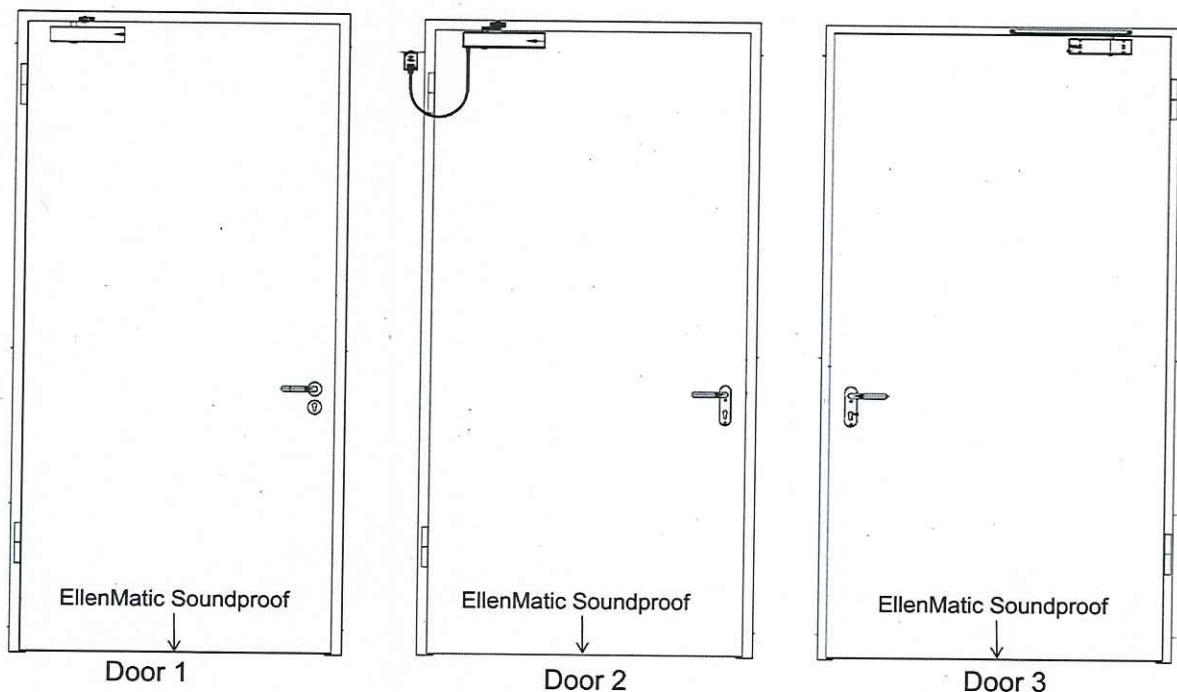
1 Size of order and cooperation of the test lab in choosing the test specimen

DMT GmbH & Co. KG was assigned by dormakaba Deutschland GmbH, Elton B.V. and EBB Entwicklungsbüro für Bauelemente und Brandschutzdienstleistungen to carry out a fire test of a fire resisting doorset with different hardware components according to EN 1634-1. In addition to the verification of the door, this test should provide verification of the suitability of the automatic drop seal "EllenMatic Soundproof" of the manufacturer Elton B.V. for the use in fire protection doors with regard to the performance criteria according to EN 1634-1 in conjunction with EN 1363-1 (integrity and thermal insulation)

The design and construction of the fire resisting doorsets was defined by dormakaba Deutschland GmbH (other fittings), Elton B.V. (automatic drop seals) and the EBB Entwicklungsbüro für Bauelemente und Brandschutzdienstleistungen (door). DMT GmbH & Co. KG was not involved in the planning of the test specimen to be tested.

2 Description of the test specimen

2.1 Door overview



2.2 Test specimen description

(all dimensions stated in mm)

Door leaf	
Type:	Hinged and pivoted door, single-leaved, made of wood-based materials
Manufacturer:	EBB Entwicklungsbüro für Bauelemente und Brandschutzdienstleistungen
Material:	Wood and wood-based materials and non-combustible materials
Type:	Full door leaf
Thickness:	Approx. 64
Rebate:	Single rebated
Leaf dimensions (W x H):	1235 x 2485
Door leaf weight:	Each approx. 119 kg
Door frame	
Type:	Steel corner frame
Manufacturer:	BOS GmbH Best of Steel
Threshold:	Without
Surface treatment:	Primed, door 1 to 3
Frame outside dimension (B x H):	Door 1 and door 2: 1316 x 2533 Tür 3: 1296 x 2523
Frame rebate dimension (W x H):	Door 1, 2 and 3: 1216 x 2483
Clear opening (B x H):	Door 1, 2 and 3: 1186 x 2468
Frame infill material:	Mortared, door 1-3
Mounting:	Door 1 Corner frame nail anchor, hinge side 5 pieces, lock side 3 pieces Door 2 Corner frame nail anchor, hinge side 5 pieces, lock side 3 pieces Door 3 Dowel mounting without anchor, hinge side 5 pieces, lock side 3 pieces
Dog bolts:	Without
Intumescent seals:	In the door leaf, between Perimeter door framing and frame
Automatic drop seal door 1 - 3	See annex 1.5
Fabrication:	EllenMatic Soundproof
Manufacturer:	Elton B.V.
Dimensions:	14,7 x 30, total height with fastening angle 48

Fastening:	Via angle and screws provided by the manufacturer
Mounting position:	12 from closing edge, within groove 15 x 30

Further details on the design and construction of the tested building hardware can be found in annexes 1.1 to 1.5 of this test report.

2.3 Supporting construction and conditioning

The door constructions were lateral embedded to a standard supporting construction according to EN 1363-1 paragraph 7.2.2.2 as a massive supporting construction with low density rigid with a thickness of 175 mm. The supporting construction consisted of blocks of aerated concrete, strength class 4, density class 0.55, size (L x W x H) 62.4 cm x 17.5 cm x 24.9 cm. To the top the connection was made to a reinforced concrete lintel. For bricklaying thin bed mortar acc. to EN 998-2 was used.

The supporting construction with a thickness of 175 mm was mounted to a test frame.

The clear opening of the furnace chamber was (W x H): 6400 mm x 5300 mm.

The supporting construction was made on 06.01.2021. The test specimens were installed on 11. bis 13.01.2021.

A full conditioning of the supporting construction and the verification according to paragraph 8.2 EN 1363-1 is made.

Annotation:

In this supporting construction three test specimens of nearly the same type were embedded. Between the three test specimens a stripe of the supporting construction with a width of approx. 750 mm was arranged. There was no interaction within the meaning of EN 1634-1.

2.4 Verification and Sampling

The selection of the test specimen was done by the sponsor.

The test specimen was manufactured as prototype in single part production, so there was no sampling out of production.

In EN 1634-1, paragraph 6.6 "Verification and sampling", the following is stated:

When the method of construction precludes a detailed survey of the test specimen, without having to permanently damage it or if it is considered that it will subsequently be impossible to evaluate construction details from a post test examination, then one of two options shall be exercised by the laboratory, either:

- a) the laboratory shall request or oversee the manufacture of the doorset or openable window which is to be the subject of the test; or
- b) the sponsor shall, at the discretion of the test laboratory, be requested to supply an additional test specimen or that part of the test specimen which cannot be verified (e.g. door leaf) to the number required for testing; the laboratory shall then choose freely which of these shall be submitted to the test and which shall be used to verify the construction.

The construction to be tested was a construction which admits a detailed inspection during the installation of the test specimen and after the fire test. For this reason none of the two options was performed.

The sponsor provided DMT GmbH & Co. KG prior to the test a detailed description and construction drawings on which base a detailed inspection of the test specimen was performed prior to and after the test and the correctness of the provided information could be confirmed.

Further information of official sampling of the test specimen used at the fire test as also of other parts of the test specimen are not presented to DMT GmbH & Co. KG resp. are unknown.

DMT GmbH & Co. KG was not involved in the selection of samplings out of production.

3 Test requirements and preparation

3.1 Test standards

EN 1363-1:2020 "Fire resistance tests - Part 1: General Requirements"

EN 1363-2:1999 "Fire resistance tests - Part 2: Alternative and additional procedures"

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"

EN 13501-2:2016 "Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services"

EN 16034:2014 "Pedestrian doorsets, industrial, commercial, garage doors and openable windows – Product standard, performance characteristics – Fire resistance and/or smoke control characteristics"

EN 15269-3:2012 "Extended application of test results for fire resistance and/or smoke control for door, shutters and openable window assemblies, including their elements of building hardware - Part 3: Fire resistance of hinged and pivoted timber doorsets and openable timber framed windows"

Please note: The above stated standards conform to the german standards DIN EN.

3.2 Selection of the exposed side to the fire

The door construction was tested from the opening face / opening into the furnace (door 1) and from the closing side / non-hinge side (door 2 and door 3).

The test is part of a test series, the selection of the fire exposed side results out of context of the test series.

The selection of the fire exposed side was made on customer's request.

3.3 Used test equipment

The test equipment was used according to the list of testing instruments used at DMT Test Body for Fire Protection Lathen.

3.4 Shakedown conditioning

(according to EN 16034:2014, Annex A, paragraph A.2.3)

A test of the mechanical conditioning by filling material losing height was not performed, as the insulating material or heat-absorbing materials used were not of any friable or crumbly materials.

3.5 Operability test

(according to EN 16034:2014, Annex A, paragraph A.2.2)

Prior to being mounted on the test furnace, the three samples to be fire tested were checked for operability in the fire restraint frame by operating each leaf from the fully closed position to an opening of minimum 90° and back to fully closed for 25 cycles. The opening process was done manually, the closing process by the closing device. The functionality was ensured.

3.6 Self-closing for doorsets or openable windows fitted without door coordinating devices

(according to EN 16034:2014, Annex A, paragraph A.4.1)

Following the test according to 3.5 each door leaf was opened to $(10 \pm 2)^\circ$; this state was maintained for (20 ± 2) s and released without push. It was ensured that the leaves of both test specimens returned to the closed position.

3.7 Retention force measurement

(according to EN 1634-1:2014+A1:2018, paragraph 10.1.3)

The measurement of the forces of opening and closing, measured at a distance of 100 mm from the closed position, resulted in a value of approx. 68 N for door 1, a value of approx. 74 N for door 2 and a value of approx. 74 N for door 3, each with a distance of 1080 mm from the centre of the hinges.

3.8 Gap measurement

(according to EN 1634-1:2014+A1:2018, paragraph 10.1.2)

The primary gap width of the functional joints measured prior to the test is deposited at DMT GmbH & Co. KG, as in this test report only the building hardware of Elton B.V. is described.

3.9 Final settings

(according to EN 1634-1:2014+A1:2018, paragraph 10.1.4)

Prior to the test for fire resistance the three doors were submitted to a final closing procedure where the leaves were opened for approx. 300 mm and then closed again by the closing device.

Door 1: The door leaf was latched and locked via the catch of the self-locking lock. The keys were removed.

Door 2 and door 3: The door leaves were each latched but not locked. The keys were removed.

3.10 Setup of furnace thermocouples

The furnace was exposed to flames according to the heating curve according to EN 1363-1:2020, paragraph 5.1.1. Twenty-four plate thermometers according to EN 1363-1:2020, paragraph 4.5.1.1, were used to measure the temperature in the furnace. Those 24 furnace thermocouples, used to control the temperature in the furnace, were spread equally, so every single element covered a maximum area of 1.5 m².

3.11 Setup of measuring points for furnace pressure

The tubular measuring points to control the pressure in the furnace according to EN 1363-1:2020, paragraph 4.5.2, are arranged in a way to measure the pressure in the furnace with one element at a height of 970 mm from floor level and one element at 5520 mm. The pressure distribution over the height of the furnace was adjusted and observed according to EN 1363-1:2020, paragraph 5.2, so a pressure of 0 Pa. appears at a height of 500 mm (measured from the notional floor level of the test specimen).

3.12 Thermocouples on the unexposed side of the test specimen

The temperatures on the unexposed side of the test specimens were measured by a total number of 31 thermocouples for each door according to EN 1363-1, paragraph 4.5.1.2.

The measuring points for measuring the temperature increases - in relation to the initial temperature of the unexposed side of the test specimen - are shown in annexes 2.1 and 2.3.

3.13 Setup of measuring points for deflection

The locations of the measuring points for measuring the deflection of the test specimen are deposited at DMT GmbH & Co. KG, as in this test report only the building hardware of Elton B.V. is described.

3.14 Requirements and deviations

The requirements correspond to the standard requirements. There were no deviations to the test methods resp. test conditions.

4 Test execution and results

The test specimens were put to a fire test performed under the conditions as specified in EN 1363-1:2020 and EN 1634-1:2014+A1:2018 on 26.01.2021.

The fire testing side of door 1 was the opening face / opening into the furnace, the fire exposed side of door 2 and 3 was the closing face / opening away from the furnace.

4.1 Measurement of temperature rise

The temperature increases above the initial temperature determined during the fire test on the side of the test specimen facing away from the fire are deposited at DMT GmbH & Co. KG. The temperatures inside the furnace, the deviations of the fire chamber temperatures from the set curve and the ambient temperature are shown in charts in annexes 2.4 to 2.6.

4.2 Deflection of the test specimen during fire exposure

The results of the deflection measurements are deposited at DMT GmbH & Co. KG, as in this test report only the building hardware of Elton B.V. is described.

4.3 Observations during the fire test

The whole observations during the fire test are deposited at DMT GmbH & Co. KG, as in this test report only the building hardware of Elton B.V. is described.

Table 1: For hardware fittings relevant observations

Test duration	Door 1: Opening side / Hinge side on the fire side
	Door 2 and door 3: Closing side / Non-hinge side on the fire side
60 : 00	The integrity is all right
65 : 22	Door 1: A cotton pad is held between the frame and the lintel. This glows after 30 seconds → loss of integrity
90 : 00	The integrity of door 2 and door 3 is in order
91 : 10	Door 2: Flames emerge from the hinge side with a duration 10 seconds. → Loss of integrity
92 : 03	End of test

5 Summary of test results and comparison to the requirements of EN 1634-1:2014+A1:2018

The following tables 2, 3 and 4 lists the key results of the door design and compares them with the requirements of EN 1634-1 for the requested categories EI₁ 60 and EI₂ 60 of EN 13501-2:2016.

Table 2: requirements according to EN 1634-1:2014+A1:2018 for fire resisting door assemblies; summary of key results and comparison with the requested categories EI₁ 60 and EI₂ 60 according to EN 13501-2:2016 door 1

Referring to a standard	Performance criteria	Test results (fire exposed side = opening face / opening into the furnace)			Comparison
Indications according to		Description	Results		of test results with the requirements for classes EI ₁ 60 and EI ₂ 60 according to EN 13501-2:2016 see paragraph 6
EN 1634-1 paragraph 11.1	Ensuring of integrity, e.g. avoidance of:	Ignition or smouldering of the cotton pad	Smouldering of the cotton pad after 65 minutes		fulfilled
		Penetration of 6 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Penetration of 25 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Sustained flaming > 10 s at the unexposed side	Flames > 10 s at the unexposed side occurred after 73 minutes		
EN 1634-1 paragraph 11.2.3 and 11.2.4 and also 11.2.5	Observance of allowed temperature rise at the fire unexposed side above the initial temperature		classification time (60 min.)	End of test (74 min.**))	
	Maximum allowed average value = 140 K	ΔT - mean in K:	66	54	fulfilled
	Maximum allowed single value = 180 K	ΔT - Max in K.:	75	93	EI ₂ fulfilled
		at measuring point no.:	8	7	
	supplementary procedure Maximum allowed single value = 180 K	ΔT - Max in K:	315	290	EI ₁ not fulfilled
		at measuring point no.:	12	11	
	Temperatures of peripheral components (frame) max. allowed value = 360 K (EI ₂) max. allowed value = 180 K (EI ₁)	Max. temperature increase of peripheral components	311	386	EI ₁ not fulfilled EI ₂ fulfilled
		at measuring point no.:	18	18	
EN 1634-1 paragraph 11.3	Observance of the surface temperature of > 300°C at the unexposed side	Radiation in kW/m²	-*)		fulfilled
EN 1363-1 paragraph 11.4.2	Insulation versus integrity	Integrity	74 min.		fulfilled
EN 1363-1 paragraph 5.6	Ambient temperature max. temperature increase +20 K max. temperature decrease -10 K	ΔT - Max in K:	1		fulfilled
		ΔT - Min in K:	0		
EN 1363-1 paragraph 9.2	Pressure inside furnace during fire exposure	Pressure in furnace at neutral pressure level	see Annex 2.7		
		Pressure furnace at the top edge of test specimen (max.)			

*) Radiation was not determined as temperatures were expected to be below 300° C.

**) The test specimen was covered in the 75th minute due to the continued flames.

Table 3: requirements according to EN 1634-1:2014+A1:2018 for fire resisting door assemblies; summary of key results and comparison with the requested categories EI₁ 60 and EI₂ 60 according to EN 13501-2:2016 door 2

Referring to a standard	Performance criteria	Test results (fire exposed side = closing face / opening away from the furnace)			Comparison
Indications according to		Description	Results		of test results with the requirements for classes EI ₁ 60 and EI ₂ 60 according to EN 13501-2:2016 see paragraph 6
EN 1634-1 paragraph 11.1	Ensuring of integrity, e.g. avoidance of:	Ignition or smouldering of the cotton pad	no igniting or smouldering of the cotton pad		fulfilled
		Penetration of 6 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Penetration of 25 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Sustained flaming > 10 s at the unexposed side	Flames > 10 s at the unexposed side occurred after 91 minutes		
EN 1634-1 paragraph 11.2.3 and 11.2.4 and also 11.2.5	Observance of allowed temperature rise at the fire unexposed side above the initial temperature		classification time (60 min.)	End of test (92 min.)	
	Maximum allowed average value = 140 K	ΔT - mean in K:	64	20	fulfilled
	Maximum allowed single value = 180 K	ΔT - Max in K.:	67	75	EI ₂ fulfilled
		at measuring point no.:	63	44	
	supplementary procedure Maximum allowed single value = 180 K	ΔT - Max in K:	81	141	EI ₁ fulfilled
		at measuring point no.:	52	54	
	Temperatures of peripheral components (frame) max. allowed value = 360 K (EI ₂) max. allowed value = 180 K (EI ₁)	Max. temperature increase of peripheral components	354	491	EI ₁ not fulfilled EI ₂ fulfilled
		at measuring point no.:	57	59	
EN 1634-1 paragraph 11.3	Observance of the surface temperature of > 300°C at the unexposed side	Radiation in kW/m²	-*)		fulfilled
EN 1363-1 paragraph 11.4.2	Insulation versus integrity	Integrity	91 min.		fulfilled
EN 1363-1 paragraph 5.6	Ambient temperature max. temperature increase +20 K max. temperature decrease -10 K	ΔT - Max in K:	1		fulfilled
		ΔT - Min in K:	0		
EN 1363-1 paragraph 9.2	Pressure inside furnace during fire exposure	Pressure in furnace at neutral pressure level	see Annex 2.7		
		Pressure furnace at the top edge of test specimen (max.)			

*) Radiation was not determined as temperatures were expected to be below 300° C.

Table 4: requirements according to EN 1634-1:2014+A1:2018 for fire resisting door assemblies; summary of key results and comparison with the requested categories EI₁ 60 and EI₂ 60 according to EN 13501-2:2016 Tür 3

Referring to a standard	Performance criteria	Test results (fire exposed side = closing face / opening away from the furnace)			Comparison
Indications according to		Description	Results		of test results with the requirements for classes EI ₁ 60 and EI ₂ 60 according to EN 13501-2:2016 see paragraph 6
EN 1634-1 paragraph 11.1	Ensuring of integrity, e.g. avoidance of:	Ignition or smouldering of the cotton pad	no igniting or smouldering of the cotton pad		fulfilled
		Penetration of 6 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Penetration of 25 mm Gap gauge	Gap gauge could not penetrate the test specimen		
		Sustained flaming > 10 s at the unexposed side	Flames > 10 seconds at the unexposed side did not occur		
EN 1634-1 paragraph 11.2.3 and 11.2.4 and also 11.2.5	Observance of allowed temperature rise at the fire unexposed side above the initial temperature		classification time (60 min.)	End of test (92 min.)	
	Maximum allowed average value = 140 K	ΔT - mean in K:	63	79	fulfilled
	Maximum allowed single value = 180 K	ΔT - Max in K.:	65	82	EI ₂ fulfilled
		at measuring point no.:	144	121	
	supplementary procedure Maximum allowed single value = 180 K	ΔT - Max in K:	74	146	EI ₁ fulfilled
		at measuring point no.:	135	134	
	Temperatures of peripheral components (frame) max. allowed value = 360 K (EI ₂) max. allowed value = 180 K (EI ₁)	Max. temperature increase of peripheral components	326	404	EI ₁ not fulfilled EI ₂ fulfilled
		at measuring point no.:	139	138	
EN 1634-1 paragraph 11.3	Observance of the surface temperature of > 300°C at the unexposed side	Radiation in kW/m ²	-*)		fulfilled
EN 1363-1 paragraph 11.4.2	Insulation versus integrity	Integrity	92 min.		fulfilled
EN 1363-1 paragraph 5.6	Ambient temperature max. temperature increase +20 K max. temperature decrease -10 K	ΔT - Max in K:	1		fulfilled
		ΔT - Min in K:	0		
EN 1363-1 paragraph 9.2	Pressure inside furnace during fire exposure	Pressure in furnace at neutral pressure level	see Annex 2.7		
		Pressure furnace at the top edge of test specimen (max.)			

*) Radiation was not determined as temperatures were expected to be below 300° C.

6 Conclusions and recommendations

The test specimens mounted to standard supporting construction with low density rigid with a thickness of 175 mm, as described in annexes 1.1 to 1.5 and section 2, reached the following test results:

Table 5: Summary of test results of test specimen 1 with fire exposure of from the opening face / opening into the furnace according to EN 1634-1:2014+A1:2018

Integrity (E):	
Cotton pad	65 minutes
Gap gauge 6 mm	75 minutes was not used until the end of test
Gap gauge 25 mm	75 minutes was not used until the end of test
Permanent flames > 10 s	73 minutes
Thermal insulation (I):	
Average temperature	75 minutes
Maximum temperature (supplementary procedure) I ₁	45 minutes
Maximum temperature I ₂	75 minutes
Radiation (W):	75 minutes
Duration of the test:	92 minutes *)

*) The test specimen was covered in the 75th minute.

Table 6: Summary of test results of test specimen 2 with fire exposure of from the closing face / opening away from the furnace according to EN 1634-1: 2014+A1:2018

Integrity (E):	
Cotton pad	92 minutes no igniting or smouldering of the cotton pad
Gap gauge 6 mm	92 minutes was not used until the end of test
Gap gauge 25 mm	92 minutes was not used until the end of test
Permanent flames > 10 s	91 minutes
Thermal insulation (I):	
Average temperature	91 minutes
Maximum temperature (supplementary procedure) I ₁	22 minutes
Maximum temperature I ₂	61 minutes
Radiation (W):	92 minutes
Duration of the test:	92 minutes

Table 7: Summary of test results of test specimen 3 with fire exposure of from the closing face / opening away from the furnace according to EN 1634-1: 2014+A1:2018

Integrity (E):	
Cotton pad	92 minutes no igniting or smouldering of the cotton pad
Gap gauge 6 mm	92 minutes was not used until the end of test
Gap gauge 25 mm	92 minutes was not used until the end of test
Permanent flames > 10 s	92 minutes no permanent flames until the end of test
Thermal insulation (I):	
Average temperature	92 minutes
Maximum temperature (supplementary procedure) I ₁	34 minutes
Maximum temperature I ₂	74 minutes
Radiation (W):	92 minutes
Duration of the test:	92 minutes

The test specimens met the following performance criteria:

Table 8: Summary of performance criteria of test specimen 1 with fire exposure of from the opening face / opening into the furnace according to EN 1634-1:2014+A1:2018

E - Integrity (permanent flames, cotton pad, gap gauge)	65 minutes
El ₁ – Thermal insulation (supplementary procedure)	45 minutes
El ₂ – Thermal insulation	65 minutes
EW – Radiation	65 minutes

Table 9: Summary of performance criteria of test specimen 2 with fire exposure of from the closing face / opening away from the furnace according to EN 1634-1:2014+A1:2018

E - Integrity (permanent flames, cotton pad, gap gauge)	91 minutes
El ₁ – Thermal insulation (supplementary procedure)	22 minutes
El ₂ – Thermal insulation	61 minutes
EW – Radiation	91 minutes

Table 10: Summary of performance criteria of test specimen 2 with fire exposure of from the closing face / opening away from the furnace according to EN 1634-1:2014+A1:2018

E - Integrity (permanent flames, cotton pad, gap gauge)	92 Minuten
El ₁ – Thermal insulation (supplementary procedure)	34 Minuten
El ₂ – Thermal insulation	74 Minuten
EW – Radiation	92 Minuten

The door constructions were tested for 92 minutes. An integrity of 65 minutes (door 1), 91 minutes (door 2) and 92 minutes (door 3) was achieved. Furthermore, an insulation I₂ of 65 minutes (door 1), 61 minutes (door 2) and 74 minutes (door 3) was achieved. Up to the end of the test, there were no flames, temperatures excesses or other impairments that could be attributed to the tested automatic drop seals. In summary, it can be stated that the tested automatic floor seals of Elton B.V. did not have a significant negative effect on the behaviour of the fire protection closure with regard to the above-mentioned performance criteria of integrity, thermal insulation and radiation over a period of at least 60 minutes, so that the criteria with regard to automatic drop seals were fulfilled.

7 Field of direct application of test results according to EN 1634-1:2014+A1:2018 paragraph 13

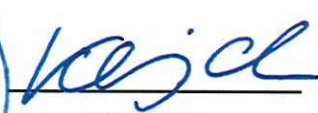
As this test report describes the results of the automatic drop seals of Elton B.V., the field of direct application according to EN 1634-1 is not applicable.

8 General statement

This test 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 1634-1, EN 1363-1, and - where appropriate - EN 1363-2. Any significant deviation with respect to size, construction details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

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

Lathen, 29.09.2021

		
Kruse		Kanjahn
(deputy head of test lab)		(case worker)

Annotations

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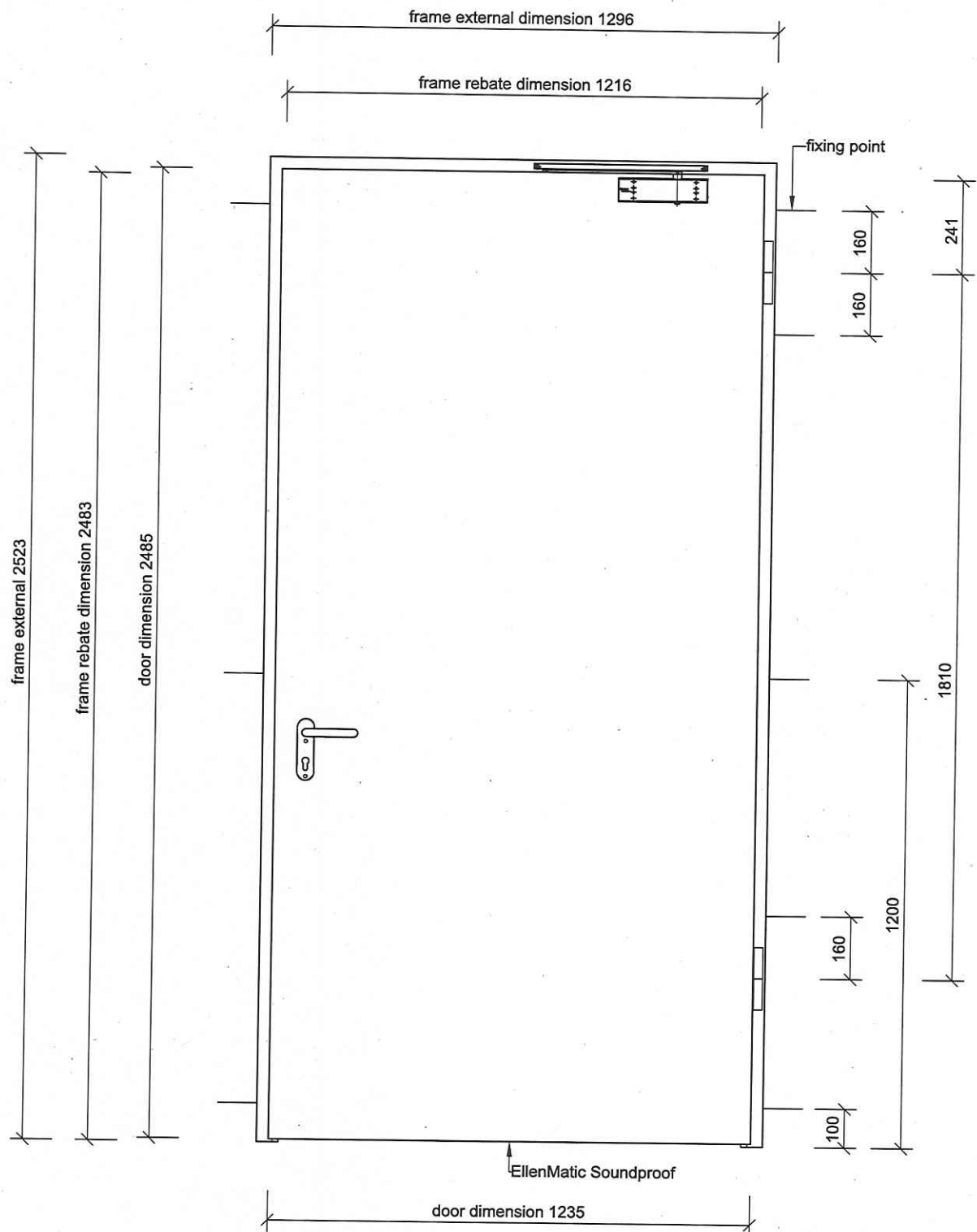
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The test material has been used up.



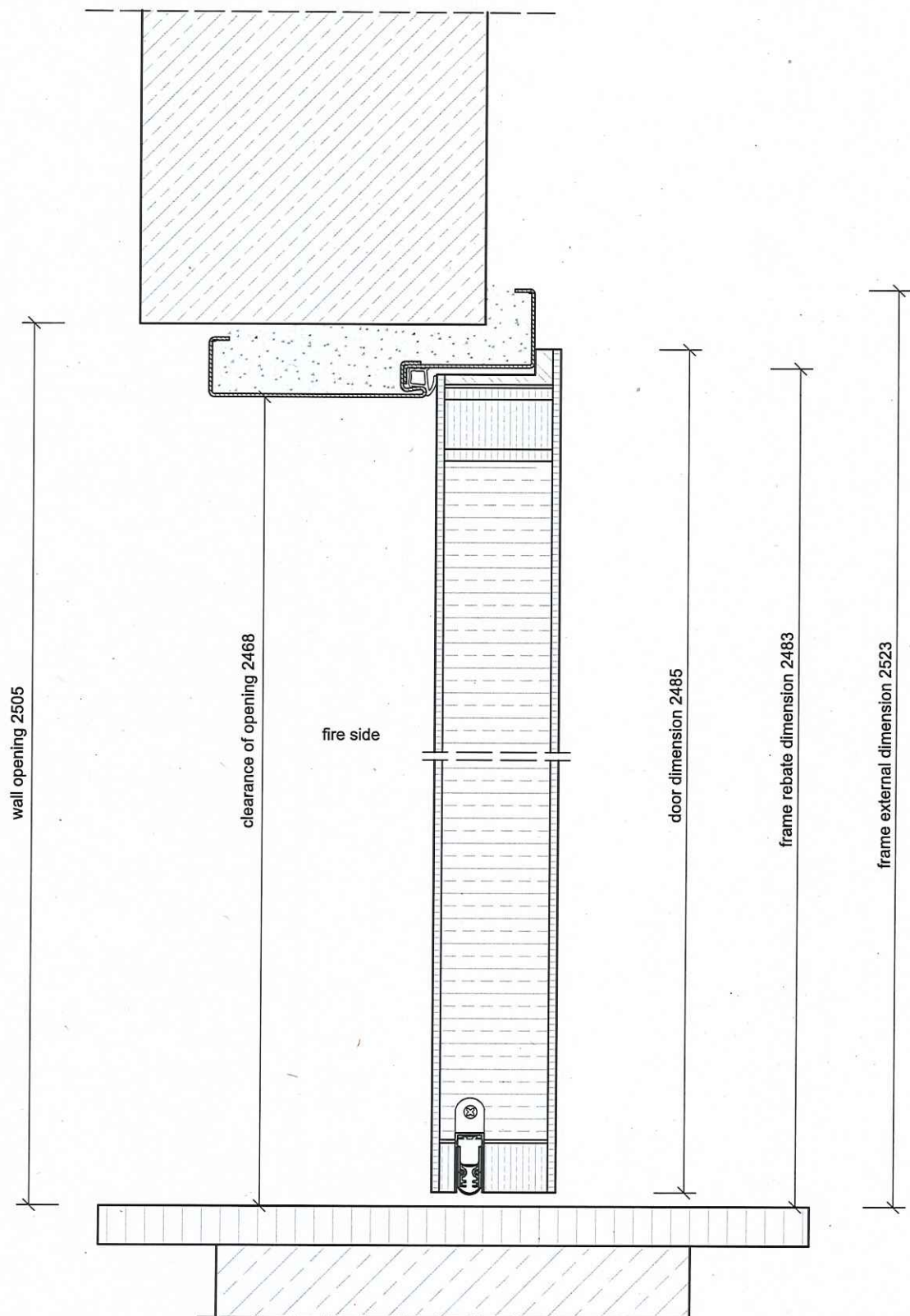
measurement in mm

View element

Appendix 1.1 of

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Laboratory for fire protection

test report no.
DMT-DO-50-992



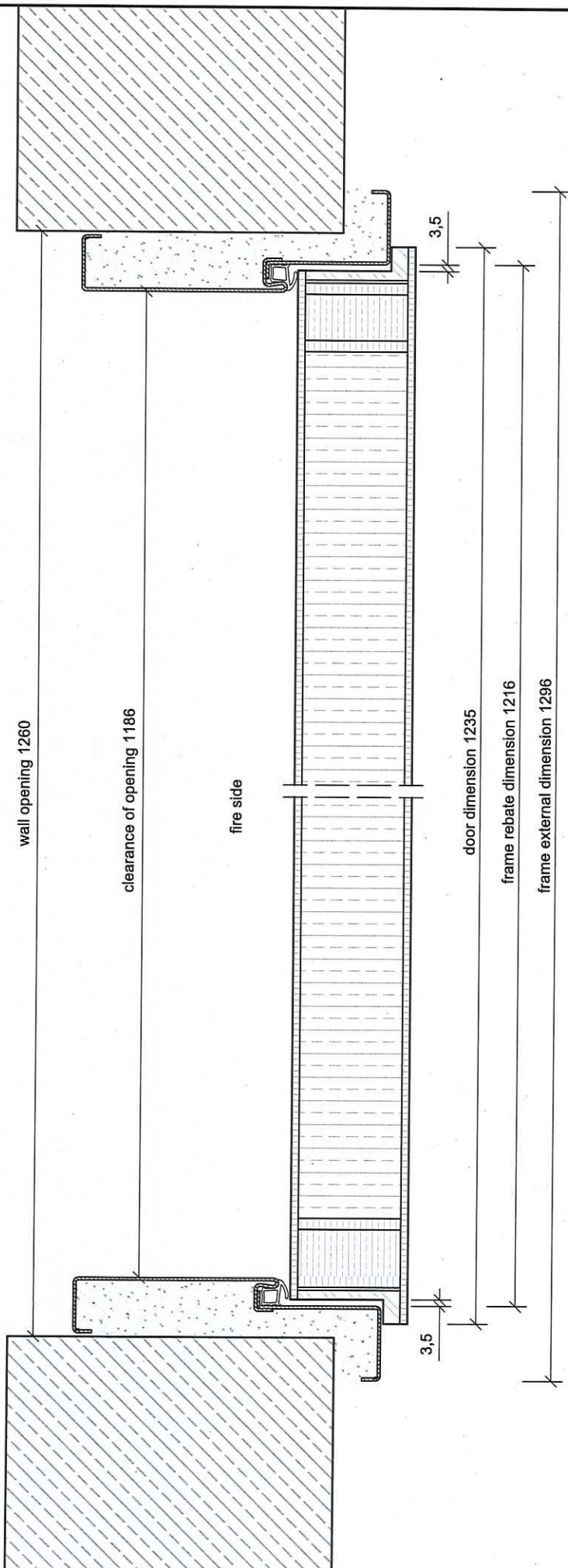
measurement in mm

Vertical section door element

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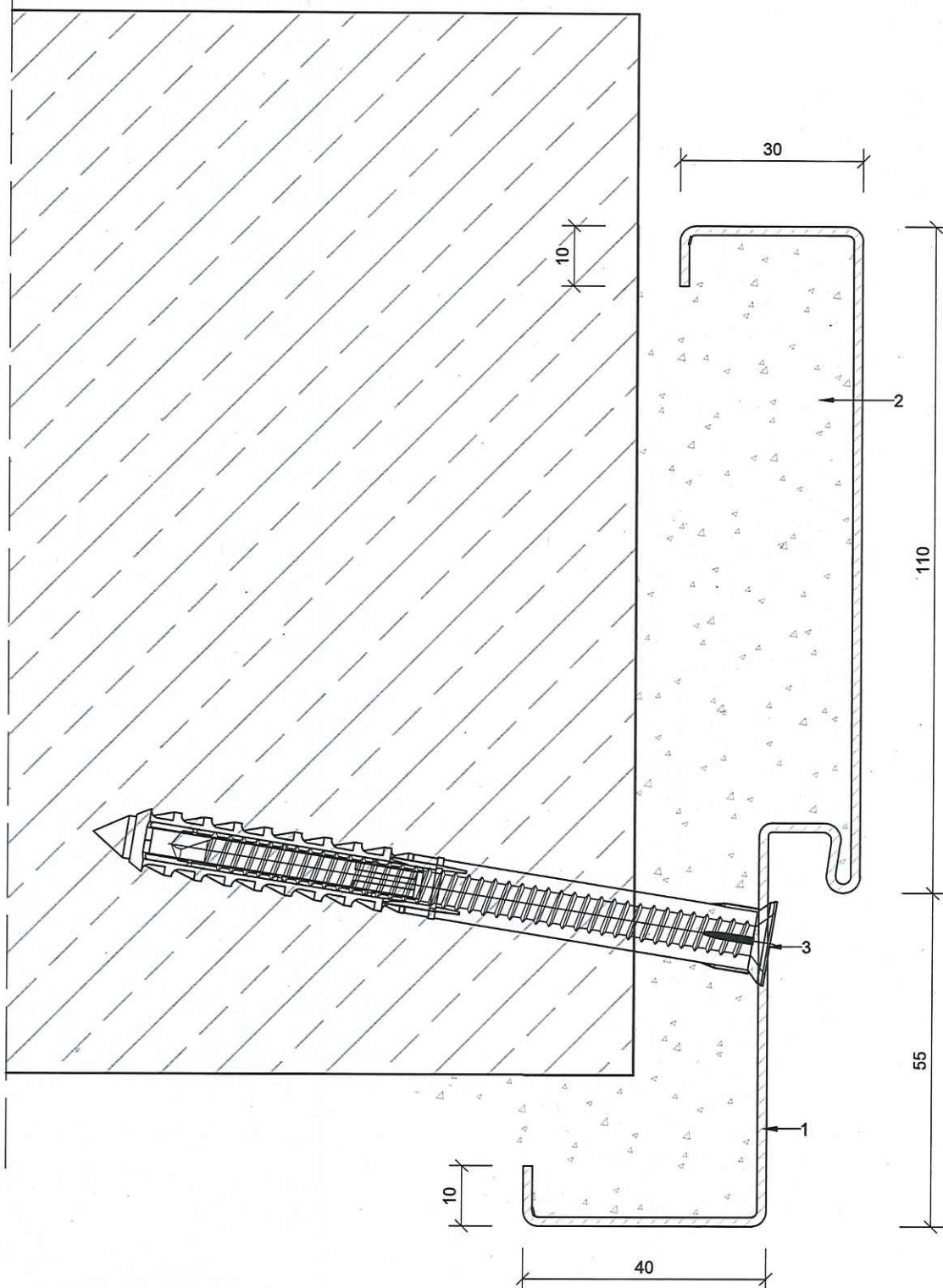
measurement in mm

Horizontal section door element

Appendix 1.3 of

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- 1 = steel frame, 1,5 thick
 2 = backfilling, mortar
 3 = dowels 10x120

measurement in mm

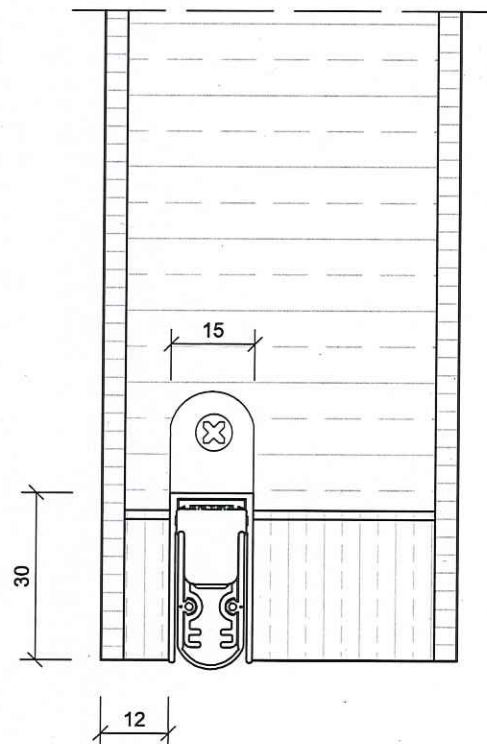
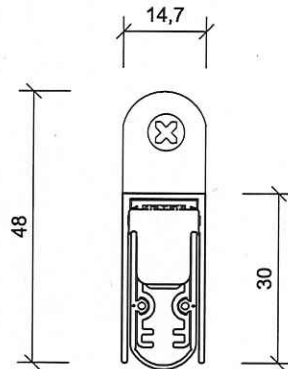
Detail wall mounting

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Dropseal EllenMatic Soundproof



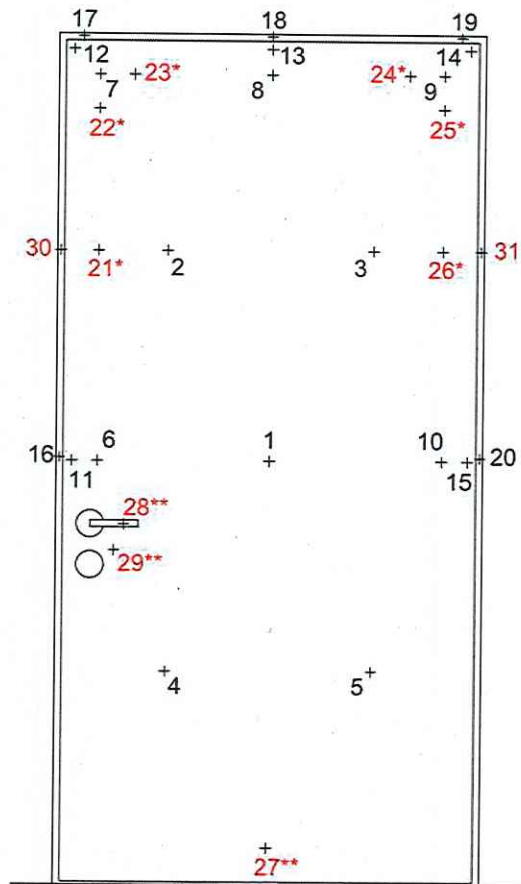
measurement in mm

Dropseal EllenMatic Soundproof

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Tür 1

Thermocouples no.	Title	Max. temp. Increase [K]	standard
1 - 5	Average value door 1	140	EN 1634-1
6 - 10	10 cm line door 1	El ₂ 180	EN 1634-1
11 - 15	2,5 cm line door 1	El ₁ 180	EN 1634-1
16 - 20	Frame middle door 1	-	informative
21 - 27	"DIN" 10 cm line, ref. to clear opening door 1	180	DIN 4102-5
28 - 29	"DIN" Handle and handles area door 1	180	DIN 4102-5
30 - 31	Frame middle door 1	-	informative

Please note:

All DIN measuring points signed with * are also in the storage of EN 1634-1 and will be considered for determination of performance characteristics.

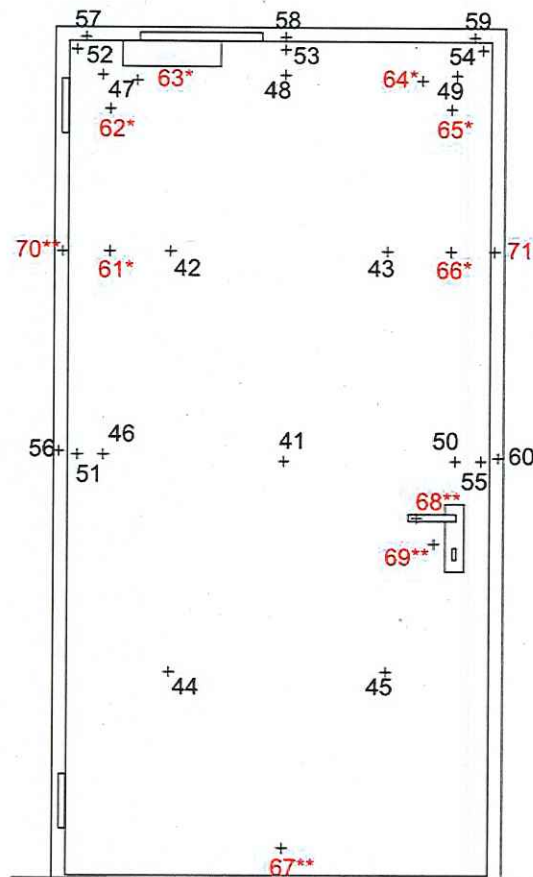
All DIN measuring points signed with ** are not in the storage of EN 1634-1 and will be not considered for determination of performance characteristics.

Location of thermo couples

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Tür 2

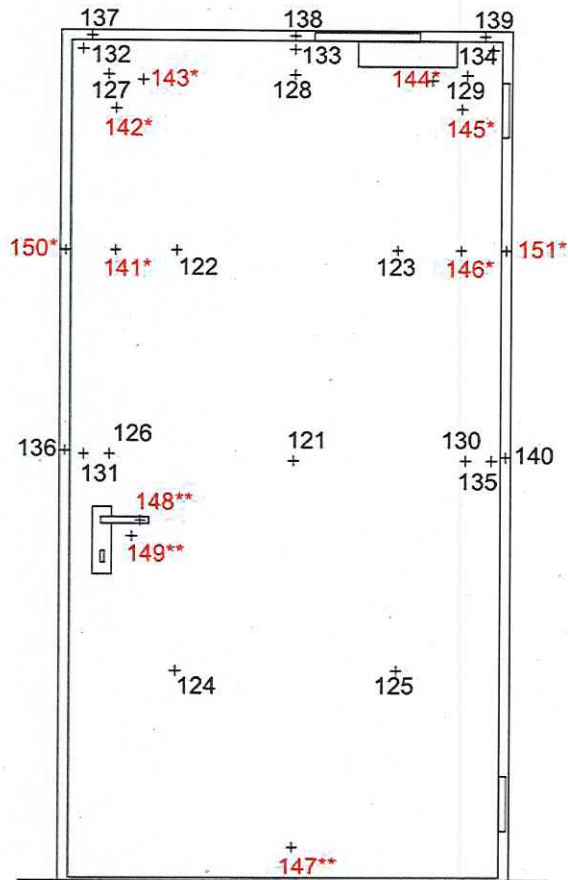
Thermocouples no.	Title	Max. temp. Increase [K]	standard
41 - 45	Average value door 2	140	EN 1634-1
46 - 50	10 cm line door 2	El ₂ 180	EN 1634-1
51 - 55	2,5 cm line door 2	El ₁ 180	EN 1634-1
56 - 60	Frame 15 mm from outer edge door 2	El ₁ 180 / 360 El ₂	EN 1634-1
61 - 67	"DIN" 10 cm line, ref. to clear opening door 2	180	DIN 4102-5
68 - 69	"DIN" Handle and handles area door 2	180	DIN 4102-5
70 - 71	Frame 15 mm from inner edge door 2	360	DIN 4102-5

Please note:

All DIN measuring points signed with * are also in the storage of EN 1634-1 and will be considered for determination of performance characteristics.

All DIN measuring points signed with ** are not in the storage of EN 1634-1 and will be not considered for determination of performance characteristics.

Location of thermo couples	annex 2.2 of
DMT GmbH & Co. KG Plant and Product Safety Test Body for fire protection	test report no. DMT-DO-50-992



Tür 3

Thermocouples no.	Title	Max. temp. Increase [K]	standard
121 - 125	Average value door 3	140	EN 1634-1
126 - 130	10 cm line door 3	El ₂ 180	EN 1634-1
131 - 135	2.5 cm line door 3	El ₁ 180	EN 1634-1
136 - 140	Frame 15 mm from outer edge door 3	El ₁ 180 / 360 El ₂	EN 1634-1
141 - 147	"DIN" 10 cm line, ref. to clear opening door 3	180	DIN 4102-5
148 - 149	"DIN" Handle and handles area door 3	180	DIN 4102-5
150 - 151	Frame 15 mm from inner edge door 3	360	DIN 4102-5

Please note:

All DIN measuring points signed with * are also in the storage of EN 1634-1 and will be considered for determination of performance characteristics.

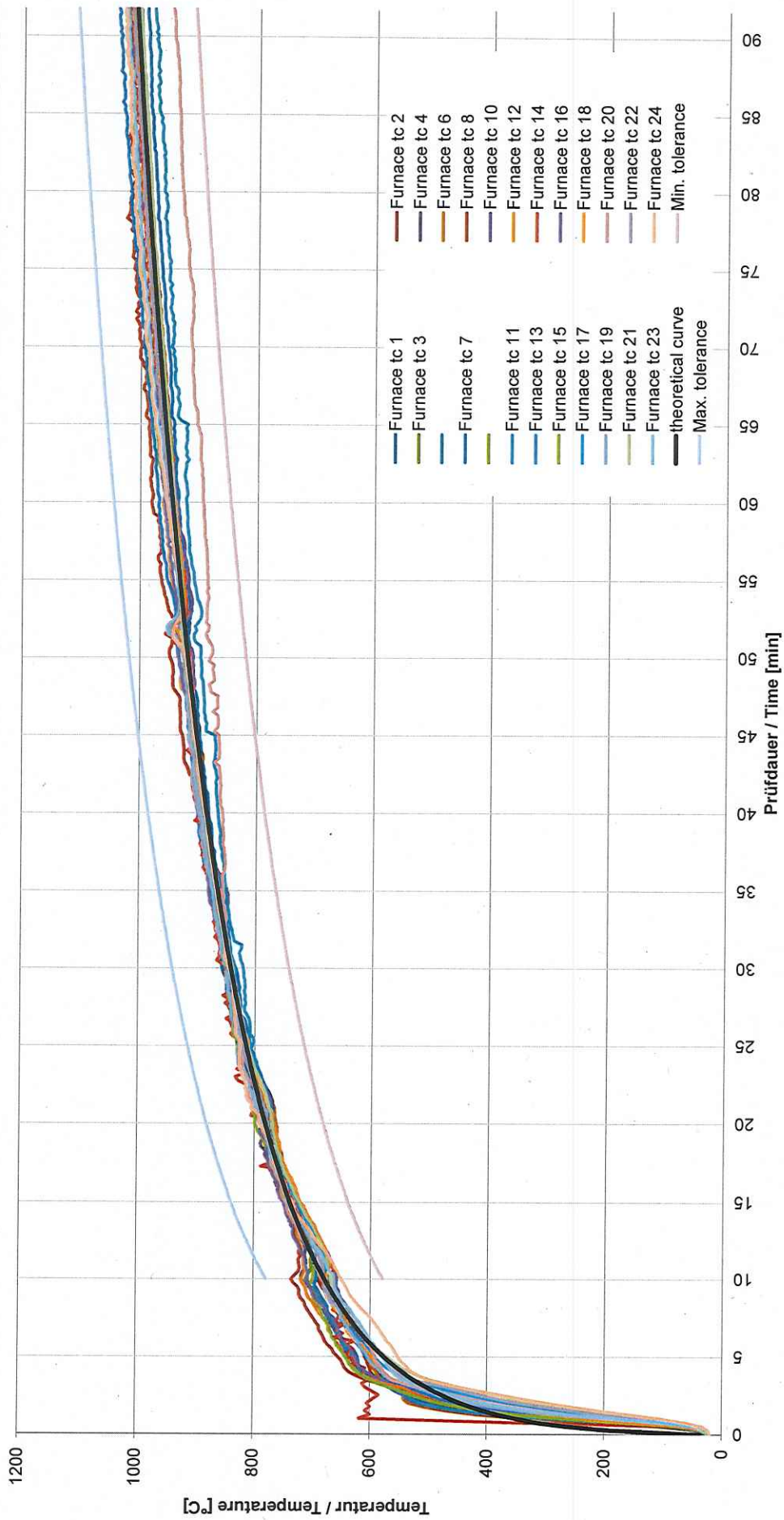
All DIN measuring points signed with ** are not in the storage of EN 1634-1 and will be not considered for determination of performance characteristics.

Location of thermo couples

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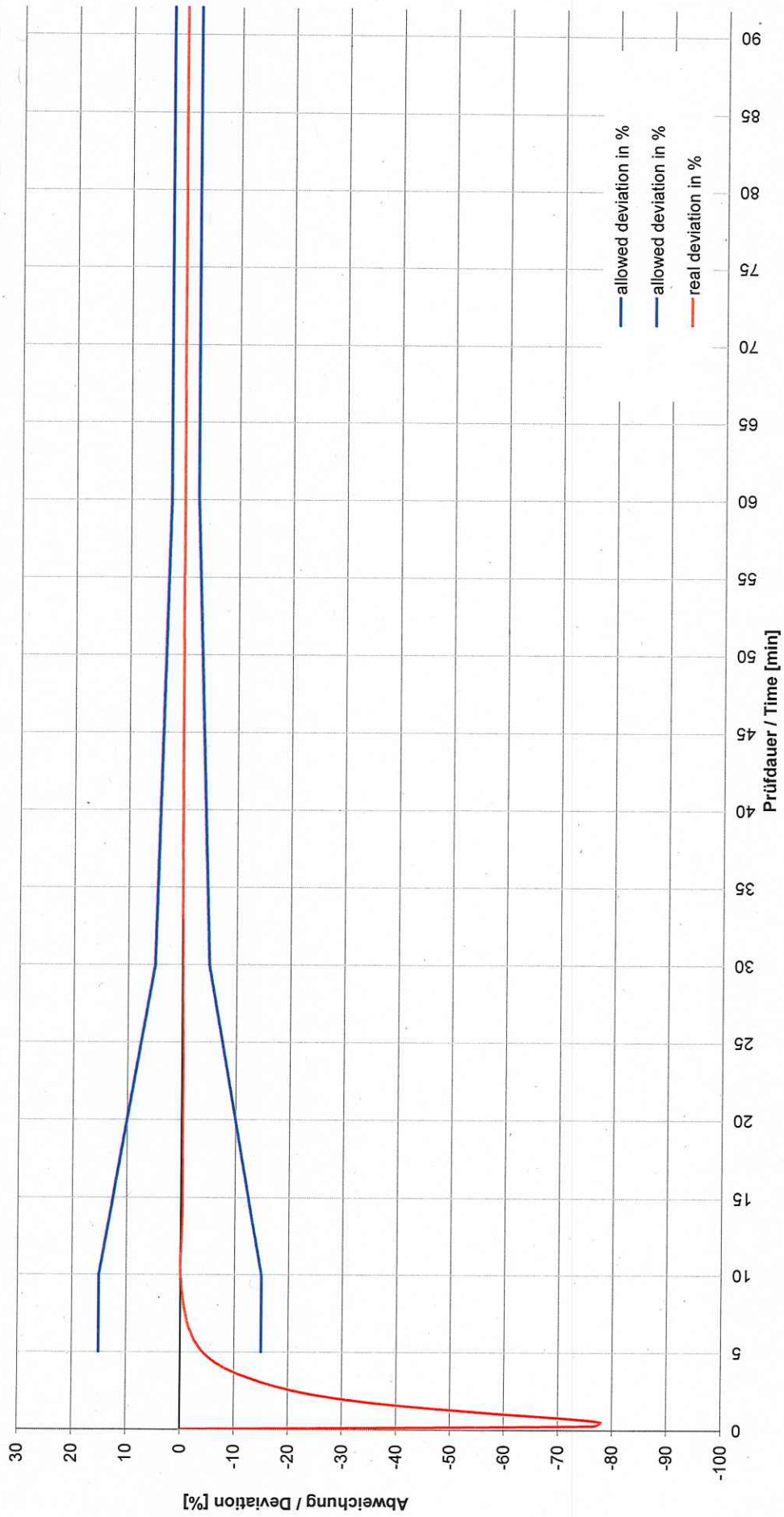


Heating curve

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test report no.
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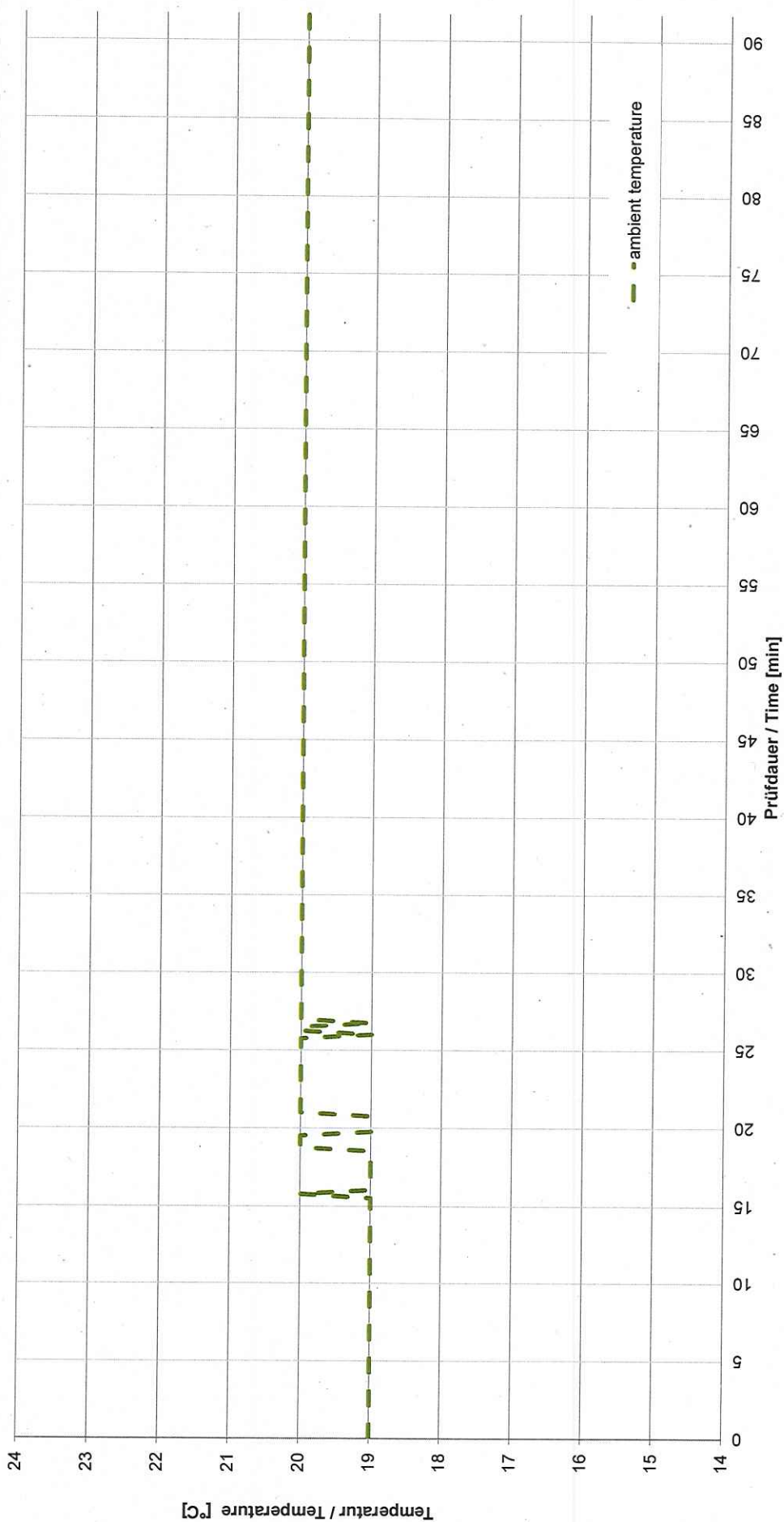


Heating curve, tolerances

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annex 2.5 of

test report no.
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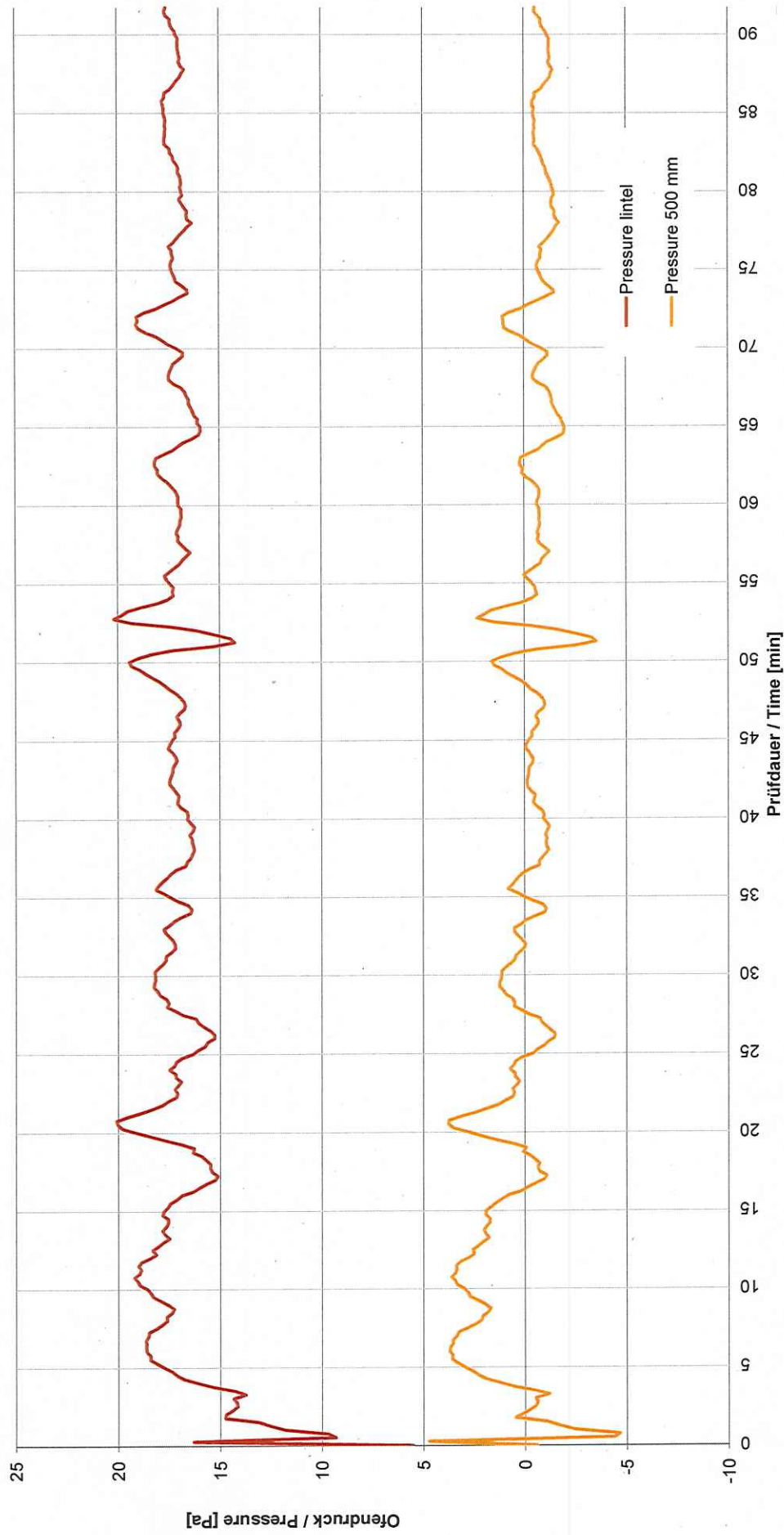


Ambient temperature

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Pressure during test procedure

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