

TEST REPORT NON-LOADBEARING WALL

Name of sponsor:	Wood:UpHigh		
Product name:	ikke bærende skillevæg		
File no.:	PGA12336A	Revision no.:	0
Test date:	2023-08-09	Date:	2024-02-06
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Ref:	RKP / KTO		

Client information

Client: Wood:UpHigh
Address: Jernholmen 12
2650 Hvidovre
Denmark

The test is part of the project Wood:UpHigh. The project is partly sponsored by Uddannelses- og Forskningsstyrelsen through DBI's performance contract, Realdania and Grundejernes Investeringsfond. The project is headed by DBI, except for the construction of test specimens for the fire tests, which is headed by LOGIK&CO.

The results relate only to the items tested. The report should only be reproduced in extenso - in extracts only with a written agreement with this institute.

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1 Date of test

The test was conducted on 2023-08-09

2 Purpose of test

The test specimen has been subjected to a standard fire test in accordance with the following standards:

DS/EN 1363-1:2020 Fire resistance tests – General requirements

in conjunction with

EN 1364-1:2015 - Fire resistance tests – Non-Loadbearing Wall

3 Test specimen

The trade name and sponsors identification mark is stated below:

Trade name: None

Identification mark: None

The components for the test specimen were delivered and mounted by the sponsor.

Boards: Two different boards were used for each side of the test specimen.

1st layer (inner layer)

A 15 mm thick particleboard, designated [REDACTED] (nominal density 650 kg/m³, EN 13986:2004 + A1:2015) was mounted on both sides of the wooden frame with 5.0 x 60 mm screws, designated [REDACTED]. For each stud behind the board 6 screws were fixed with a c/c of 100 mm, for the maximum board dimension 30 screws were used. A full-size particleboard had the dimensions 625 x 2500 mm with tongue and groove.

The board joints were floating and not backed by the wooden studs.

See drawing no. 1.2 and photo no. 3.

2nd layer (outer layer)

The outer layer consisted of wood fibre boards designated [REDACTED] with the nominal dimensions of 60 x 580 x 2000 mm and a nominal density of 180 kg/m³. The layer was fixed with 100 x 26 x 1.9 mm staples per c/c 200 mm along the edges of the board.

See photo no. 4b and 5b.

Measured by DBI

Product		Wood fiber board	Particle board	Wood fiber insulation	Wood stud
Density	kg/m ³	197	690	45	485
Thickness	mm	53	15	60	45
Moisture content	%	5,2	6,6	3,1	7,4
Sampling method		Extra material	Extra material	Extra material	Extra material
Drying temperature	°C	105	105	105	105

5 Test conditions

Conditioning

The test specimen was delivered on the 31-07-2023 to the DBI laboratory and stored under room temperature. On the day of the fire testing the condition of the test specimen was similar with respect to its moisture content as the test specimen would be in normal service.

Mounting

The test specimen was mounted in a concrete lined test frame with a clear opening of 3000 x 3000 mm.

A free edge was established along the right vertical edge of the test specimen as seen from the unexposed side. The free edge was made by 2 x 25 mm stone wool with alu-foil.

Fire test

Observations were made during the test on the general behavior of the test specimen.

Temperature observations were taken continually during the entire testing time.

The surface temperatures were measured on the unexposed surface of the test specimen as indicated on DBI drawing no. 1.0, 1.1, 1.2, 1.3, 1.4, 1.5 and 1.6.

The furnace temperature was determined by means of plate thermocouples uniformly distributed at a distance of approximately 100 mm from the exposed side of the test specimen. The furnace temperature was continuously controlled so as to follow the standard time temperature curve within the accuracy specified in EN 1363-1:2020.

The thermocouples were constructed according to the description in EN 1363-1:2020.

The furnace pressure was controlled at a level of 20 Pa at the top of the test specimen during first 81 minutes of the test. After the 81 minutes the pressure was -20 Pa and the temperature in the furnace was in excess of 100 °C from the temperature time curve.

6 Test results

Duration of the test was 91 minutes.

Measurements

The enclosed graphs and tables show:

Enclosures 2.0 and 2.1	Furnace temperatures The actual minimum-, average- and maximum furnace temperature in relation to the standard temperature. The table also shows the area under the actual time-temperature curve as well as the area under the standard time-temperature curve.
Enclosures 3.0 and 3.1	Pressure
Enclosures 4.0 and 4.1	Ambient temperature The ambient temperature in the laboratory during the test
Enclosures 5.0 and 5.1	Average temperature rise Measured with 5 thermocouples.
Enclosures 6.0 and 6.1	Maximum temperature rise Maximum temperature rise on the unexposed side.
Enclosures 7.0 and 7.1	Between wood fiber board and studs Maximum temperature rise inside the construction.
Enclosures 8.0 and 8.1	Center of stud Measured with 5 thermocouples.
Enclosures 9.0 and 9.1	Between studs and wood fiber board Maximum temperature rise on the unexposed side.
Enclosures 10.0 and 10.1	Between wood fiber board and wood fiber board Maximum temperature rise inside the construction.
Enclosures 11.0 and 11.1	Deformation Negative values indicate movement towards the furnace.
Enclosures 12.0 and 12.1	Maximum temperature through the layers 8=ISO834

Visual observations:

Time / Minutes	Visual observations:	U = Unexposed side E = Exposed side
0	Test commences	
4	Charring on wood fiber board	E
9	No change	U
11	Cracks in all wood fiber boards and large gaps starting to form between the boards	E
14	No changes	U
17	Cracks in wood fiber boards starting to widen, gaps widening between the boards	E
22	No changes	U
29	No changes	U
33	Slight smoke from free edge	U
35	Larger cracks and gaps in wood fiber boards	E
35	No changes	U
45	No changes	U
45	Chipboard behind the wood fiber board was visible between the boards and had charred	E
46	Smoke from fixed edge of specimen	U
50	Gaps between the wood fiber boards widening	E
58	Cotton pad test over top of fixed edge: No discoloration, no ignition	U
60	No changes	U
61	Wood fiber boards were still attached to the chipboard	E
65	Heavy smoke from edge of fixed edge	U
66	Discoloration of fixed edge into places on the wood fiber board	U
70	Wood fiber boards had started to fall	E
75	Smoke from fixed edge turned to a darker color	U
76	Most wood fiber board had fallen.	E
80	No changes	U
81	Furnace pressure changed from 20 Pa to -20 Pa due to safety reasons	
83	Smoke had stopped from the side of the test specimen	U
90	Glowing was visible from below the test specimen in the left corner	U
92	Test stopped	

The photographs on the attached photo sheets show the test specimen during the mounting, testing and after the test. See the description at each photo.

7 Conclusion

Fire resistance testing according to 1364-1:2015 of the construction described in this test report showed that failure according to the performance criteria stated in the test method occurred at the following time:

The test stopped at 81st minute. This was due to the change of pressure made because of safety reasons.

Integrity (E): **81 minutes**

- Sustained flaming did not occur during the test.
- The cotton pad was not ignited during the test.
- No through-going openings in the test specimen were created during the test.

Insulation (I): **81 minutes**

- The mean temperature rise measured on the unexposed surface of the test specimen did not exceed 140 °C during the test. The mean temperature rise was 1 °C.
- The maximum temperature rise measured on the unexposed surface of the test specimen did not exceed 180 °C during the test. The maximum temperature rise was 5 °C.

8 Remarks

The field of direct application of the test results appears from 1364-1:2015, clause 13.

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 1363-1:2020, and where appropriate EN 1363-2:1999. 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 in the 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.

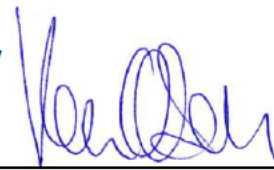
This report has only been printed in a pdf-version. DBI has not issued a hard copy version.

All values mentioned in this report are nominal values, production tolerances are not considered.



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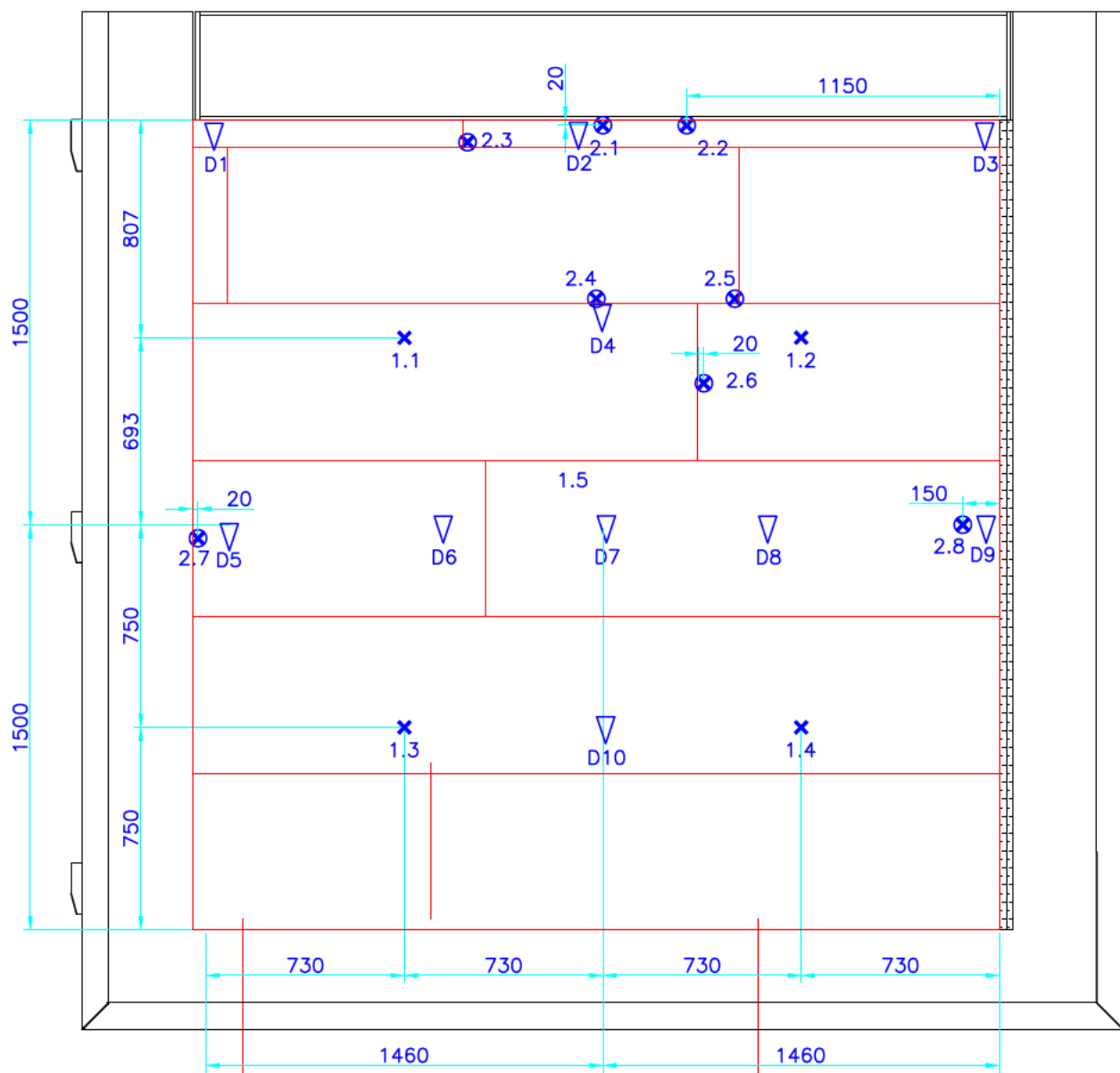
Wood:UpHigh

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Denmark

Enclosures:

DBI drawings:	7
DBI graphs and tables:	22
Photo sheets:	12
Sponsors drawings:	0

41



- ✘ Thermocouple placed on the unexposed surface (average)
- ⊗ Thermocouple placed on the unexposed surface (maximum)
- ▽ Deflection measuring point

All measurements are in mm

Danish Institute of Fire and security Technology

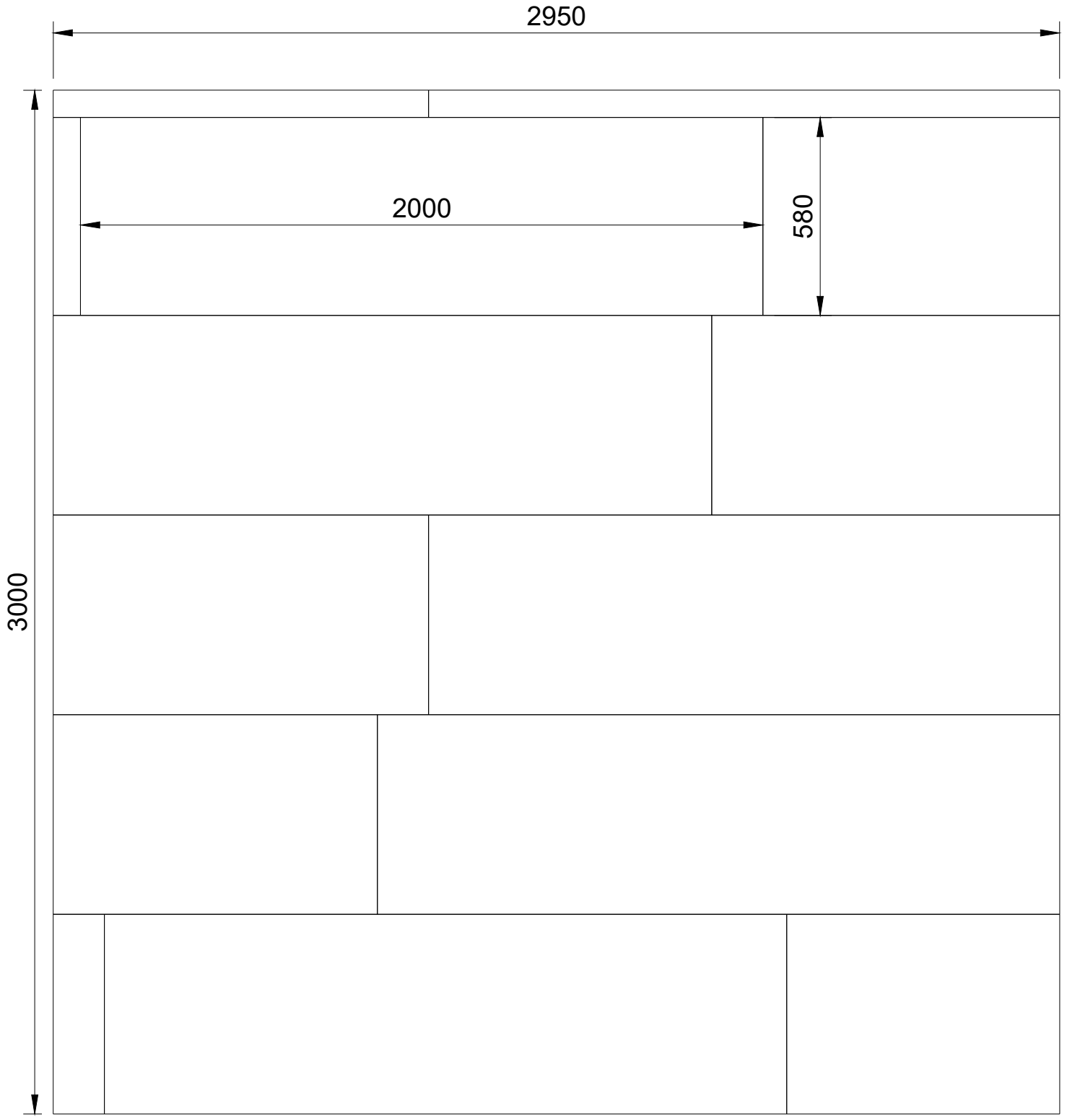
Sponsor: General placement and numbering of thermocouples

Subject: Non-loadbearing wall

File No.: PGA12336A

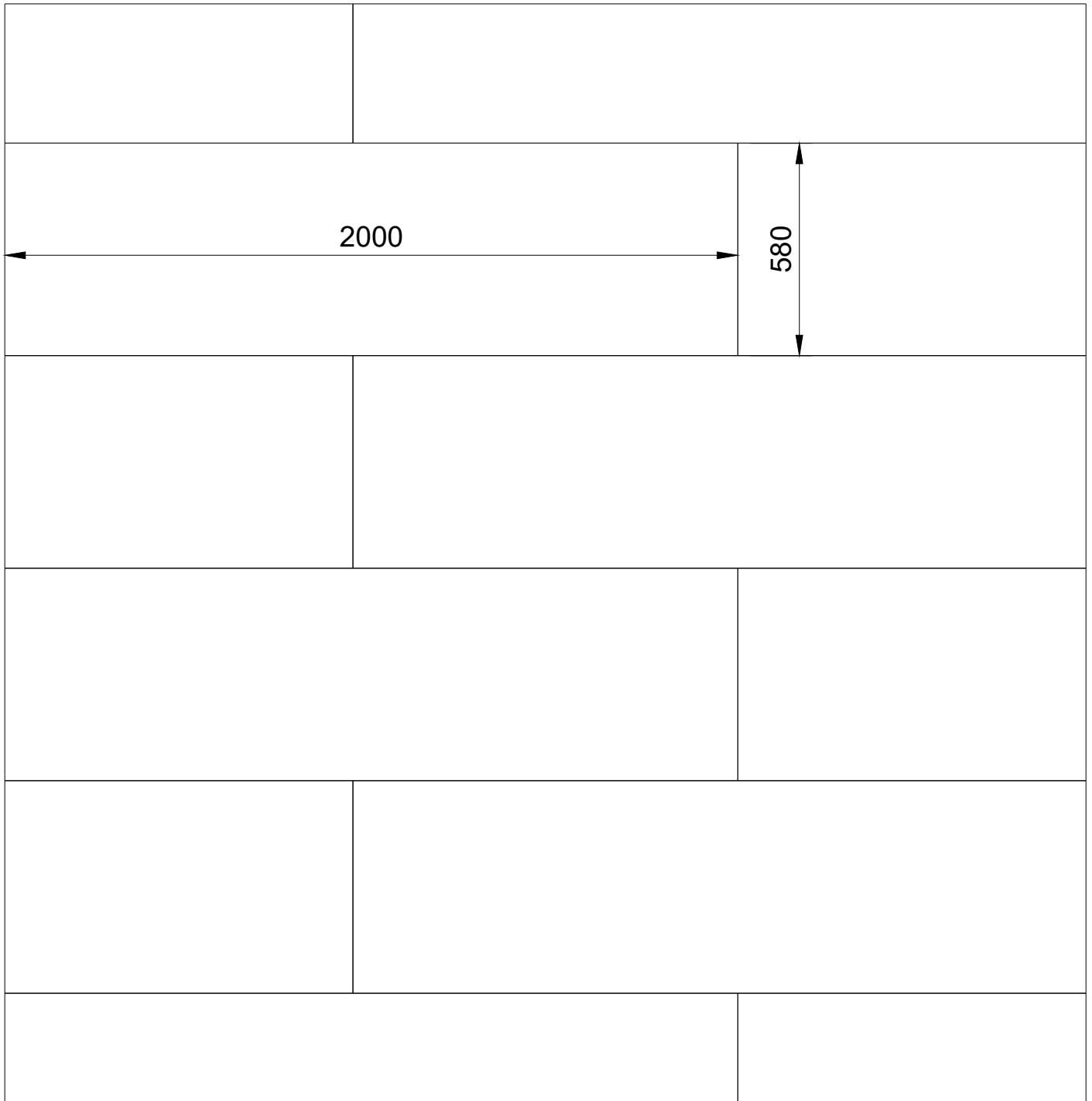
Test date: 09-08-2023

Enclosure: 1,0



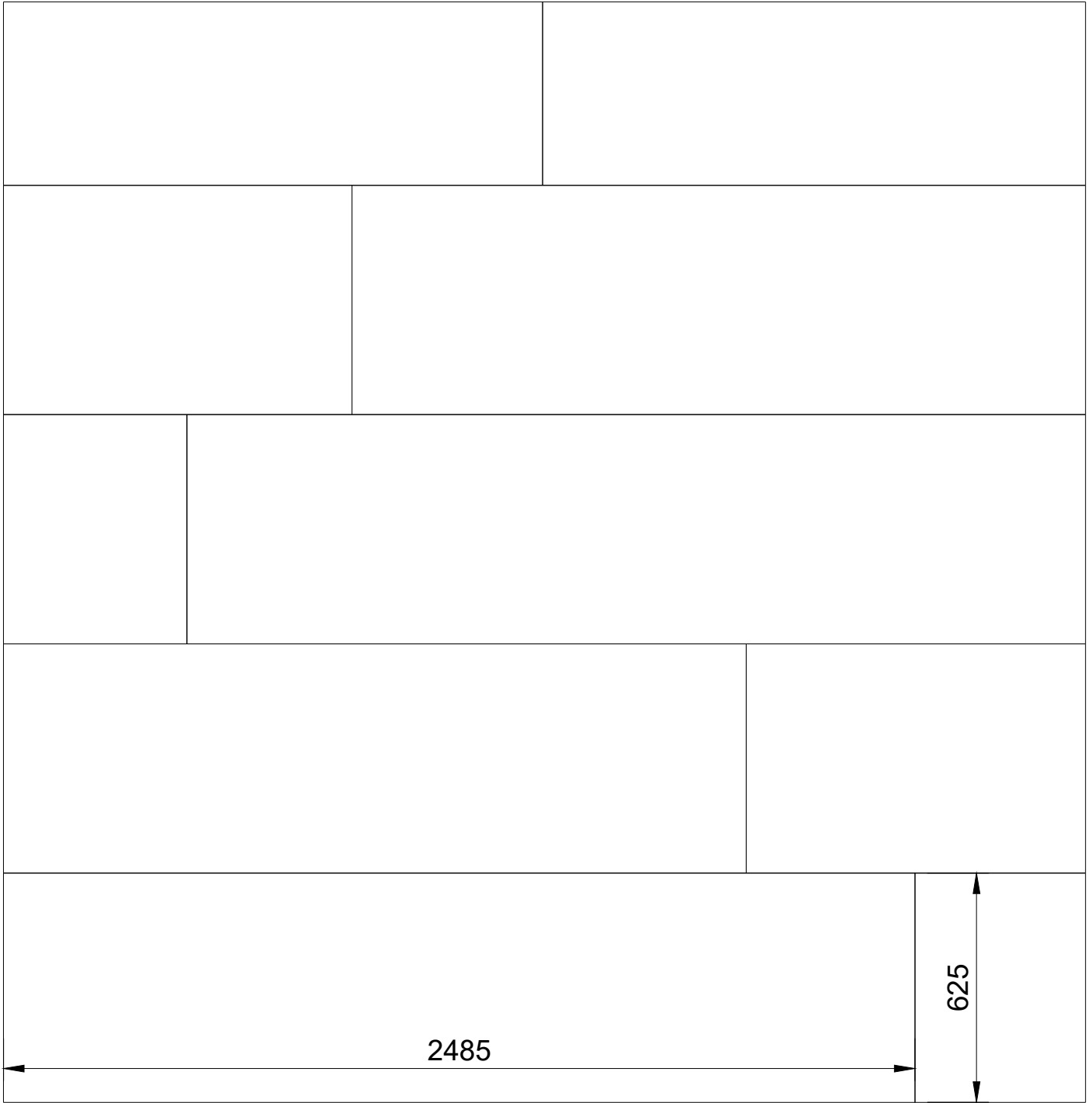
All measurements are in mm





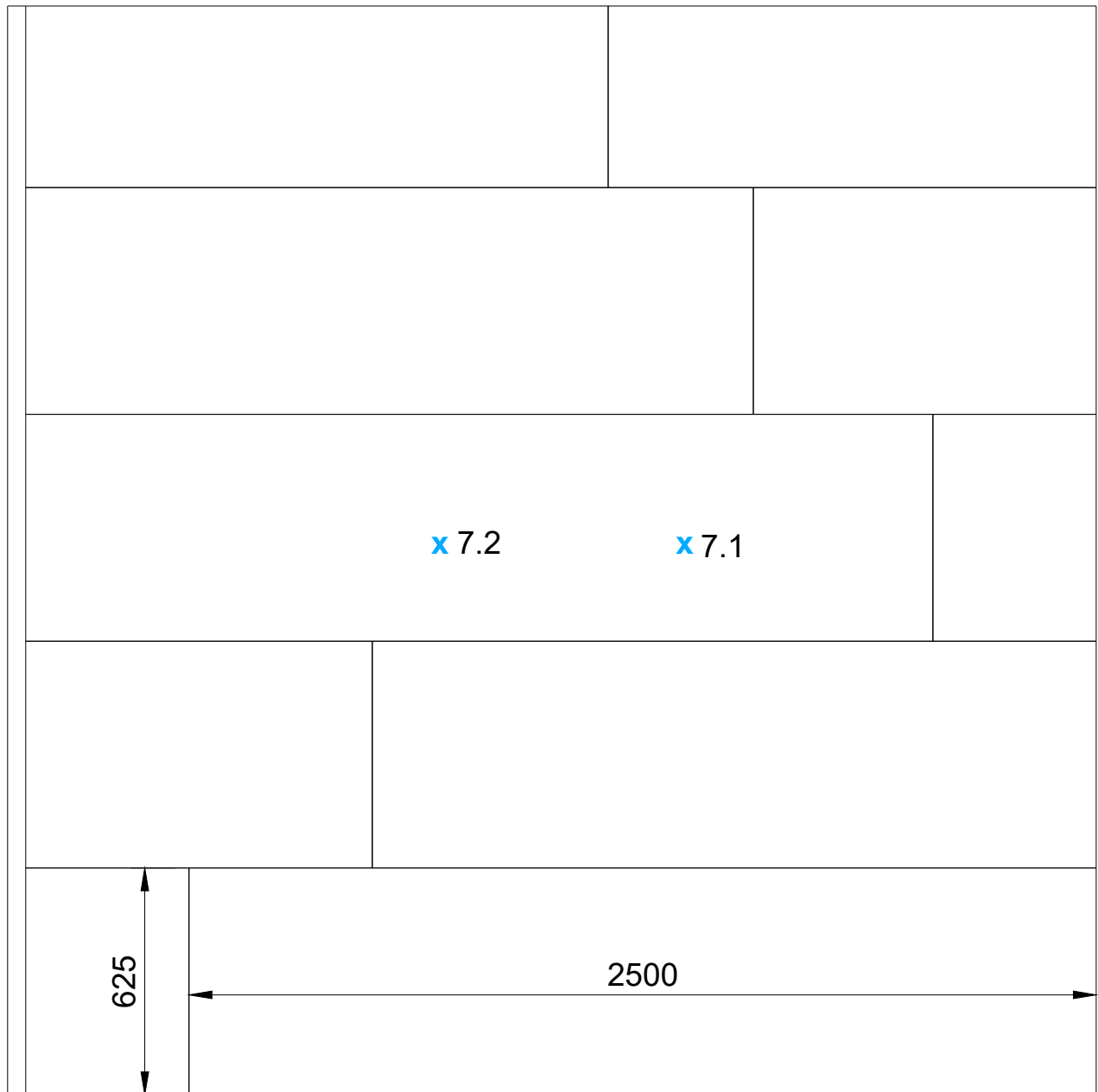
All measurements are in mm





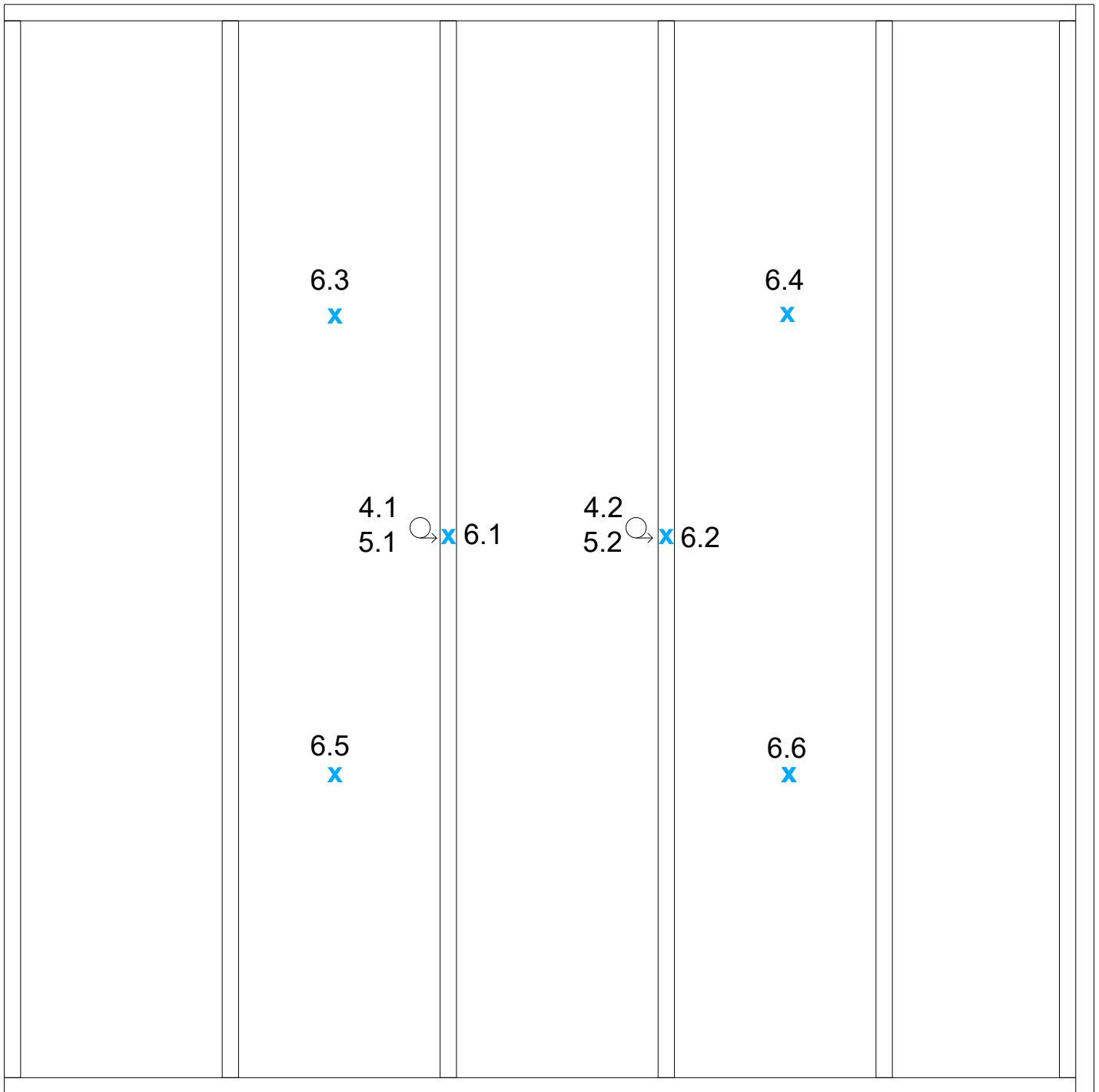
All measurements are in mm





All measurements are in mm



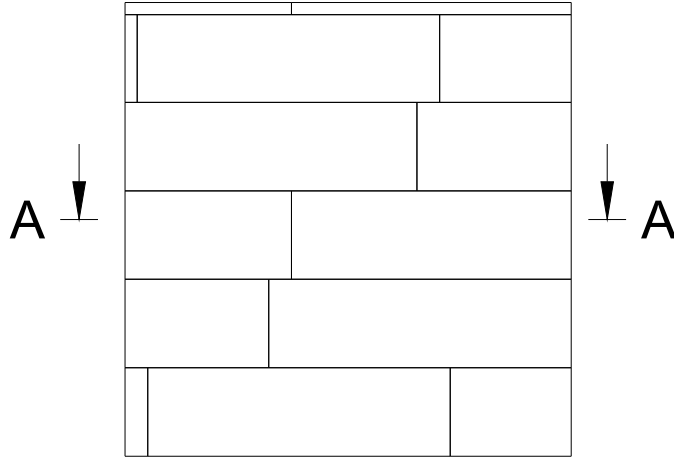


x Thermocouple

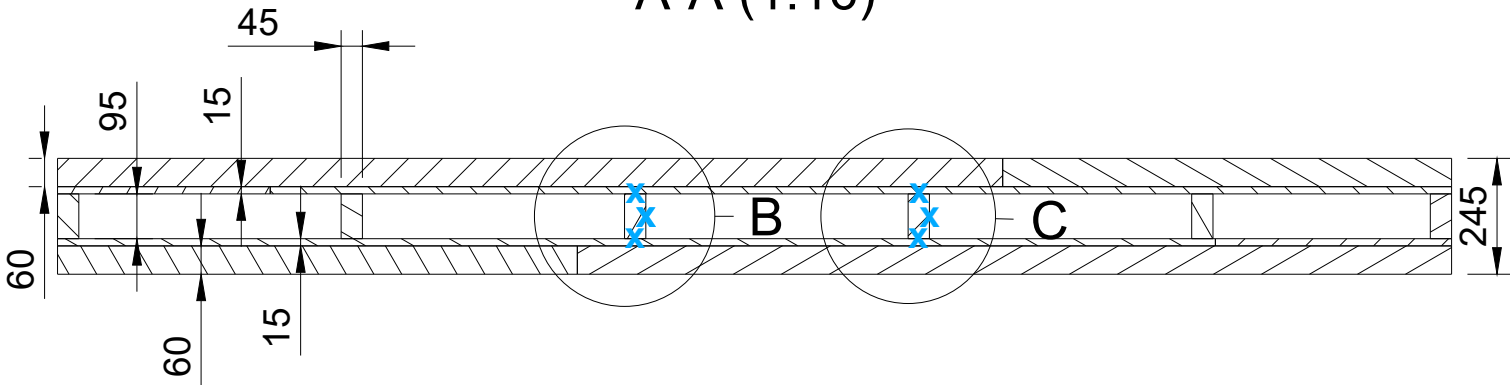
Q Thermocouple placed on side of stud see drawing 1.6

All measurements are in mm



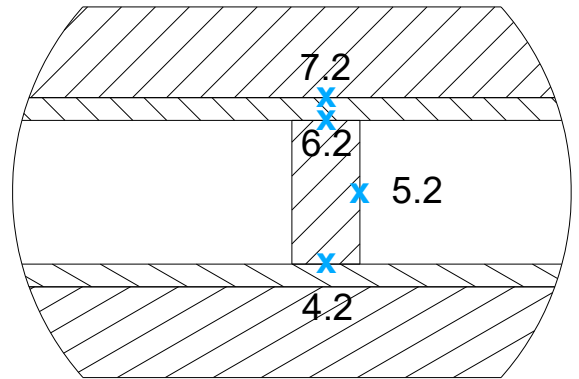
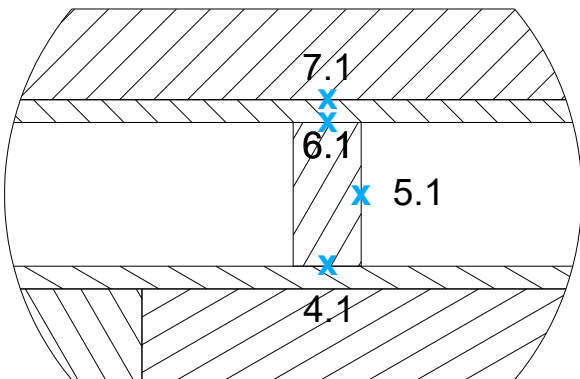


A-A (1:16)



B (1:5)

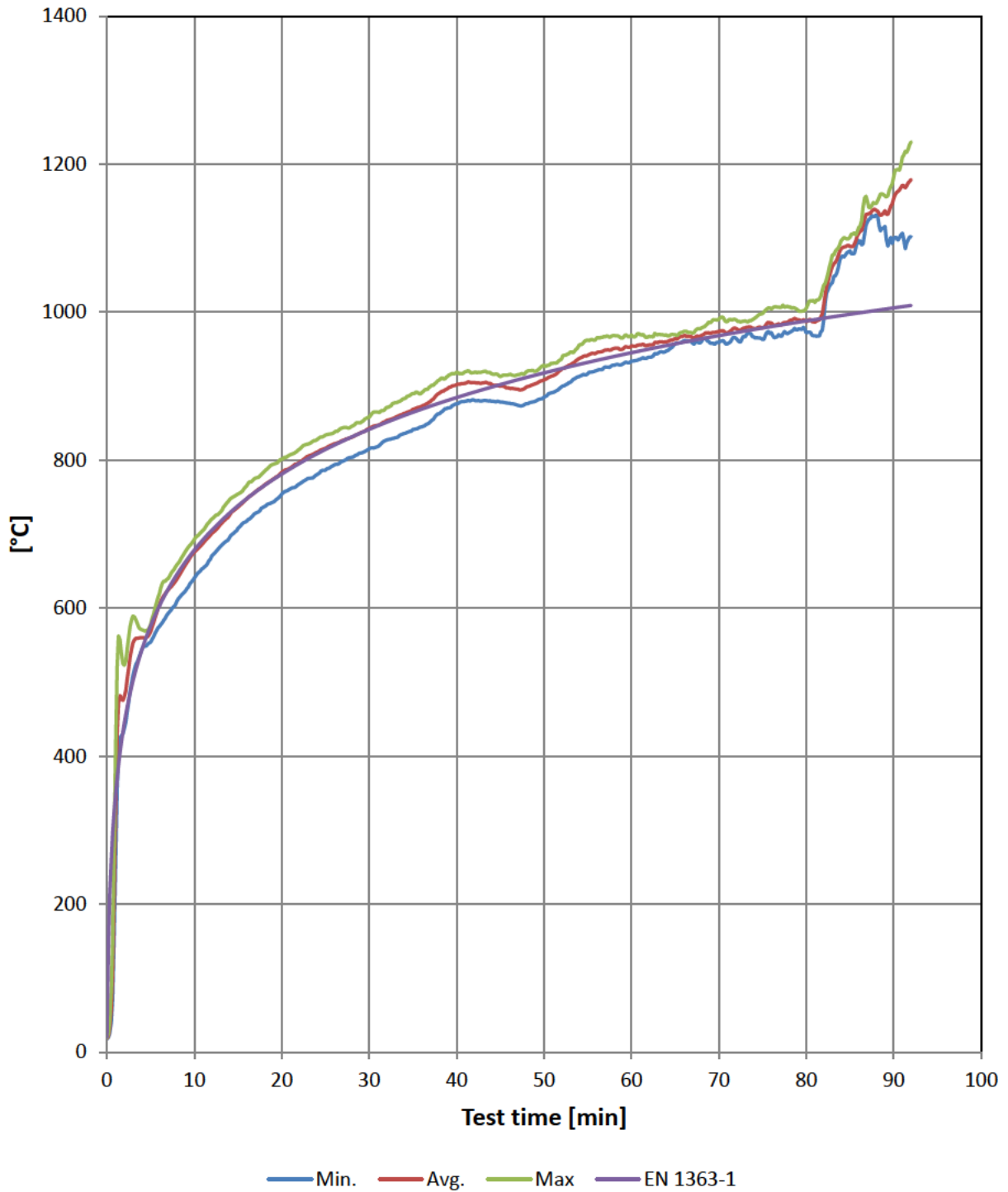
C (1:5)



All measurements are in mm



Furnace temperature

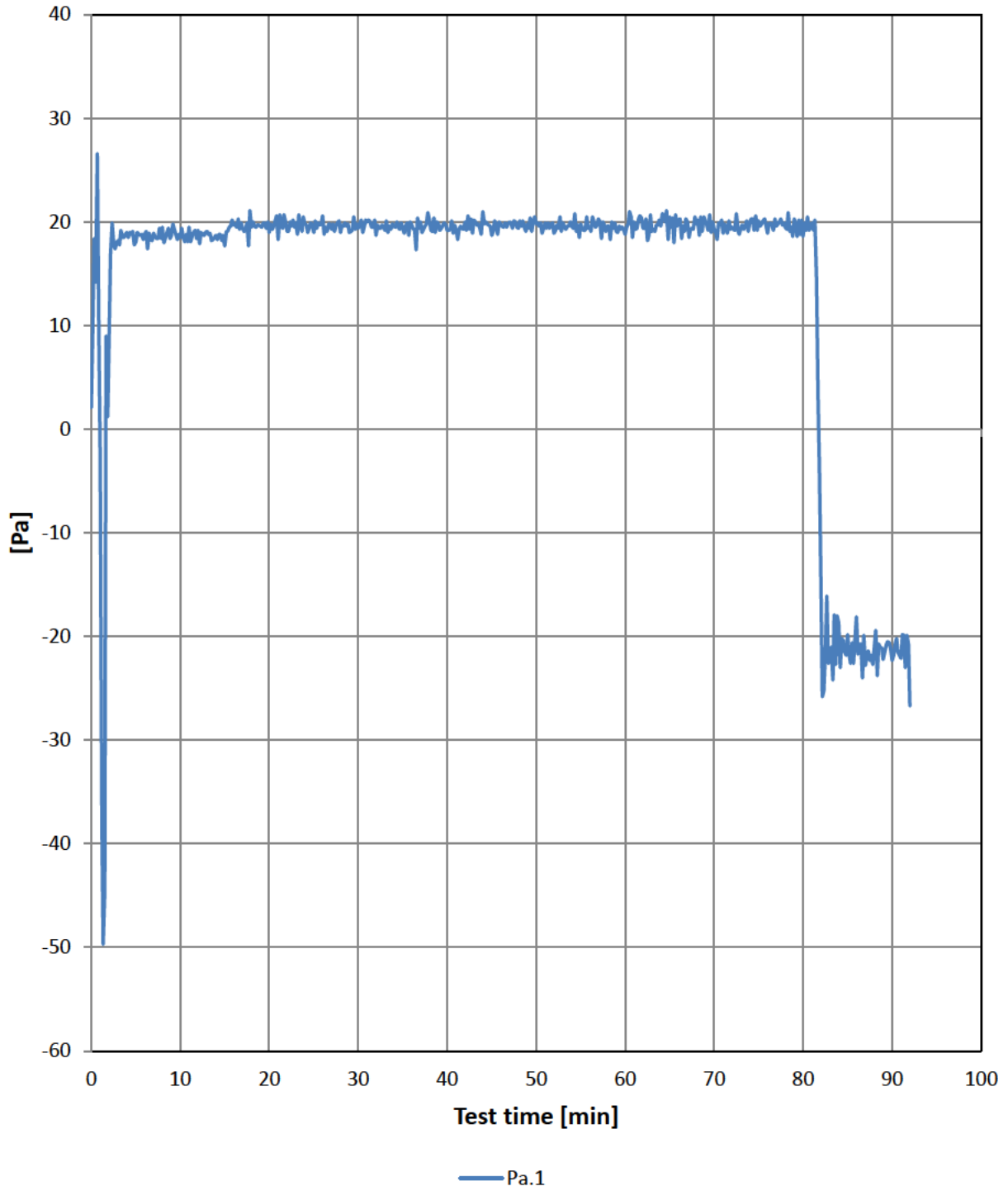


Furnace temperature

Time Minutes	Measured			Norm	Area under curve		Dev. [%]	Limit [%]
	Minimum	Average	Maximum	EN 1363-1	Measured	EN 1363-1		
0	18	18	19	20	0	0	0,0	
3	509	553	590	502	1076	1115	-3,5	
6	575	605	620	603	2783	2790	-0,2	15
9	624	659	677	663	4680	4695	-0,3	15
12	671	701	721	705	6724	6750	-0,4	14
15	708	737	754	739	8882	8918	-0,4	13
18	737	766	784	766	11139	11176	-0,3	11
21	761	790	808	789	13475	13508	-0,2	10
24	781	811	828	809	15878	15904	-0,2	8
27	799	827	844	826	18335	18357	-0,1	7
30	816	843	858	842	20838	20859	-0,1	5
33	830	858	878	856	23390	23406	-0,1	5
36	845	873	891	869	25987	25994	0,0	5
39	871	897	914	881	28642	28619	0,1	4
42	881	905	919	892	31350	31279	0,2	4
45	879	900	913	902	34060	33971	0,3	4
48	876	899	920	912	36752	36692	0,2	4
51	892	914	931	921	39471	39442	0,1	3
54	913	938	955	930	42248	42218	0,1	3
57	926	949	967	938	45079	45019	0,1	3
60	934	954	970	945	47932	47844	0,2	3
63	944	959	969	953	50800	50691	0,2	3
66	961	968	974	960	53688	53559	0,2	3
69	958	971	986	966	56593	56448	0,3	3
72	964	978	990	973	59516	59356	0,3	3
75	963	979	999	979	62452	62283	0,3	3
78	972	988	1007	985	65404	65228	0,3	3
81	968	987	1013	990	68372	68190	0,3	3
84	1075	1086	1097	996	71477	71169	0,4	3
87	1123	1133	1149	1001	74780	74164	0,8	3
90	1100	1154	1183	1006	78190	77175	1,3	3
92	1102	1179	1230	1009	80527	79190	1,7	3

Pressure

The differential pressure in the furnace during the test, measured at the top of the wall



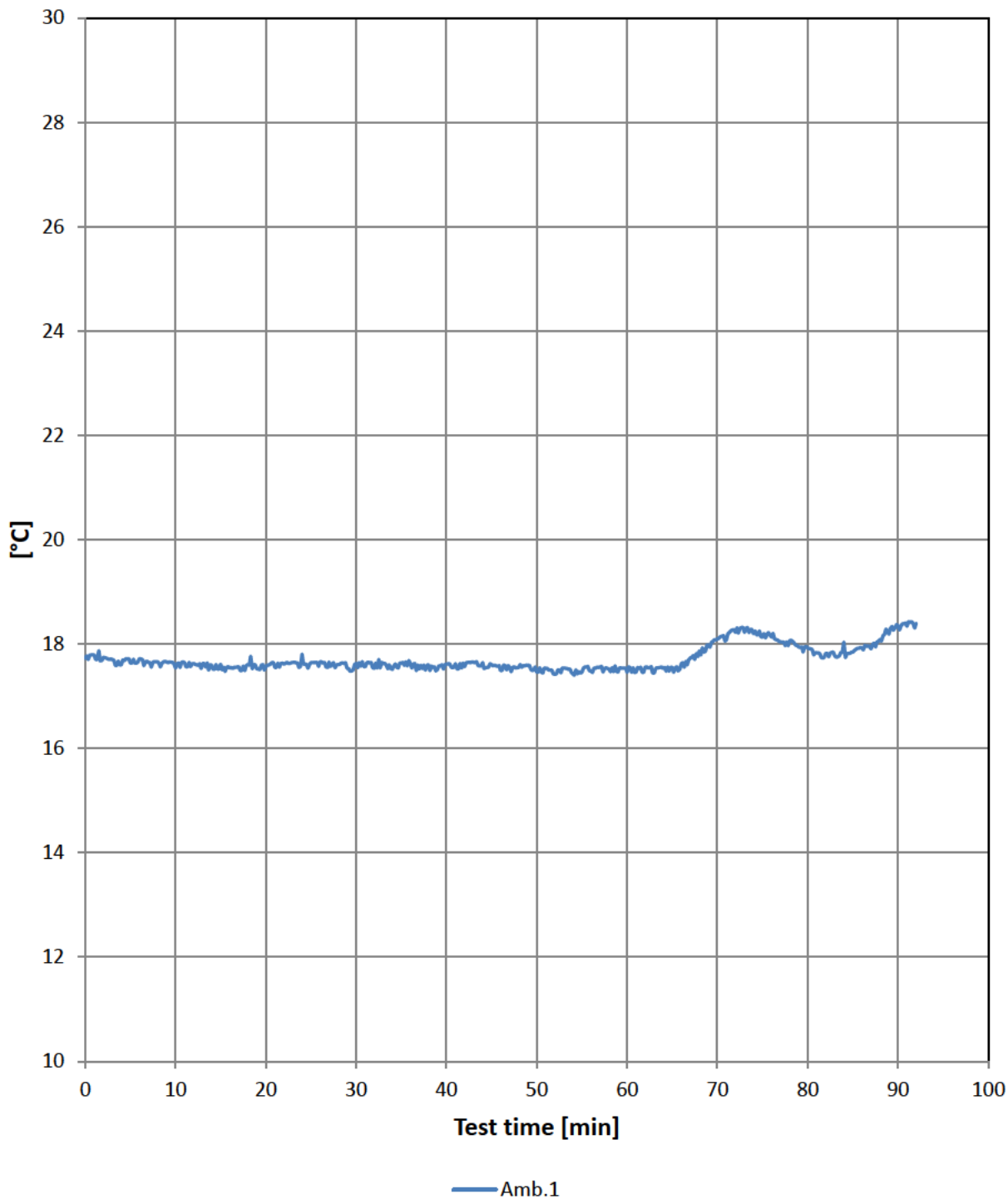
Pressure

The differential pressure in the furnace during the test, measured at the top of the wall

Min. / Pa	Pa.1
0	2
3	18
6	19
9	19
12	19
15	18
18	20
21	18
24	20
27	19
30	19
33	19
36	20
39	20
42	20
45	19
48	19
51	20
54	20
57	20
60	19
63	19
66	20
69	20
72	20
75	20
78	20
81	20
84	-19
87	-23
90	-22
92	-27

Ambient temperature

The ambient temperature in the laboratory during the test



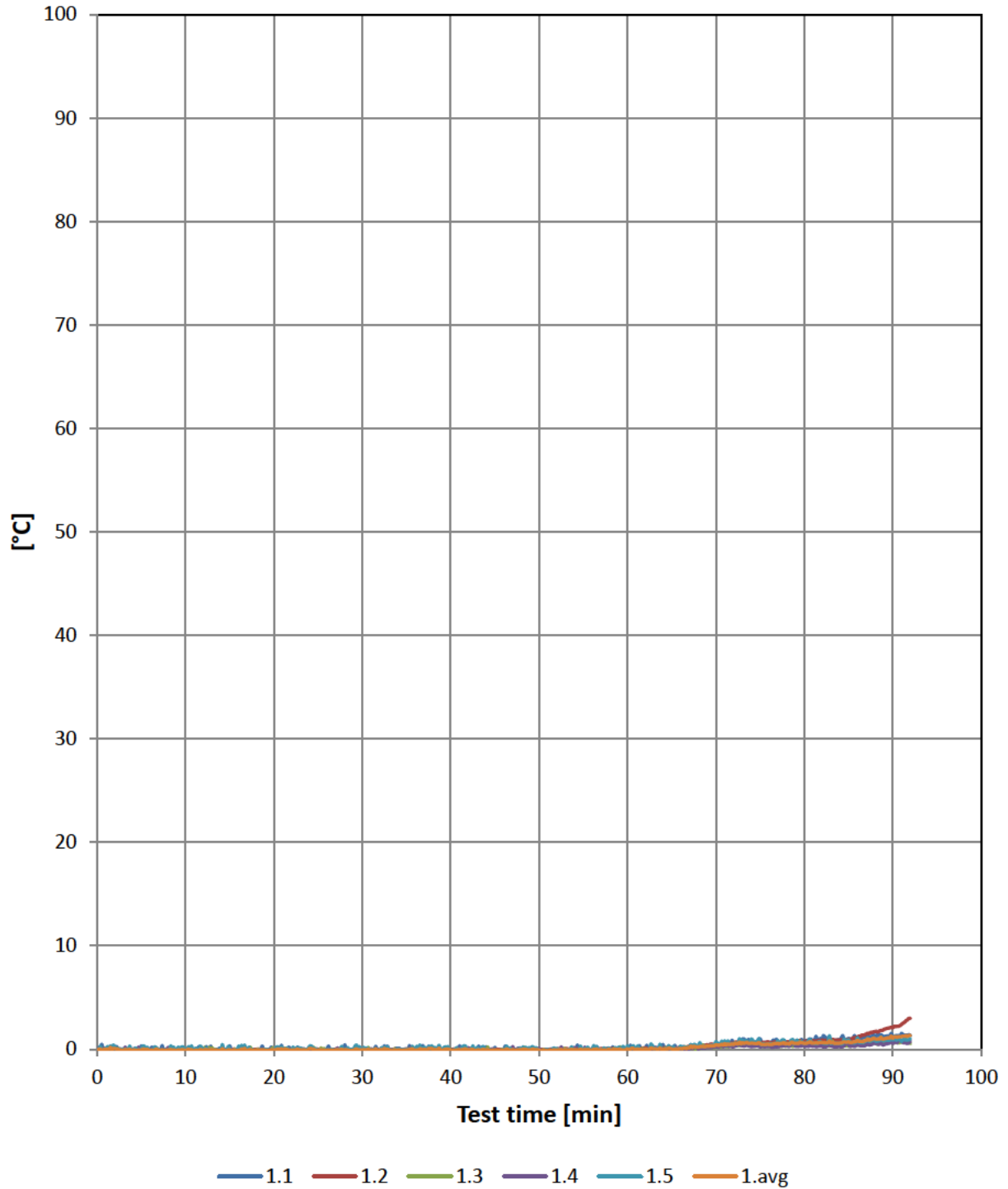
Ambient temperature

The ambient temperature in the laboratory during the test

Min. / °C	Amb.1
0	18
3	18
6	18
9	18
12	18
15	18
18	18
21	18
24	18
27	18
30	18
33	18
36	18
39	18
42	18
45	18
48	18
51	18
54	17
57	18
60	17
63	17
66	18
69	18
72	18
75	18
78	18
81	18
84	18
87	18
90	18
92	18

Average temperature rise

Measured with 5 thermocouples



Average temperature rise

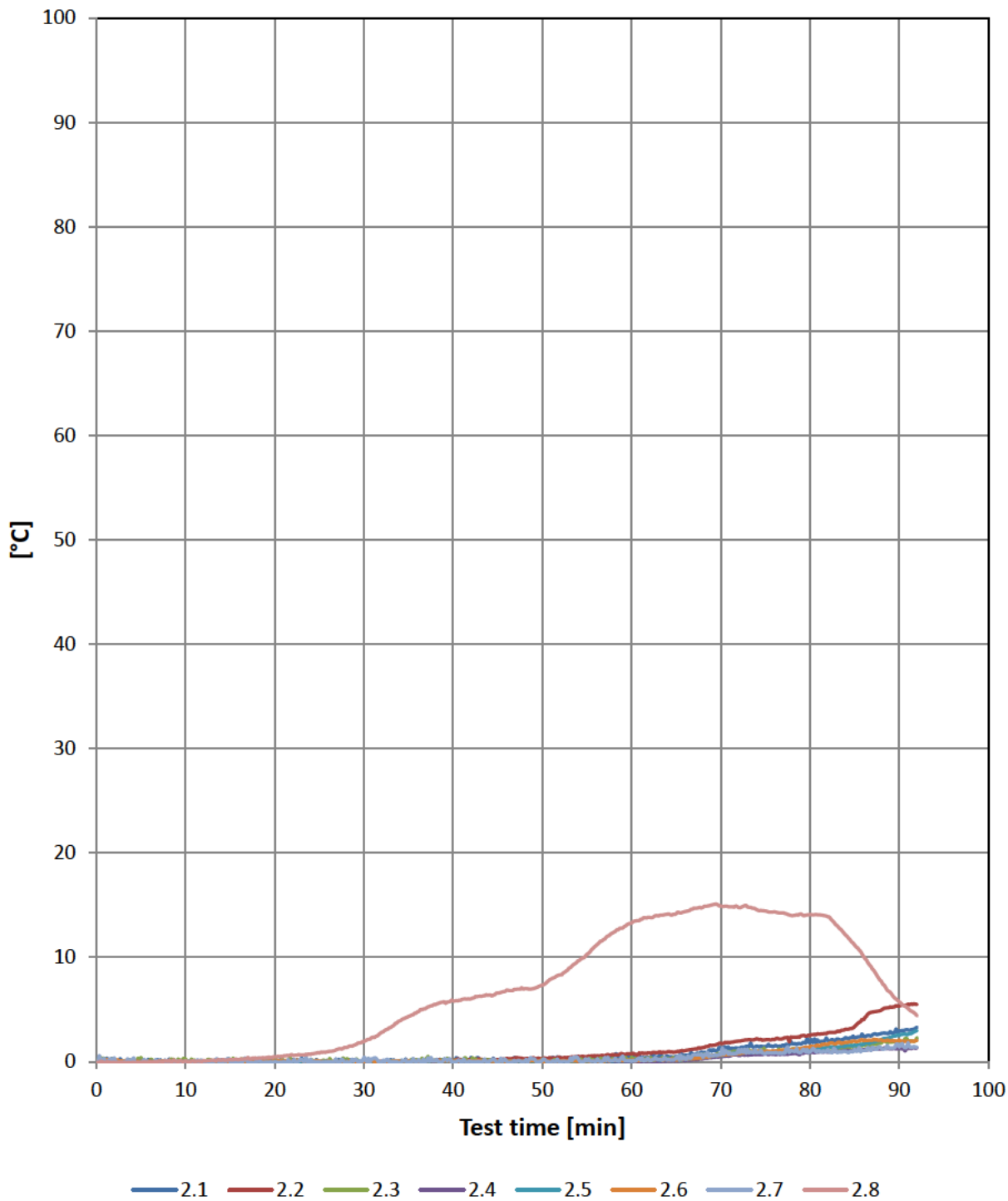
Measured with 5 thermocouples

Min. / °C	1.1	1.2	1.3	1.4	1.5	1.Avg	1.Max
0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0
63	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0
72	1	1	0	0	1	0	1
75	1	1	0	0	1	1	1
78	1	1	0	0	0	1	1
81	1	1	0	0	1	1	1
84	1	1	0	0	1	1	1
87	1	1	0	0	1	1	1
90	1	2	1	1	1	1	2
92	1	3	1	1	1	1	3

Failure [min]	-	-	-	-	-	-	-
Failure °C	180	180	180	180	180	140	180

Maximum temperature rise

Maximum temperature rise on the unexposed side



Maximum temperature rise

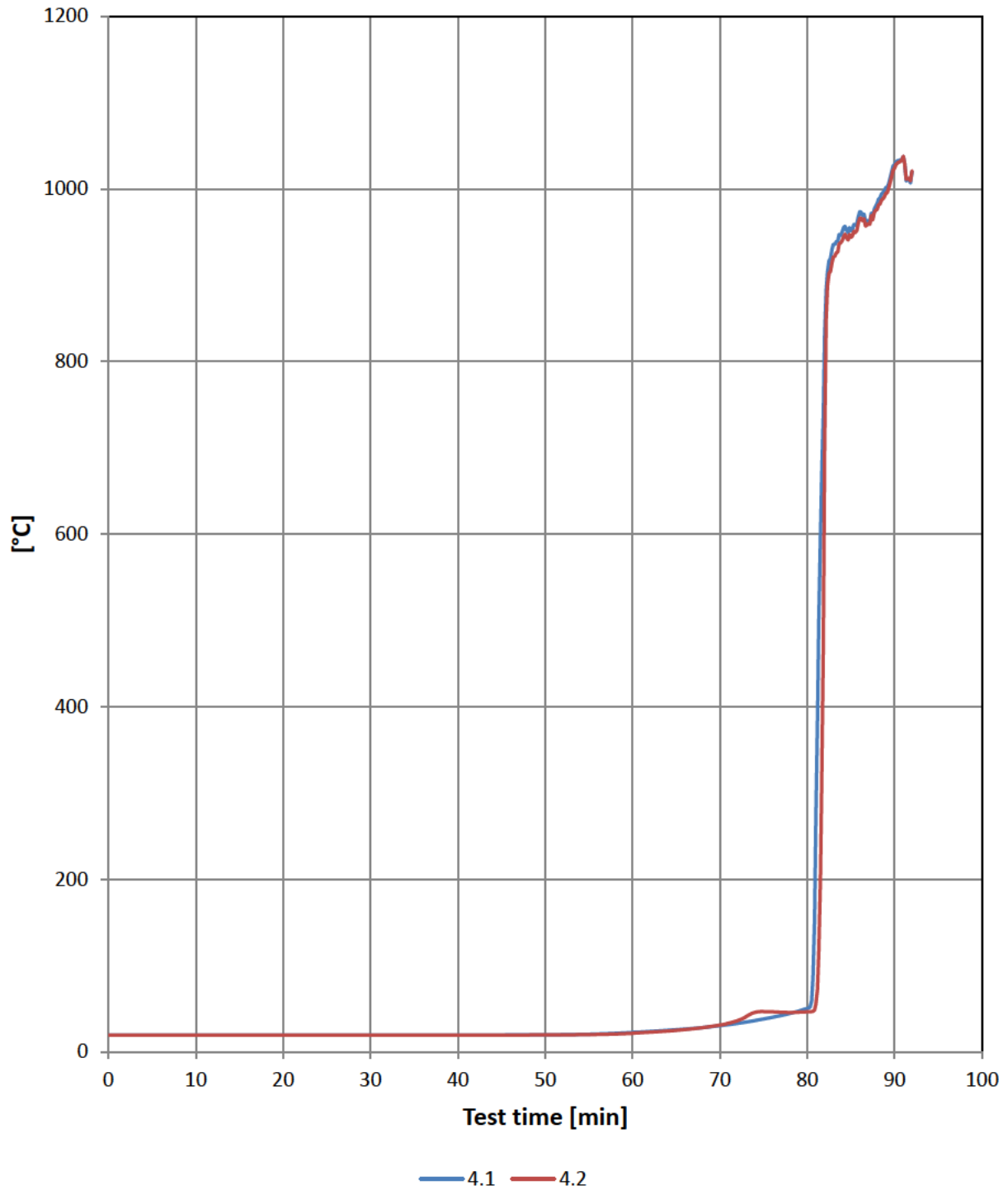
Maximum temperature rise on the unexposed side

Min. / °C	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.Max
0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	1	1
24	0	0	0	0	0	0	0	1	1
27	0	0	0	0	0	0	0	1	1
30	0	0	0	0	0	0	0	2	2
33	0	0	0	0	0	0	0	3	3
36	0	0	0	0	0	0	0	5	5
39	0	0	0	0	0	0	0	6	6
42	0	0	0	0	0	0	0	6	6
45	0	0	0	0	0	0	0	7	7
48	0	0	0	0	0	0	0	7	7
51	0	0	0	0	0	0	0	8	8
54	0	1	0	0	0	0	0	10	10
57	0	1	0	0	0	0	0	12	12
60	0	1	0	0	0	0	0	13	13
63	0	1	0	0	0	0	0	14	14
66	1	1	0	0	0	0	0	14	14
69	1	2	1	0	1	1	1	15	15
72	1	2	1	1	1	1	1	15	15
75	1	2	1	1	1	1	1	14	14
78	2	2	1	1	1	1	1	14	14
81	2	3	1	1	1	2	1	14	14
84	2	3	1	1	2	2	1	12	12
87	3	5	2	1	2	2	1	9	9
90	3	5	2	1	2	2	1	6	6
92	3	5	2	1	3	2	1	4	5

Failure [min]	-	-	-	-	-	-	-	-	-
Failure °C	180	180	180	180	180	180	180	180	180

Between wood fiber board and studs

Maximum temperature rise inside the construction



Between wood fiber board and studs

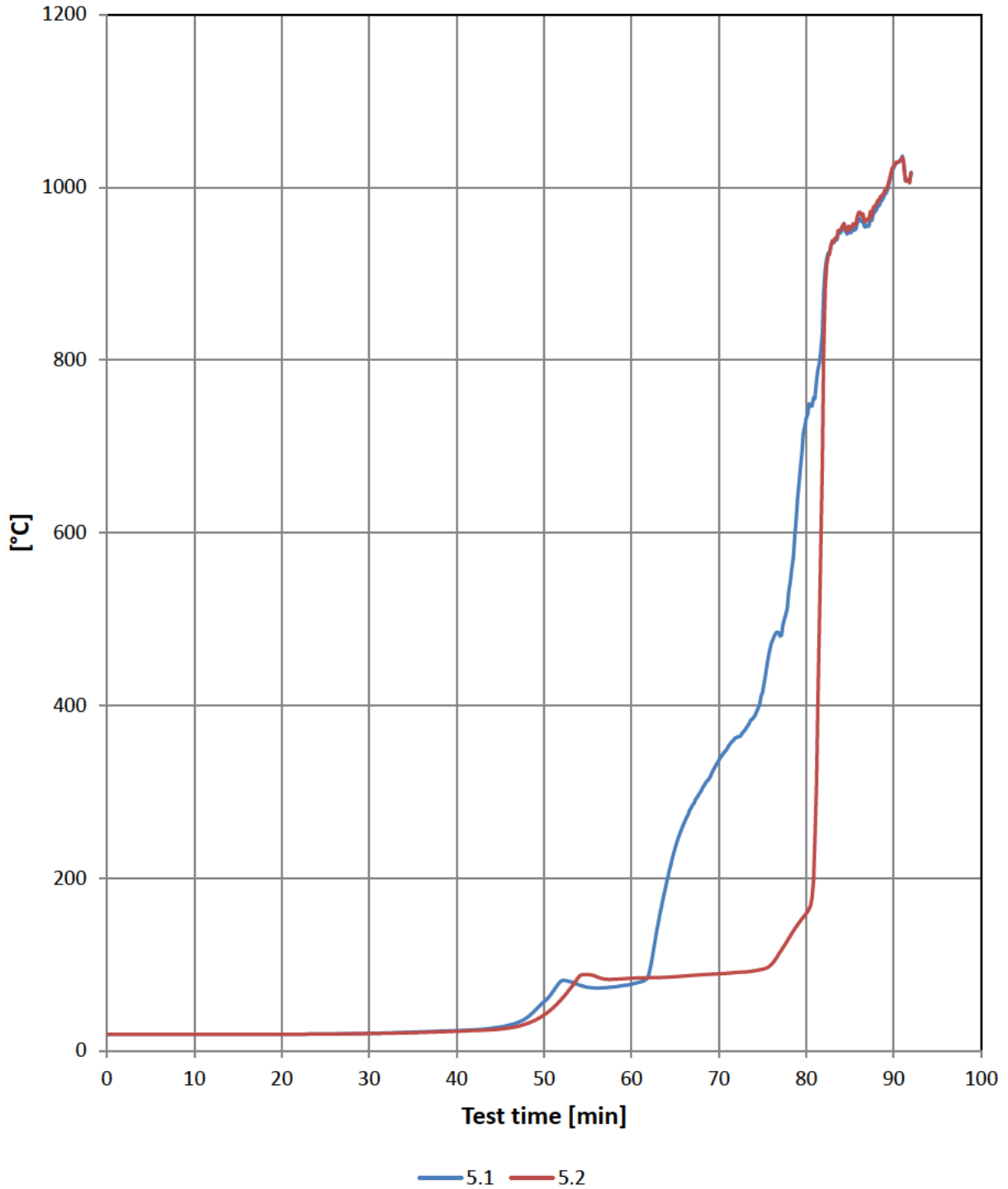
Maximum temperature rise inside the construction

Min. / °C	4.1	4.2	4.Max
0	19	19	19
3	19	19	19
6	19	19	19
9	19	19	19
12	19	19	19
15	19	19	19
18	19	19	19
21	19	19	19
24	19	19	19
27	19	19	19
30	19	19	19
33	19	19	19
36	19	19	19
39	19	19	19
42	19	19	19
45	20	19	20
48	20	20	20
51	20	20	20
54	20	20	20
57	21	20	21
60	23	22	23
63	24	23	24
66	26	26	26
69	29	29	29
72	33	36	36
75	38	47	47
78	44	46	46
81	270	55	270
84	950	940	950
87	964	960	964
90	1028	1024	1028
92	1020	1021	1021

Failure [min]	81,00	81,50	81,00
Failure °C	270	270	270

Center of stud

Maximum temperature rise inside the construction



Center of stud

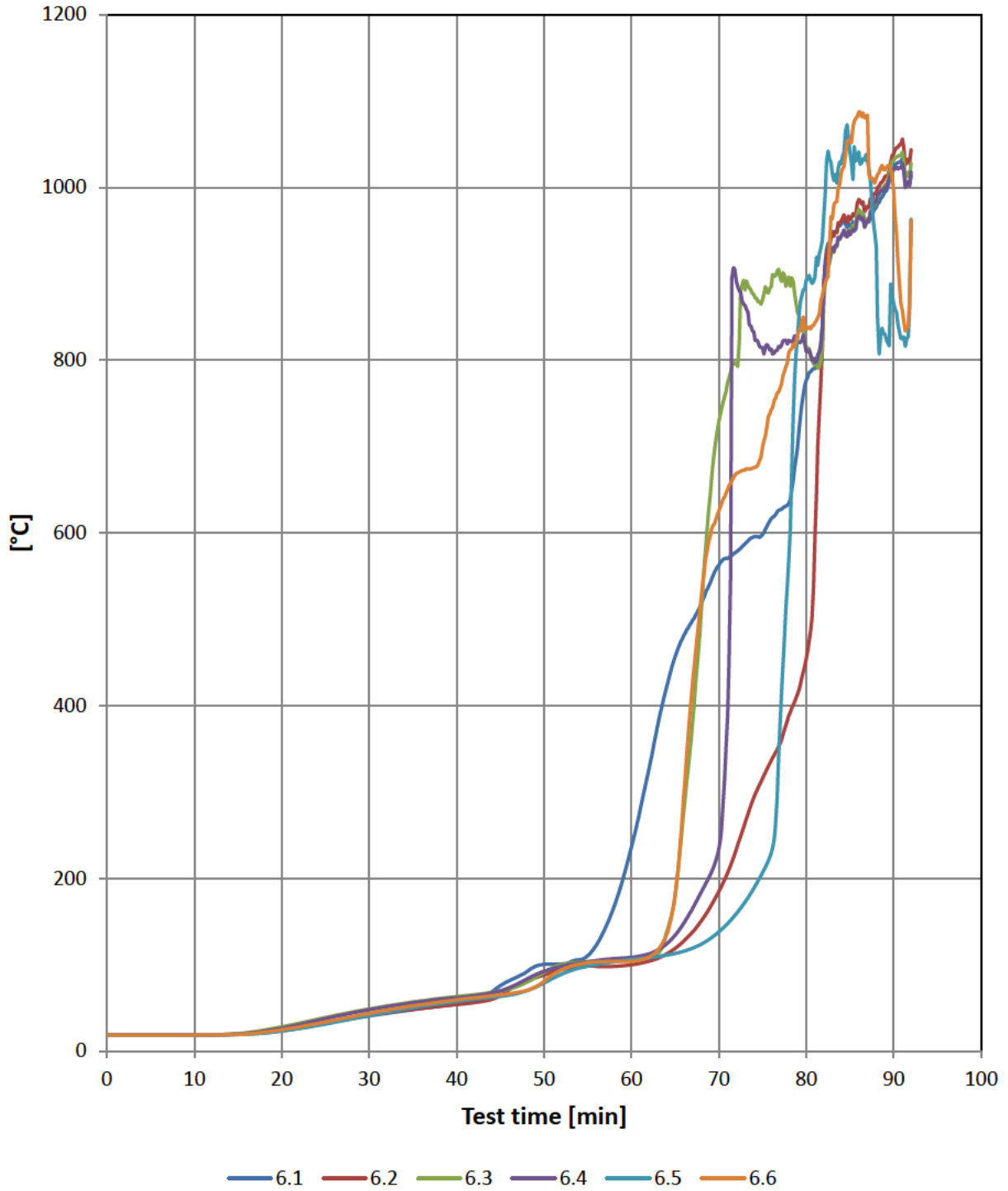
Maximum temperature rise inside the construction

Min. / °C	5.1	5.2	5.Max
0	19	19	19
3	19	19	19
6	19	19	19
9	19	19	19
12	19	19	19
15	19	19	19
18	19	19	19
21	19	19	19
24	19	19	19
27	20	19	20
30	20	20	20
33	21	20	21
36	22	21	22
39	23	22	23
42	24	23	24
45	28	25	28
48	38	31	38
51	68	50	68
54	76	86	86
57	73	83	83
60	77	84	84
63	144	85	144
66	263	87	263
69	317	89	317
72	363	91	363
75	415	94	415
78	531	130	531
81	755	243	755
84	948	952	952
87	956	963	963
90	1022	1024	1024
92	1018	1017	1018

Failure [min]	66,33	81,00	66,33
Failure °C	270	270	270

Between studs and wood fiber board

Maximum temperature rise on the unexposed side



Between studs and wood fiber board

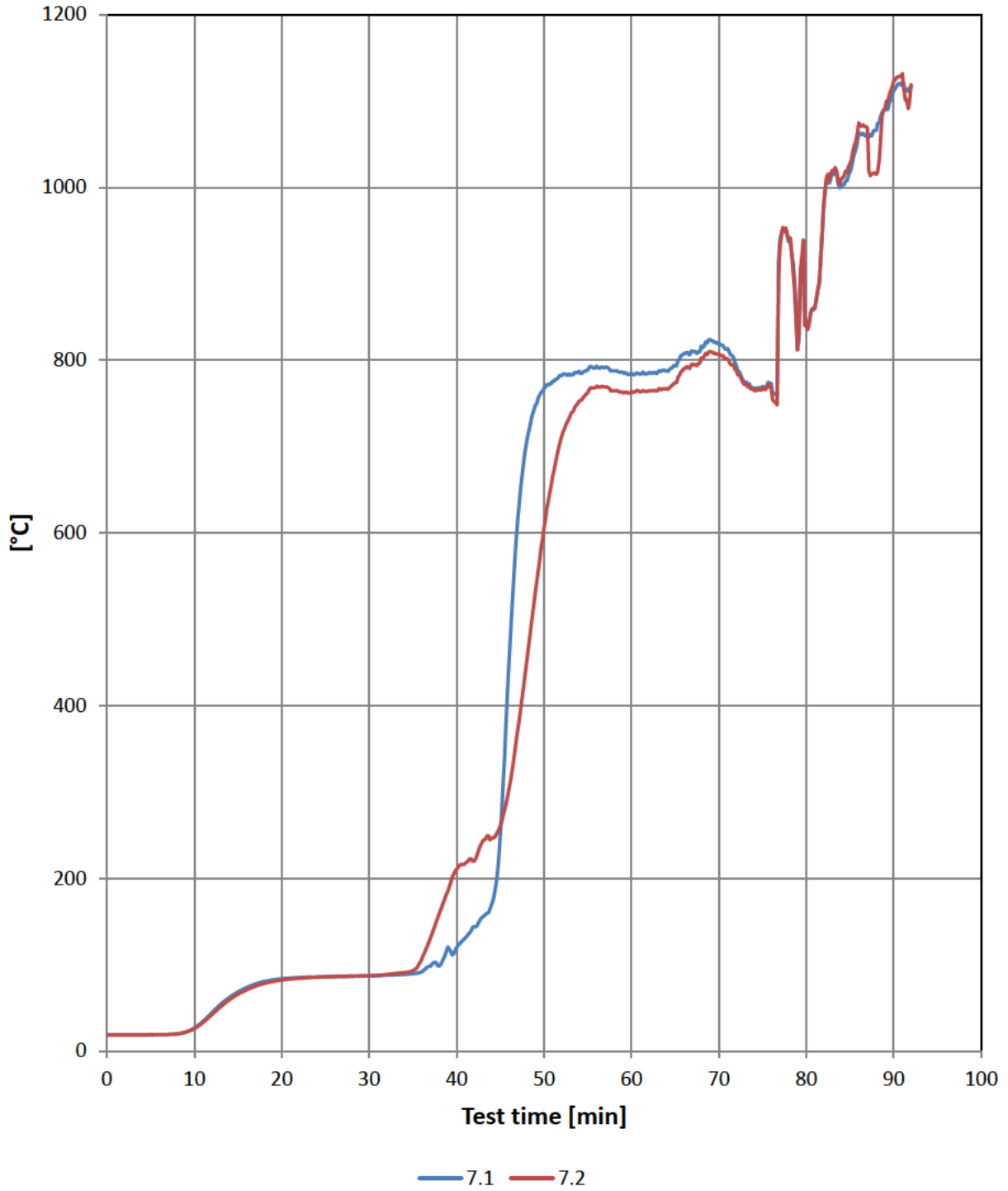
Maximum temperature rise on the unexposed side

Min. / °C	6.1	6.2	6.3	6.4	6.5	6.6	6.Max
0	19	19	19	19	19	19	19
3	19	19	19	19	19	19	19
6	19	19	19	19	19	19	19
9	19	19	19	19	19	19	19
12	19	19	19	19	19	19	19
15	19	20	20	20	19	19	20
18	21	22	24	23	21	22	24
21	25	26	30	28	25	26	30
24	30	31	37	35	29	32	37
27	36	37	43	42	35	38	43
30	41	42	49	48	41	44	49
33	45	46	54	53	47	49	54
36	49	49	58	57	52	54	58
39	53	53	62	61	56	58	62
42	58	56	65	64	60	62	65
45	76	64	69	70	63	65	76
48	92	82	79	83	70	70	92
51	101	92	97	96	84	88	101
54	106	98	103	102	96	100	106
57	142	98	105	106	102	104	142
60	236	100	107	109	106	104	236
63	377	107	113	117	109	117	377
66	481	128	278	148	116	296	481
69	542	167	643	204	130	597	643
72	578	234	795	891	159	669	891
75	598	315	870	815	207	699	870
78	634	388	896	823	567	808	896
81	790	592	795	797	896	843	896
84	957	961	943	943	1027	1016	1027
87	963	978	964	962	1030	1084	1084
90	1023	1039	1031	1020	866	996	1039
92	1014	1044	1028	1018	964	962	1044

Failure [min]	60,67	73,17	65,83	70,33	76,50	65,67	60,67
Failure °C	270	270	270	270	270	270	270

Between wood fiber board and wood fiber board

Maximum temperature rise inside the construction



Between wood fiber board and wood fiber board

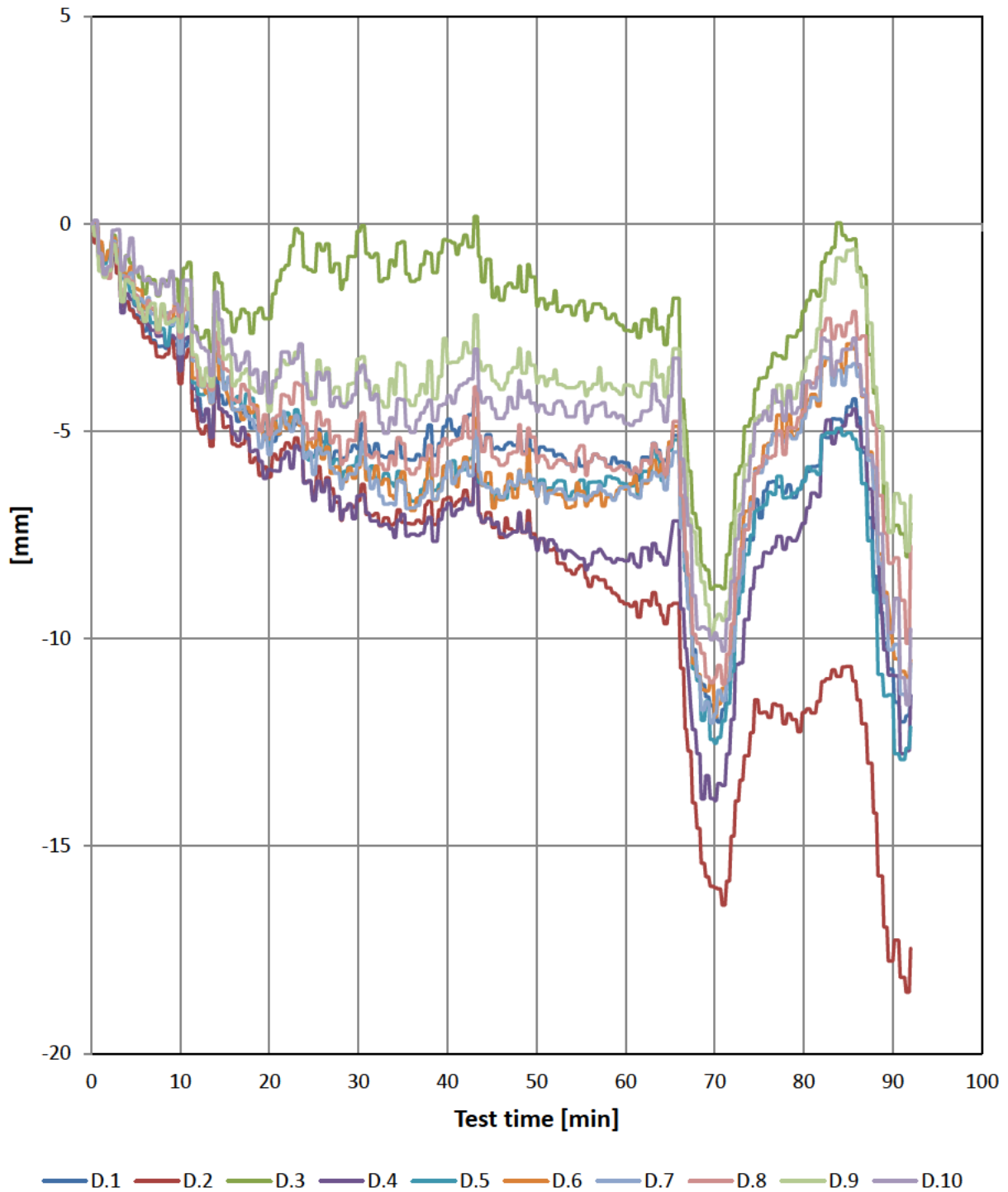
Maximum temperature rise inside the construction

Min. / °C	7.1	7.2	7.Max
0	19	19	19
3	19	19	19
6	19	19	19
9	22	22	22
12	44	42	44
15	69	66	69
18	81	78	81
21	85	83	85
24	86	86	86
27	86	87	87
30	87	88	88
33	88	90	90
36	92	106	106
39	121	185	185
42	144	220	220
45	251	261	261
48	705	449	705
51	776	666	776
54	787	753	787
57	791	769	791
60	785	764	785
63	785	765	785
66	808	790	808
69	824	810	824
72	794	788	794
75	770	768	770
78	937	939	939
81	860	861	861
84	1002	1009	1009
87	1058	1068	1068
90	1112	1123	1123
92	1118	1119	1119

Failure [min]	45,00	45,17	45,00
Failure °C	270	270	270

Deformation

Negative values indicate movement towards the furnace



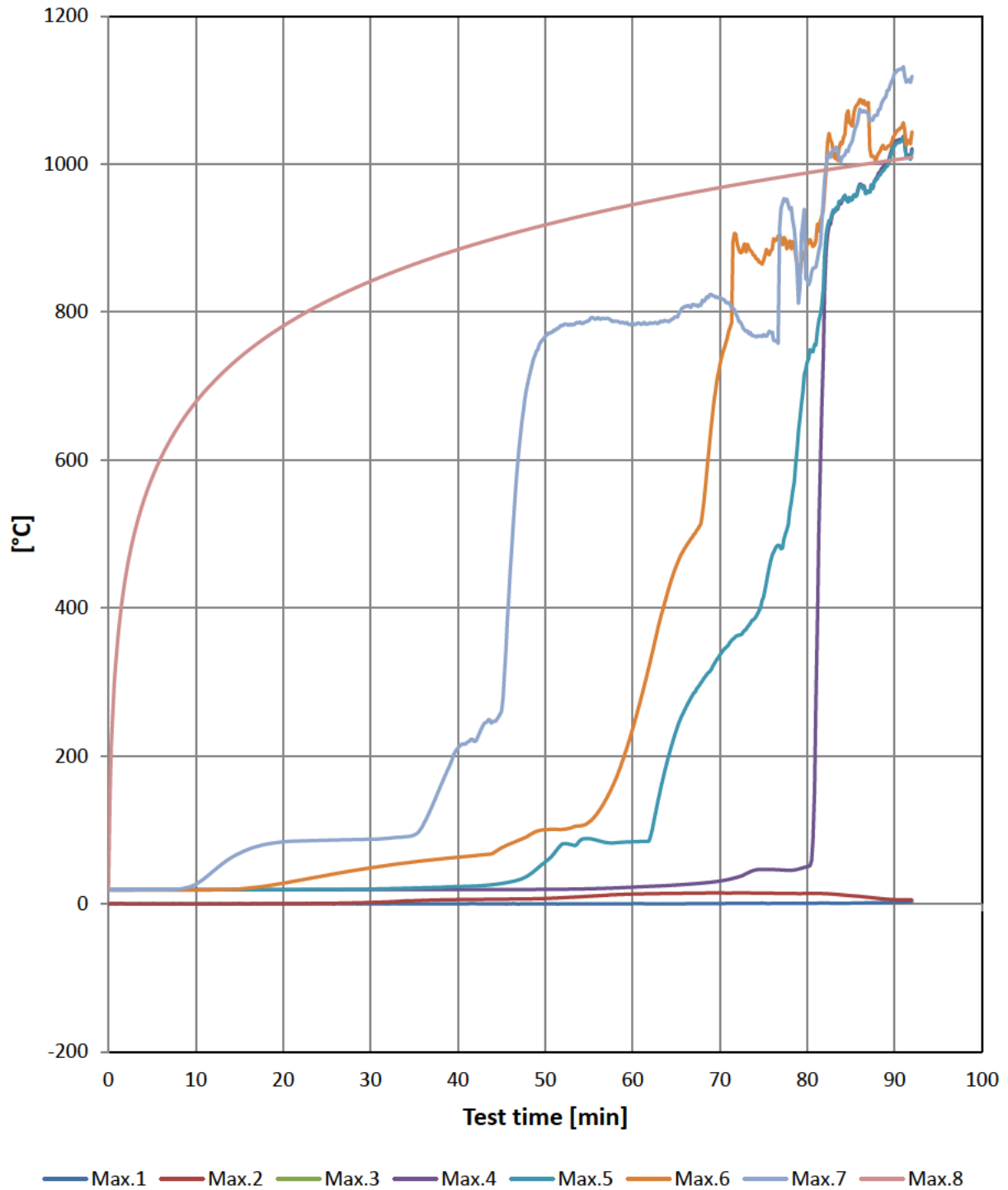
Deformation

Negative values indicate movement towards the furnace

Min. / mm	D.1	D.2	D.3	D.4	D.5	D.6	D.7	D.8	D.9	D.10
0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
3	-1,2	-1,2	-0,6	-0,9	-0,6	-0,6	-0,9	-1,0	-0,9	-0,1
6	-2,6	-2,7	-1,7	-2,4	-2,1	-2,0	-1,9	-2,2	-2,4	-1,4
9	-2,8	-2,8	-1,3	-2,7	-2,5	-2,3	-2,4	-2,1	-2,4	-1,1
12	-4,2	-4,9	-2,8	-4,5	-4,1	-3,7	-3,6	-3,9	-3,5	-2,9
15	-4,4	-4,9	-2,1	-4,5	-3,8	-3,9	-4,0	-3,5	-3,3	-2,9
18	-4,9	-5,8	-2,6	-5,5	-4,2	-4,6	-4,7	-4,4	-4,0	-3,6
21	-5,1	-5,7	-1,4	-6,0	-5,0	-5,1	-5,0	-4,6	-3,5	-3,7
24	-5,4	-6,2	-1,0	-6,3	-5,4	-5,4	-5,7	-4,8	-3,6	-3,9
27	-5,7	-6,4	-1,2	-6,9	-5,8	-6,0	-5,9	-5,3	-4,1	-4,4
30	-5,4	-6,7	-0,2	-6,6	-5,6	-5,9	-5,8	-4,8	-3,3	-3,6
33	-5,6	-7,1	-1,3	-7,2	-6,0	-6,2	-6,8	-5,9	-4,4	-5,1
36	-5,7	-7,2	-1,4	-7,5	-6,7	-6,9	-6,9	-6,0	-4,4	-5,0
39	-5,3	-6,9	-0,7	-7,1	-6,3	-6,4	-6,4	-5,4	-3,7	-4,4
42	-4,7	-6,4	-0,3	-6,6	-5,9	-5,6	-5,8	-4,6	-2,9	-3,8
45	-5,4	-7,3	-1,8	-7,2	-6,7	-6,9	-6,5	-5,6	-3,8	-4,5
48	-5,0	-7,1	-1,0	-7,0	-6,2	-5,9	-6,0	-4,8	-3,0	-3,8
51	-5,5	-7,9	-2,1	-7,9	-6,4	-6,7	-6,7	-5,7	-3,9	-4,6
54	-5,9	-8,4	-2,2	-7,9	-6,5	-6,8	-6,6	-6,0	-4,0	-4,7
57	-5,6	-8,6	-1,9	-7,8	-6,2	-6,4	-6,3	-5,7	-3,5	-4,4
60	-5,8	-9,2	-2,6	-8,1	-6,3	-6,4	-6,3	-5,9	-3,9	-4,8
63	-5,3	-8,9	-2,1	-7,7	-5,5	-5,7	-6,0	-5,3	-3,3	-3,9
66	-5,1	-9,2	-1,8	-7,2	-5,2	-4,9	-5,5	-4,8	-3,0	-3,2
69	-11,4	-15,7	-8,3	-13,3	-11,5	-11,3	-11,5	-10,9	-9,2	-9,8
72	-10,4	-14,8	-7,2	-11,9	-10,8	-9,8	-10,3	-9,7	-8,3	-8,6
75	-7,1	-11,8	-3,7	-8,3	-6,9	-5,9	-6,0	-5,9	-4,6	-4,7
78	-6,5	-12,1	-3,3	-7,8	-6,6	-5,2	-5,3	-5,6	-4,4	-4,7
81	-5,9	-11,8	-1,6	-6,5	-6,0	-4,1	-4,2	-3,8	-3,1	-4,0
84	-4,7	-10,9	0,0	-5,0	-4,9	-3,3	-3,5	-2,5	-0,8	-3,3
87	-5,5	-12,1	-1,3	-5,4	-6,3	-4,2	-4,0	-2,7	-1,5	-4,1
90	-10,7	-17,8	-7,4	-10,9	-11,4	-10,2	-10,3	-8,2	-7,4	-9,9
92	-11,4	-17,5	-7,2	-11,4	-12,1	-10,5	-10,6	-7,8	-6,5	-9,8

Maximum temperature through the layers

Max.8=ISO834 fire curve. The others correspond to the thermocouple groups



Maximum temperature through the layers

Max.8=ISO834 fire curve. The others correspond to the thermocouple groups

Min. / °C	Max.1	Max.2	Max.4	Max.5	Max.6	Max.7	Max.8
0	0	0	19	19	19	19	20
3	0	0	19	19	19	19	502
6	0	0	19	19	19	19	603
9	0	0	19	19	19	22	663
12	0	0	19	19	19	44	705
15	0	0	19	19	20	69	739
18	0	0	19	19	24	81	766
21	0	1	19	19	30	85	789
24	0	1	19	19	37	86	809
27	0	1	19	20	43	87	826
30	0	2	19	20	49	88	842
33	0	3	19	21	54	90	856
36	0	5	19	22	58	106	869
39	0	6	19	23	62	185	881
42	0	6	19	24	65	220	892
45	0	7	20	28	76	261	902
48	0	7	20	38	92	705	912
51	0	8	20	68	101	776	921
54	0	10	20	86	106	787	930
57	0	12	21	83	142	791	938
60	0	13	23	84	236	785	945
63	0	14	24	144	377	785	953
66	0	14	26	263	481	808	960
69	0	15	29	317	643	824	966
72	1	15	36	363	891	794	973
75	1	14	47	415	870	770	979
78	1	14	46	531	896	939	985
81	1	14	270	755	896	861	990
84	1	12	950	952	1027	1009	996
87	1	9	964	963	1084	1068	1001
90	2	6	1028	1024	1039	1123	1006
92	3	5	1021	1018	1044	1119	1009



Photo No. 1 Wooden frame in test frame



Photo No. 2 Wooden frame with first layer of boards seen from unexposed side



Photo No. 3 Inner layer of boards seen from exposed side



Photo No. 4 Holes drilled for insulating construction



Photo No. 5 Holes are drilled and the board pieces were saved and taped back in the board layer after filling the wall with insulation.



Photo No. 6 Outer layer of wood fiber board seen from exposed side



Photo No. 7 Inner layer seen from unexposed side



Photo No. 8 Outer layer during mounting seen from unexposed side



Photo No. 9 Outer layer of wood fiber board seen from unexposed side



Photo No. 10 Outer layer of wood fiber board seen from exposed side



Photo No. 11 Test specimen seen from unexposed side before test start



Photo No. 12 Test specimen seen from unexposed side at test start



Photo No. 13 Test specimen seen from exposed side 11 minutes into the test



Photo No. 14 Test specimen seen from unexposed side 28 minutes into the test



Photo No. 15 Test specimen seen from exposed side 35 minutes into the test



Photo No. 16 Test specimen seen from exposed side 49 minutes into the test



Photo No. 17 Test specimen seen from unexposed side 60 minutes into the test



Photo No. 18 Test specimen seen from unexposed side 75 minutes into the test



Photo No. 19 Test specimen seen from unexposed side at test end



Photo No. 20 Test specimen seen from exposed side after the test



Photo No. 19 Test specimen seen from exposed side after the test