

Title:

Fire Resistance Test
In Accordance With
BS EN 1365-2: 2014,
On A Loadbearing
Timber Floor
Construction Protected
By A Plasterboard
Ceiling And
Incorporating Twelve
Down Lighters

Date of Test:

19th May 2020

Issue 2:

21st August 2020

WF Report No.

424794



Prepared for:

Orlight Ltd

Victor Way
Radlett Road
Colney Street
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Hertfordshire
AL2 2FL



0249

Test Specimen

Summary of Tested Specimen

The timber floor had overall nominal dimensions of 4294 mm long by 3000 mm wide by 303 mm deep and comprised 'Staircraft Group Limited', engineered, TFSi, Plus 47 x 235' I-joists at 600 mm centres. The unexposed surface of the floor comprised nominally 22 mm thick tongue and grooved chipboard flooring.

The floor assembly was protected on its underside by a decoupled ceiling, formed from two layers of 15 mm thick 'Gyproc FireLine TE' boards. The ceiling was fixed to 0.75 mm thick 'RB1 Resilient bar', at 400 mm centres, which were in turn fixed to the joist flanges on the exposed face.

The ceiling incorporated twelve, 'Orlight Limited' downlighter light fittings giving a downlight density of 1/m². The lights are referenced as follows:

Test Ref.	Model Ref.	Description
A(1-2)	ORL1009	Fixed Downlight
B (1-2)	ORL1019	Direction Downlight
C	ORL009	Fixed Downlight
D	ORLCL	Fixed IP54-Rated Downlight
E (1-2)	AQUASPOT-FG	Fixed IP65-Rated Downlight
F	STEAMSPOT-FG	Fixed IP65-Rated Downlight
G	SHOWERSPOT	Fixed IP65-Rated Downlight
H	ORL1005	Fixed IP20-Rated Downlight
I	ORL6009	Fixed Downlight

Downlights were purposely incorporated both immediately adjacent to a joist flange, and directly over a board joint, as well as being spaced 600 mm apart in both orthogonal directions.

The floor supported a uniformly distributed load of 1.28 kN/m². This load was provided by the test sponsor as to represent the expected maximum working load for the floor construction in practice.

Detailed drawings of the test specimen(s) and a comprehensive description of the test construction based on a detailed survey of the specimen(s) and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

Performance Criteria and Test Results

Loadbearing Capacity

This is the time in completed minutes for which the test specimen continues to maintain its ability to support the test load during the test. Support of the test load is determined by both the amount and the rate of Deflection. The limiting deflection and the limiting rate of deflection for the specimen, as specified by the Standard, are calculated as:

Criteria	Value
(L) Length of clear span, <i>in mm</i>	4147
(d) Depth of Structural Section, <i>in mm</i>	235
Max Deflection ($L^2/400d$) - <i>in mm</i>	183
Rate ($L^2 / 9000d$) - <i>in mm</i>	8.1
Max Deflection ($L^2/400d$) * 1.5 - <i>in mm</i>	274.5

This criterion was satisfied for 90 minutes, after which time the test was discontinued with no failure.

Integrity

It is required that the specimen retains its separating function, without:

- causing ignition of a cotton pad when applied
- permitting the penetration of a gap gauge as specified in BS EN 1363-1: 2020
- sustained flaming on the unexposed surface
- subsequent failure of loadbearing capacity

These requirements were satisfied for the periods shown below:

Sustained flaming

90 minutes – No failure*

Gap gauge

90 minutes – No failure*

Cotton pad

90 minutes – No failure*

Insulation

It is required that the mean temperature rise of the unexposed surface shall not be greater than 140°C and that the maximum temperature rise shall not be greater than 180°C. Insulation failure also occurs simultaneously with integrity failure.

These requirements were satisfied for the period shown below:

Specimen

90 minutes – No failure*

*Test duration. The test was discontinued after a period of 90 minutes.

Date of Test

19th May 2020

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Signatories



Responsible Officer

J. King*

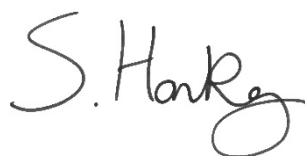
Technical Officer



Approved

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Head of Department

S. Hankey*

Business Unit Head – Fire Resistance

* For and on behalf of **Warringtonfire**.Report Issued: 2nd June 2020

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Revision History

Issue No: 2	Re-issue Date: 21 st August 2020
Revised By: C. Sweeney	Approved By: G. Edmonds
Reason for Revision: Corrected test standard reference: BS EN 1363-1: 2012 now BS EN 1363-1: 2020	

Issue No:	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

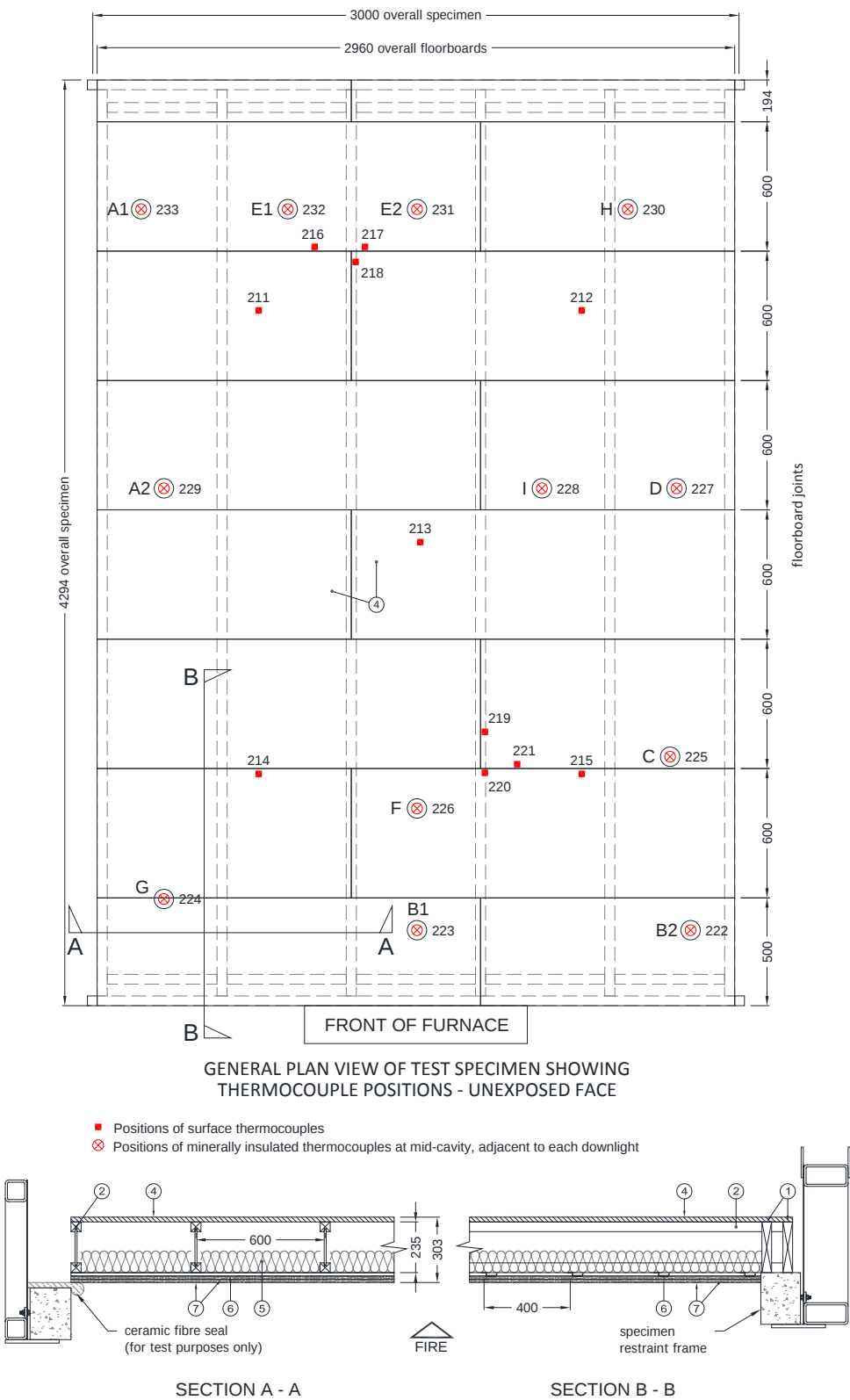
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Test Conditions

Standard	BS EN 1365-2: 2014, 'Fire resistance tests for loadbearing elements – Part 2: Floors and Roofs' The purpose of the test was to evaluate the performance of a timber floor construction protected by a ceiling of known fire resistance, when incorporating down lighter light fitting assemblies.
Sampling	Warringtonfire was not involved in the sampling or selection of the tested specimen or any of the components. The results obtained during the test only apply to the test samples as provided by the test sponsor.
Installation	Representatives of Warringtonfire assembled the floor construction (joists and floorboards) between the 11th and 12th May 2020. Representatives of the test sponsor installed the plasterboard ceiling and downlighters on the 13th May 2020.
Conditioning	The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 9 days. Throughout this period of time both the temperature and the humidity of the laboratory were measured and recorded as being within a range of from 14°C to 23°C and 29.5% to 54% respectively.
Instruction to Test	The test was conducted on the 19th May 2020 at the request of Orlight Ltd, the test sponsor.
Ambient Temperature	The ambient air temperature in the vicinity of the test construction was 31°C at the start of the test with a maximum variation of +7 and -1°C during the test.
Furnace	The furnace was controlled so that its mean temperature complied with the requirements of BS EN 1363-1: 2020 Clause 5.1 using eight plate thermometers, distributed over a plane 100 mm from the underside of test assembly.
Thermocouples	Thermocouples were provided to monitor the unexposed surface of the specimen. The output of all instrumentation was recorded at no less than one minute intervals. The locations and reference numbers of the various unexposed surface thermocouples are shown in Figure 1.
Application of the load	The full test load was applied via dead load, uniformly distributed over the test specimen 60 minutes before the commencement of the test.
Loadbearing Capacity Criteria	A linear deflection transducer was provided at the approximate centre on the unexposed surface of the specimen to record its vertical deflection.
Furnace Pressure	After the first five minutes of testing and for the remainder of the test, the furnace atmospheric pressure was controlled so that it complied with the requirements of BS EN 1363-1: 2020, clause 5.2.1 The calculated pressure differential relative to the laboratory atmosphere 100 mm below the soffit of the specimen was 19 (± 5) Pa between 5 and 10 minutes and 19 (± 3) Pa thereafter.

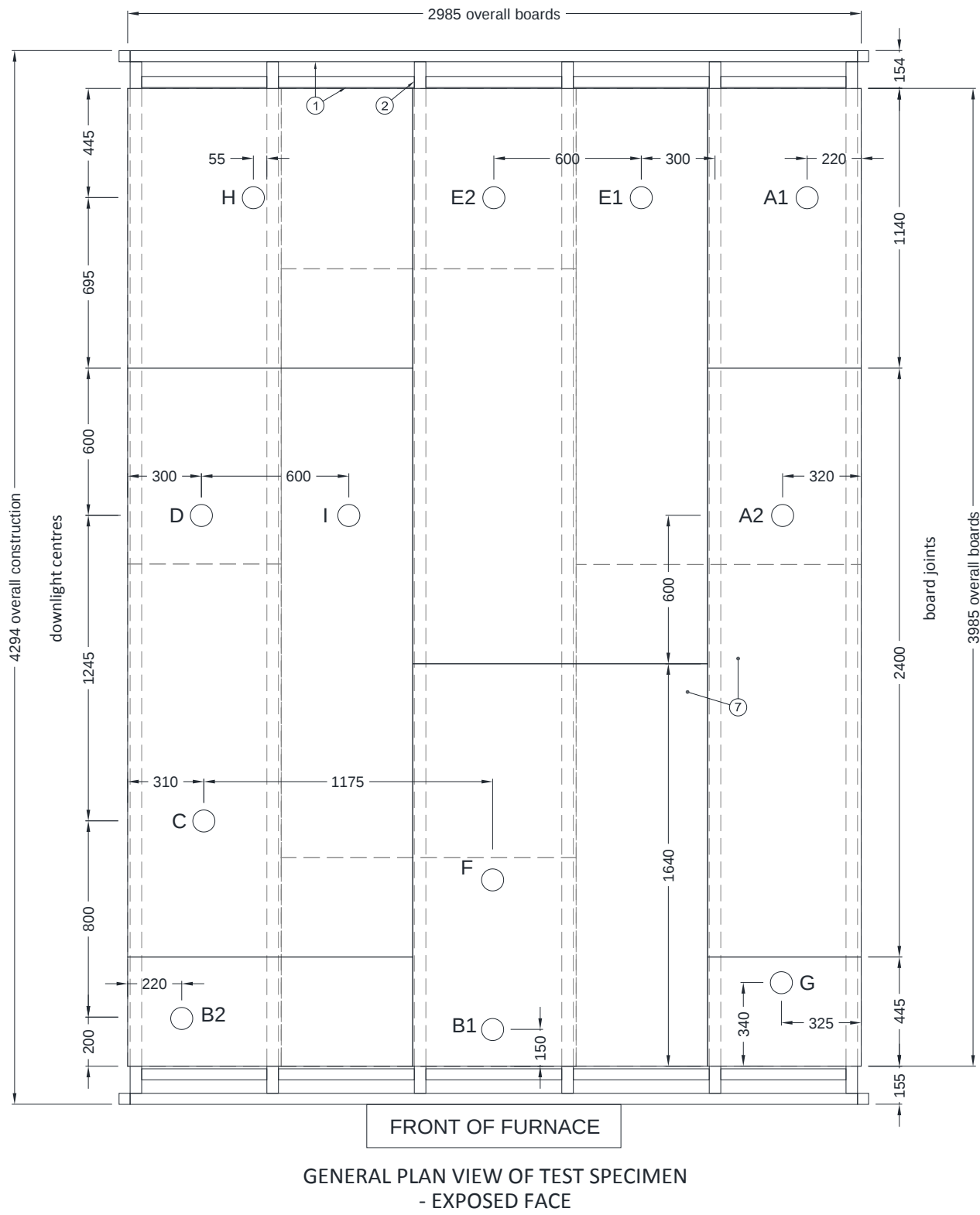
Test Specimen

Figure 1 - General plan view of test specimen showing thermocouple positions - Unexposed face



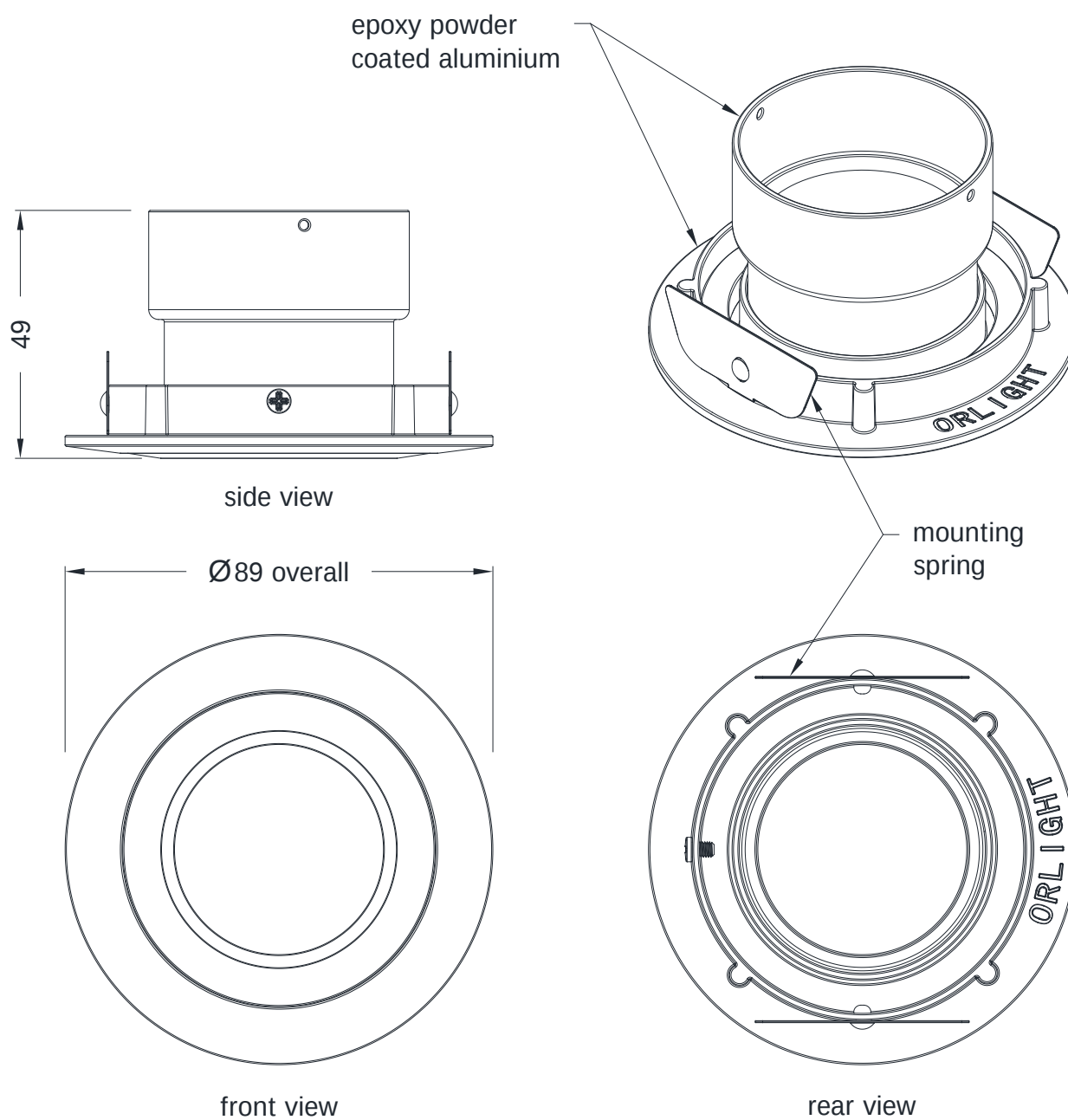
Do not scale. All dimensions are in mm

Figure 2 – General plan view showing ceiling board layout & test specimens 'A' to 'I' - Exposed face



Do not scale. All dimensions are in mm

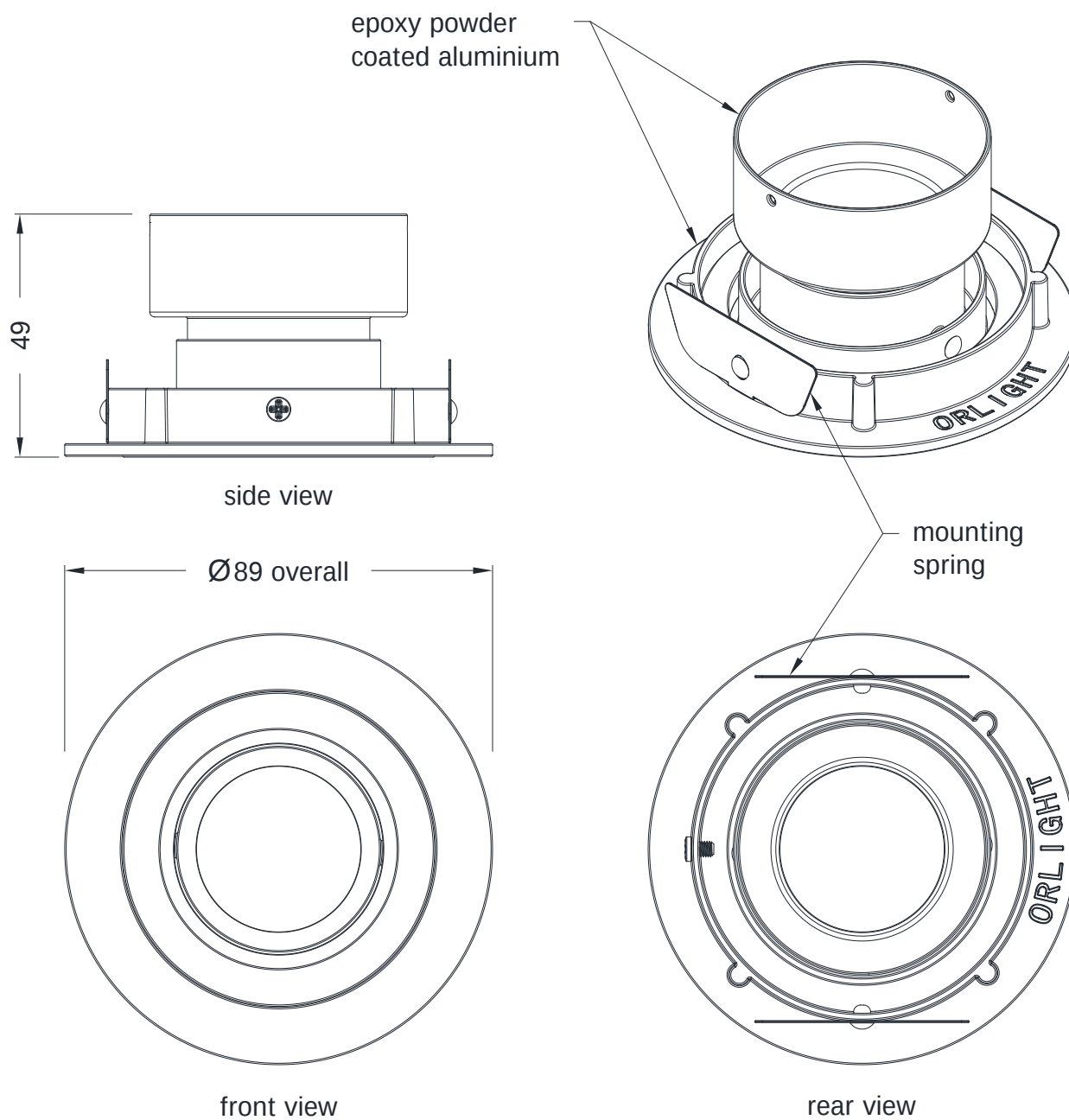
Figure 3 – Details of Specimens A1 & A2 - ORL1009



ORL1009

Do not scale. All dimensions are in mm

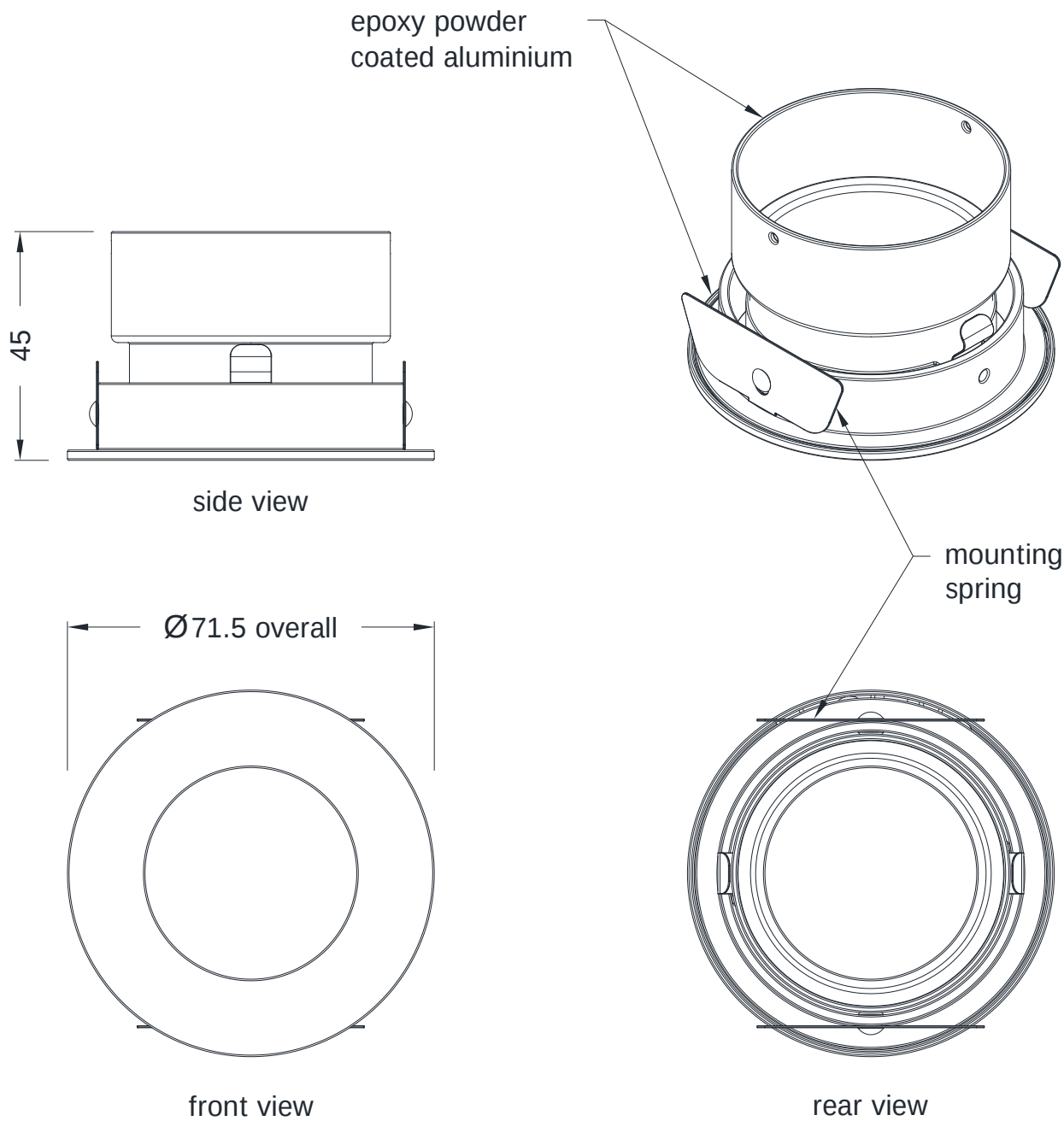
Figure 4 – Details of Specimens B1 & B2 - ORL1019



ORL1019

Do not scale. All dimensions are in mm

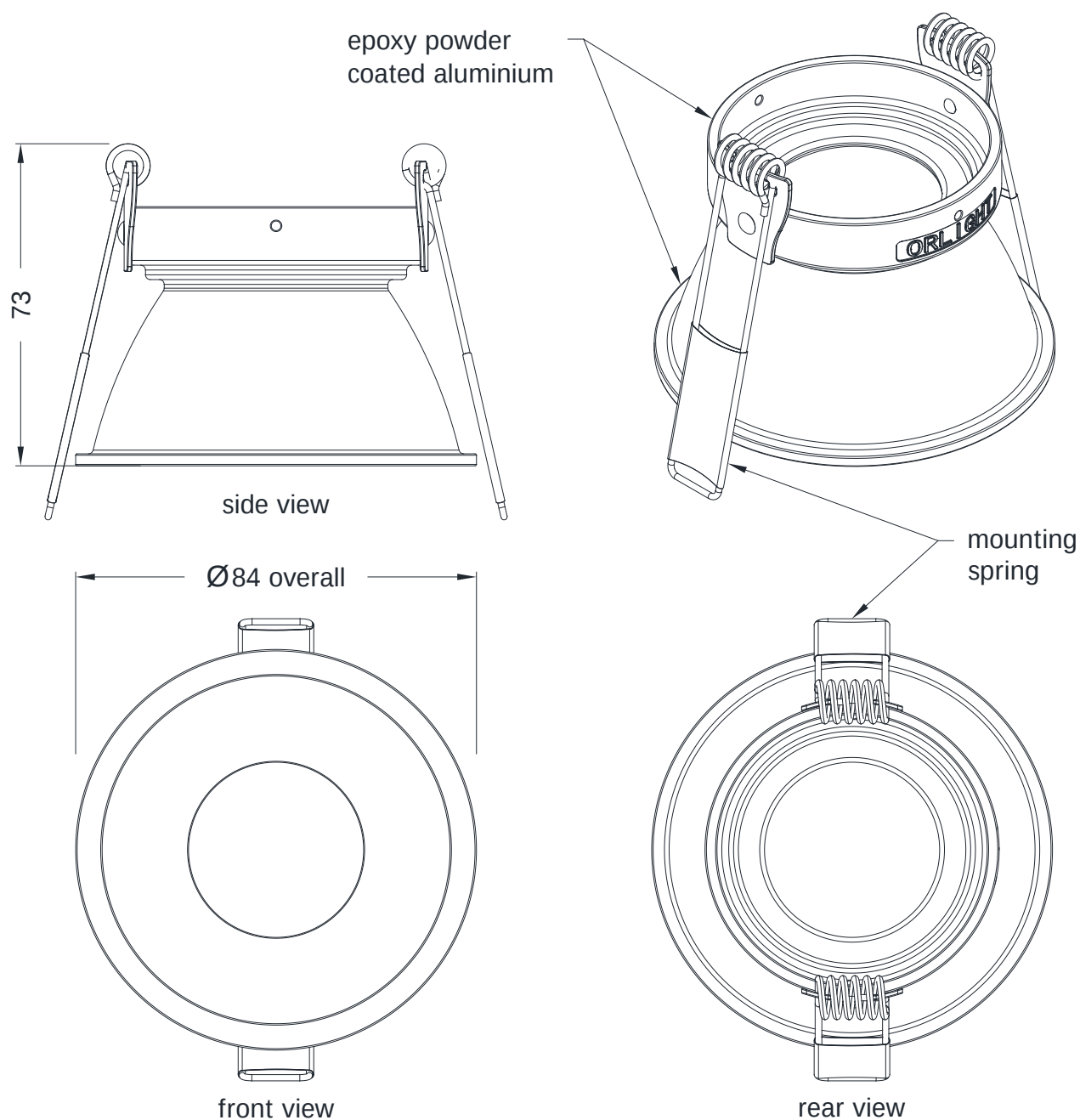
Figure 5 – Details of Specimen C - ORL009



ORL009

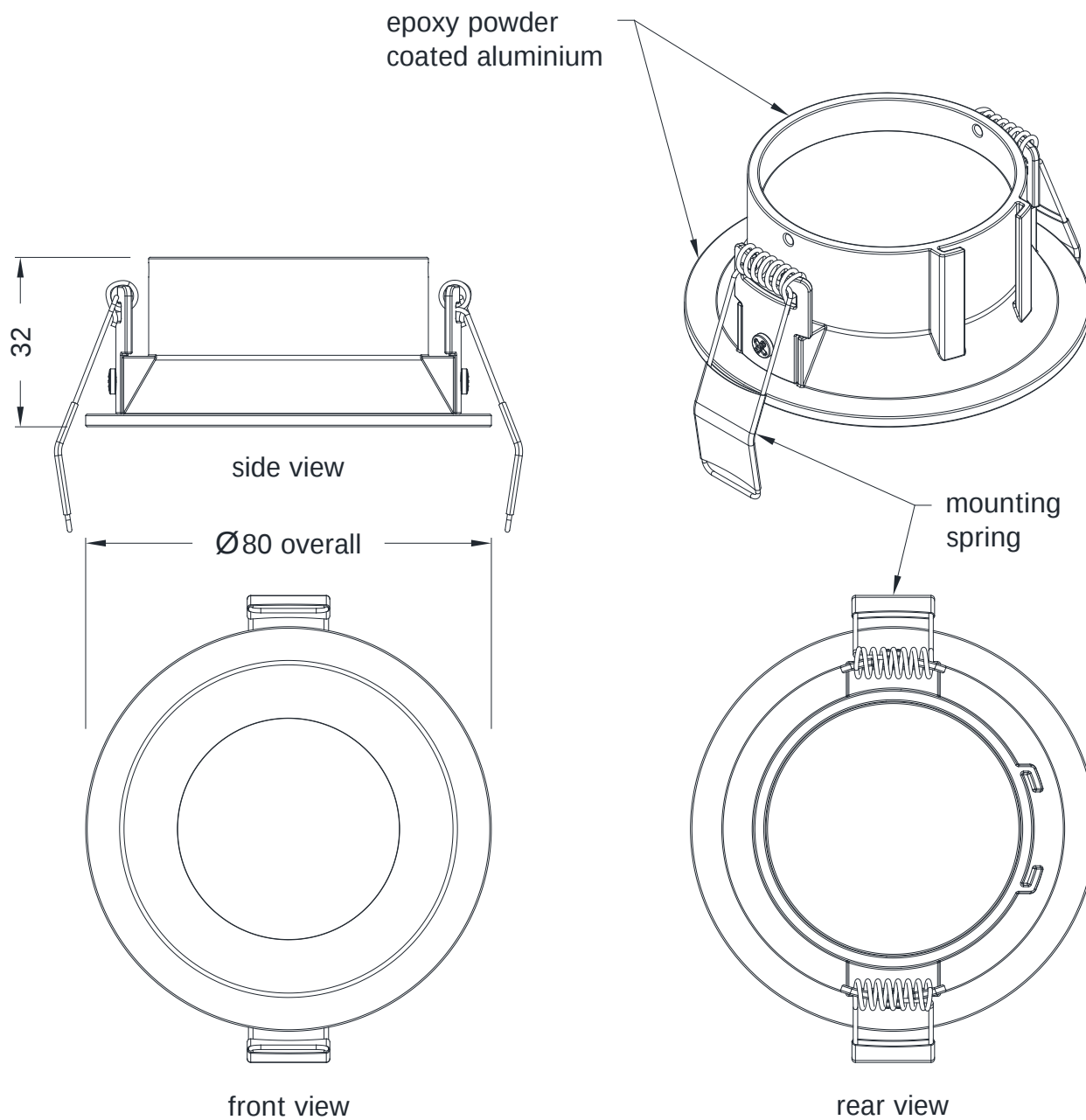
Do not scale. All dimensions are in mm

Figure 6 – Details of Specimen D - ORLCL-IP54



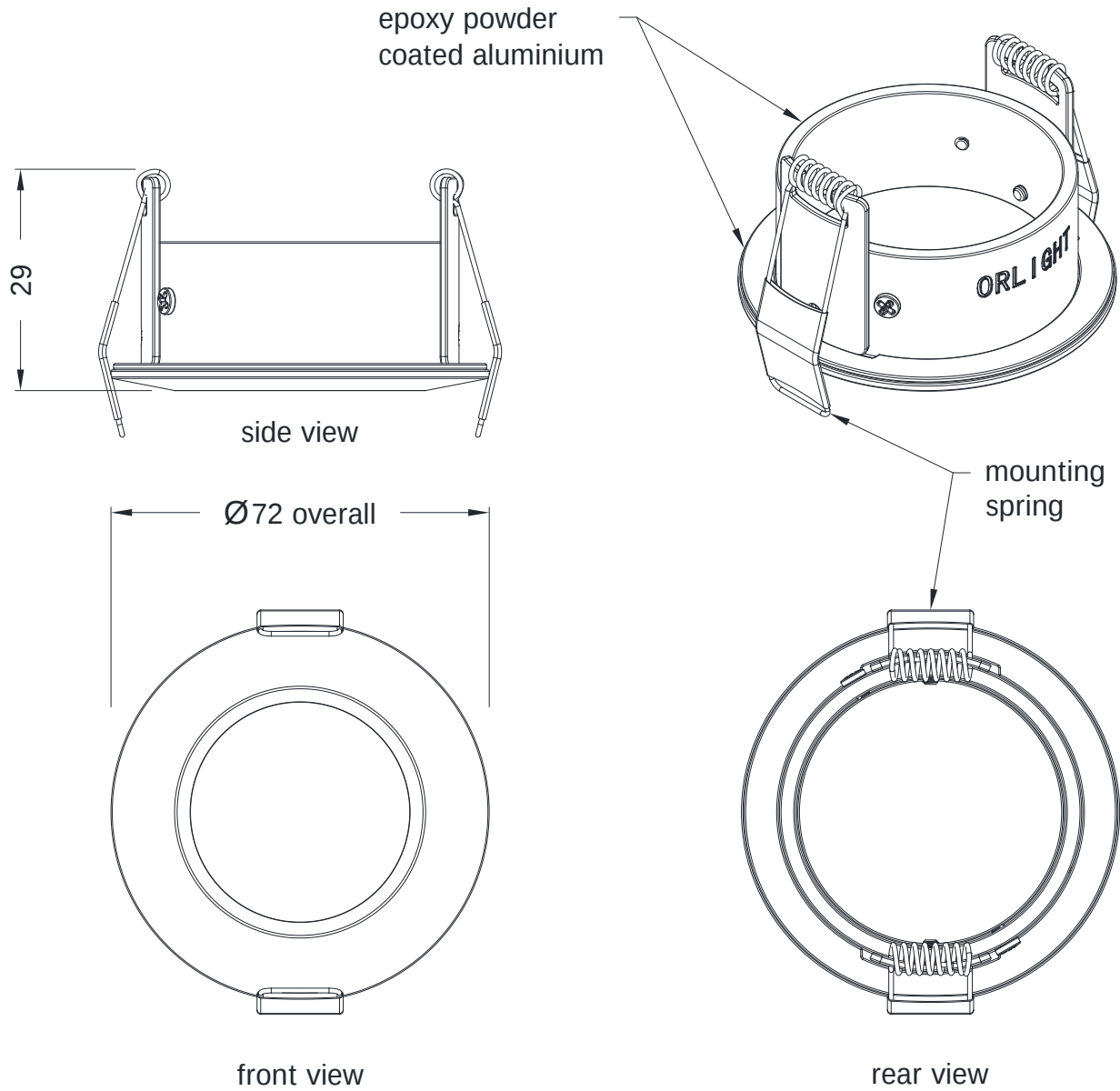
ORLCL-IP54

Do not scale. All dimensions are in mm

Figure 7 – Details of Specimens E1 & E2 - AQUASPOT**AQUASPOT**

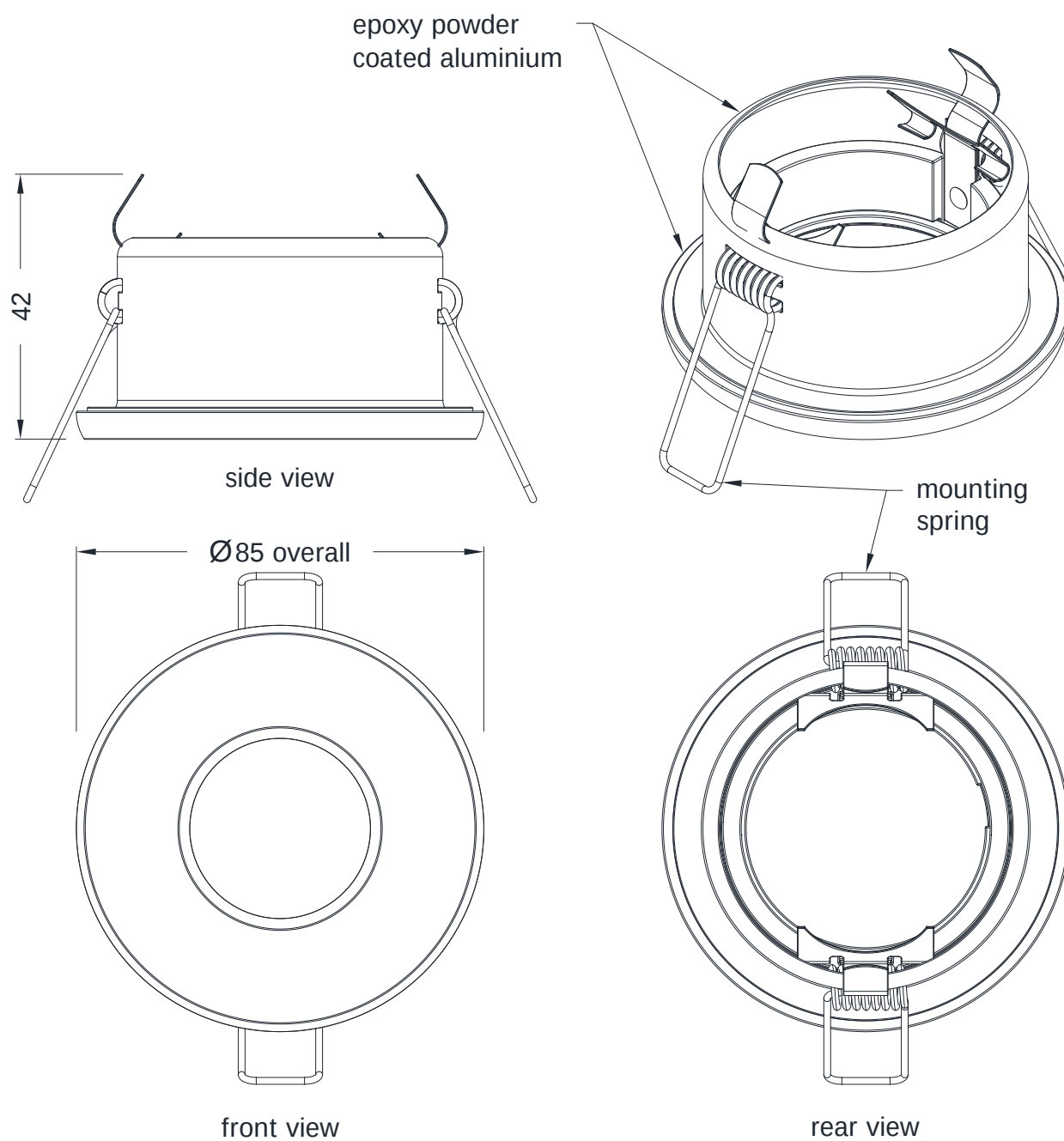
Do not scale. All dimensions are in mm

Figure 8 – Details of Specimen F - STEAMSPOT

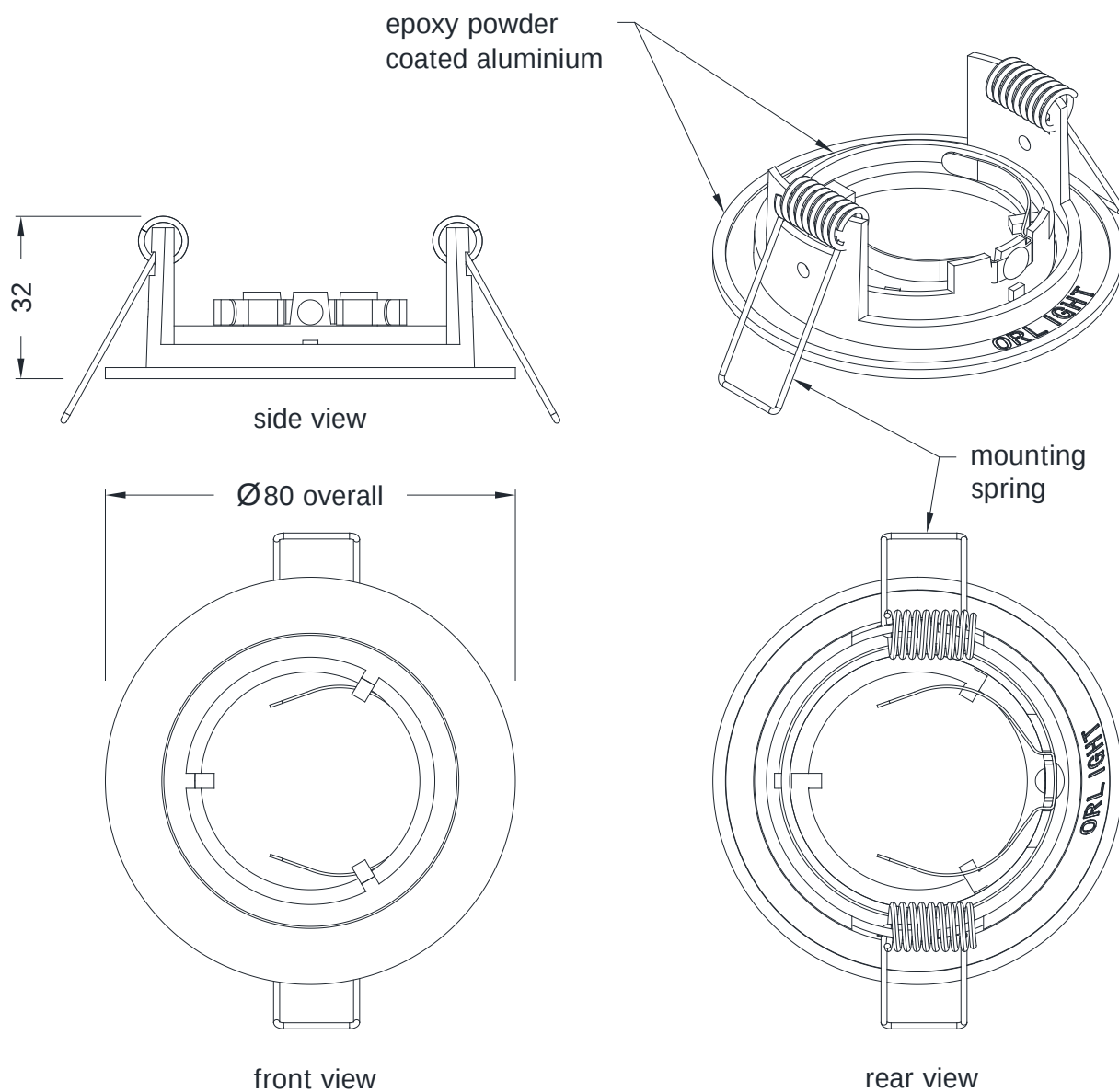


STEAMSPOT

Do not scale. All dimensions are in mm

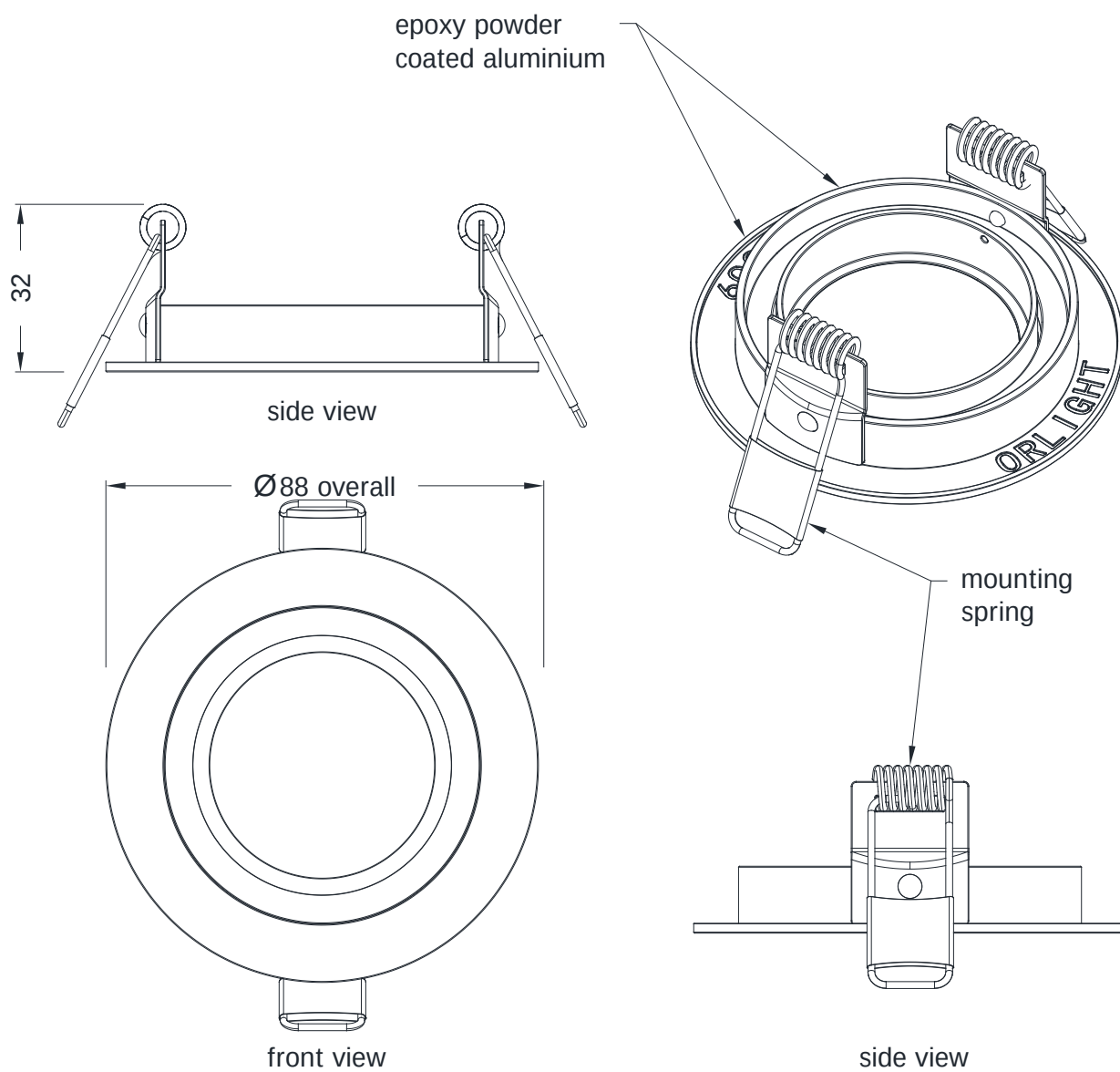
Figure 9 – Details of Specimen G - SHOWERSPOT**SHOWERSPOT**

Do not scale. All dimensions are in mm

Figure 10 – Details of Specimen H – ORL1005

ORL1005

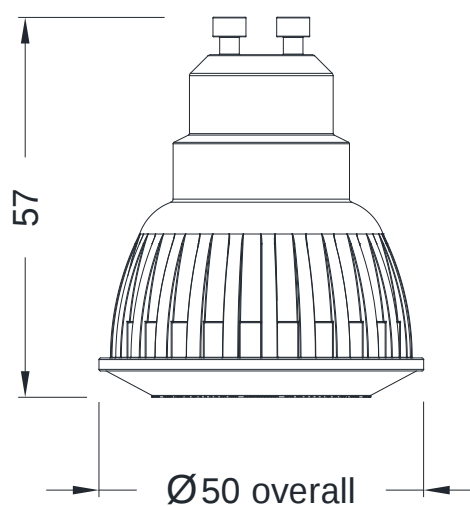
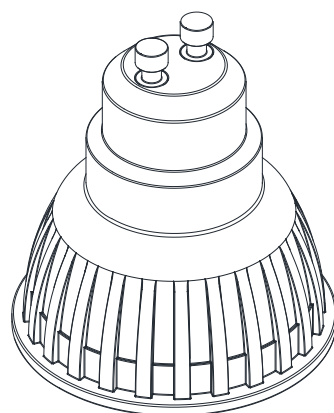
Do not scale. All dimensions are in mm

Figure 11 – Details of Specimen I – ORL6009

ORL6009

Do not scale. All dimensions are in mm

Figure 12 – Details of LUMENPLUS 3 lamp



LUMENPLUS 3

Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 12)

(All values are nominal unless stated otherwise)

(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. End beams & end noggins	
Manufacturer	: Staircraft Group Limited
Reference	: Glulam
Material	: Glued laminated timber
Section size	: 47 mm wide x 235 mm deep
Density	: 450 kg/m ³ (stated)
Fixing method	: Through fixed to joists with three nails to top and bottom flanges at each joist joint and two nails to top and bottom flanges at each noggin joint
Fixings	
i. type	: Ring shank nails
ii. size	: 100 mm long x 3.1 mm diameter
2. Timber I-Joists	
Manufacturer	: Staircraft Group Limited
Reference	: TFSi 47 x 235
Material	: Softwood flange and 11 mm thick OSB web
Section size	: 47 mm wide x 235 mm deep spaced at 600 mm centres. Flanges were 47 mm wide x 47 mm deep
Density	: 450 kg/m ³ (flange – measured) 663 kg/m ³ (web – measured)
3. End Blocks	
Material	: MDF (Meduin density fireboard.)
Thickness	: 18 mm
Overall size	: 140 mm long x 45 mm wide
Fixing method	: Fixed to web of joists at noggining positions with adhesive and a single screw per block
Fixings	
i. manufacturer	: DeWalt
ii. reference	: DWF40100 Drywall screws
iii. type	: Black phosphate coated steel
iv. size	: 3.5 mm long x 3.5 mm diameter
Adhesive	
i. reference	: Egger Joint and Joist Adhesive
ii. type	: D4 grade adhesive

Item**Description****4. Floorboards**

Manufacturer	:	Egger
Reference	:	Peel Clean Xtra (P5 Grade)
Material	:	Chipboard (tongue & groove)
Thickness	:	22 mm
Density	:	690 kg/m ³ (measured)
Fixing method	:	Through fixed to timber framework with nails and adhesive
Fixings		
i. type	:	Ring shank nails
ii. size	:	65 mm long x 3.25 mm diameter
iii. centres	:	250 mm
Adhesive		
i. reference	:	Egger Joint and Joist Adhesive
ii. type	:	D4 grade adhesive

5. Insulation

Manufacturer	:	Knauf
Reference	:	Space Loft Roll
Material	:	Glass mineral wool
Thickness	:	100 mm (uncompressed)
Density	:	11 kg/m ³ (measured)
Fixing method	:	Cut to size and fitted between the joists to the exposed face

6. Resilient bar

Manufacturer	:	British Gypsum
Reference	:	RB1 Resilient bar
Material	:	Galvanised steel
Thickness	:	0.75 mm
Section size	:	69 mm wide x 16 mm deep
Fixing method	:	Through fixed to timber framework to exposed face
Fixings		
i. manufacturer	:	DeWalt
ii. reference	:	DWF4010011 Drywall Screws
iii. type	:	Black phosphate coated steel
iv. size	:	35 mm long x 3.5 mm diameter
v. centres	:	400 mm

7. Ceiling boards

Manufacturer	:	British Gypsum
Reference	:	Gyproc FireLine TE
Material	:	Gypsum plasterboard with glass fibre and additional additives
Thickness	:	30 mm (2 layers of 15 mm)
Density	:	855 kg/m ³ (measured)
Fixing method	:	Through fixed to resilient bars with screws. Board joints were staggered
Fixings (inner layer)		
i. manufacturer	:	DeWalt
ii. reference	:	DWF4010011
iii. type	:	Black phosphate coated steel
iv. size	:	35 mm long x 3.5 mm diameter
v. centres	:	230 mm (edge), 230 mm (field)

Item**Description****7. Ceiling boards (cont.)**

Fixings (outer layer)

- i. manufacturer : 4Trade
- ii. reference : Drywall Screws
- iii. type : Black phosphate coated steel
- iv. size : 50 mm long x 3.5 mm diameter
- v. centres : 230 mm (edge), 230 mm (field)

Filler

- i. manufacturer : British Gypsum
- ii. reference : Ready Mix Joint Cement

8. Specimens A1 & A2

- Manufacturer : Orlight Limited
- Reference : ORL1009
- Description : Fixed downlight with anti-glare baffle and magnetic lamp change mechanism. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 3)
- Material : Aluminium
- Overall sizes :
- i. height (excluding lamp) : 49 mm
- ii. height (including lamp) : 103 mm
- iii. overall diameter : 89 mm
- iv. cut-out diameter : 78 mm

9. Specimens B1 & B2

- Manufacturer : Orlight Limited
- Reference : ORL1019
- Description : Directional downlight with anti-glare baffle, magnetic lamp change and spring blade fitting mechanism. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 4)
- Material : Aluminium
- Overall sizes :
- i. height (excluding lamp) : 49 mm
- ii. height (including lamp) : 117 mm
- iii. overall diameter : 89 mm
- iv. cut-out diameter : 78 mm

10. Specimen C

- Manufacturer : Orlight Limited
- Reference : ORL009
- Description : Fixed downlight with anti-glare baffle. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 5)
- Material : Aluminium
- Overall sizes :
- i. height (excluding lamp) : 45 mm
- ii. height (including lamp) : 103 mm
- iii. overall diameter : 71.5 mm
- iv. cut-out diameter : 64 mm

Item**Description****11. Specimen D**

Manufacturer	:	Orlight Limited
Reference	:	ORLCL
Description	:	Fixed IP54-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 6)
Material	:	Aluminium
Overall sizes	:	
i. height (excluding lamp)	:	73 mm
ii. height (including lamp)	:	113 mm
iii. overall diameter	:	84 mm
iv. cut-out diameter	:	78 mm

12. Specimens E1 & E2

Manufacturer	:	Orlight Limited
Reference	:	AQUASPOT-FG
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 7)
Material	:	Aluminium
Overall sizes	:	
i. height (excluding lamp)	:	32 mm
ii. height (including lamp)	:	95 mm
iii. overall diameter	:	80 mm
iv. cut-out diameter	:	72 mm

13. Specimen F

Manufacturer	:	Orlight Limited
Reference	:	STEAMSPOT-FG
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 8)
Material	:	Aluminium
Overall sizes	:	
i. height (excluding lamp)	:	29 mm
ii. height (including lamp)	:	75 mm
iii. overall diameter	:	72 mm
iv. cut-out diameter	:	68 mm

14. Specimen G

Manufacturer	:	Orlight Limited
Reference	:	SHOWERSPOT
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (see Figure 9)
Material	:	Aluminium
Overall sizes	:	
i. height (excluding lamp)	:	42 mm
ii. height (including lamp)	:	78 mm
iii. overall diameter	:	85 mm
iv. cut-out diameter	:	72 mm

Item**Description****15. Specimen H**

Manufacturer	:	Orlight Limited
Reference	:	ORL1005
Description	:	Fixed IP20-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 10)
Material	:	Aluminium
Overall sizes	:	
i. height (excluding lamp)	:	32 mm
ii. height (including lamp)	:	66 mm
iii. overall diameter	:	80 mm
iv. cut-out diameter	:	70 mm

16. Specimen I

Manufacturer	:	Orlight Limited
Reference	:	ORL6009
Description	:	Fixed downlight with anti-glare baffle and magnetic lamp change. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 17). (See Figure 11)
Material	:	Steel / Magnetic Suspension
Overall sizes	:	
i. height (excluding lamp)	:	32 mm
ii. height (including lamp)	:	68 mm
iii. overall diameter	:	88 mm
iv. cut-out diameter	:	80 mm

17. Lamp

Manufacturer	:	Orlight Limited
Reference	:	Lumenplus 3 (LP3) 7W LED lamp
Overall size	:	57 mm high x 50 mm diameter (See Figure 12)

Test Observations

Time		All observations are from the unexposed face unless noted otherwise.
mins	secs	
-60	00	Load applied.
00	00	The test commences.
11	19	When viewed from the exposed face tape and jointing has detached, board joints darken. The bezels of Specimens B1, B2, C, D, F and G have detached.
15	00	No significant visible change. Steam/smoke release can only be seen from perimeter of the ceiling construction.
16	29	When viewed from the exposed face tape and jointing has detached, board joints darken. Sections of Specimens A1, A2, E1, E2 and H have detached.
21	51	When viewed from the exposed face, boards begin to glow.
31	38	When viewed from the exposed face, joints begin to open to approximately 5 mm.
42	01	When viewed from the exposed face, boards glow brighter. No change to joints.
45	07	No significant visible change.
48	52	When viewed from the exposed face, boards continue to glow brighter and joints continue to open to approximately 8 mm.
60	00	Slight increase in the steam/smoke release from the perimeter of the specimen.
64	17	When viewed from the exposed face, joints continue to open, up to approximately 15 mm. Flaming can be seen from Specimen D location.
68	44	When viewed from the exposed face, flaming can be seen from board joints.
73	39	When viewed from the exposed face, central section of first layer of board has detached.
76	14	No significant visible change, sustained steam/smoke release from perimeter of specimen. Crackling sounds can be heard.
79	30	When viewed from the exposed face, approximately a quarter of the first layer of board has detached. Flaming has increased at joint and specimen locations.
84	03	Second layer of board starts to detach.
85	00	The central section of the floor is bowing towards the heating conditions..
90	00	Test Discontinued at client's request.

Test Photographs

The exposed face of the floor assembly prior to test



The unexposed face of the floor assembly prior to test



The unexposed face of the floor assembly after 60 minutes of testing



The unexposed face of the floor assembly after 89 minutes of testing



Temperature, Pressure and Deflection Data

Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard BS EN 1363-1: 2020

Time Mins	Specified Furnace Temperature Deg. C	Actual Furnace Temperature Deg. C
0	20	52
3	502	554
6	603	632
9	663	648
12	706	710
15	739	746
18	766	765
21	789	787
24	809	806
27	826	823
30	842	837
33	856	856
36	869	869
39	881	882
42	892	894
45	902	905
48	912	913
51	921	924
54	930	931
57	938	939
60	945	948
63	953	956
66	960	966
69	966	974
72	973	977
75	979	979
78	985	986
81	990	993
84	996	1017
87	1001	1026
90	1006	1036

Individual Temperatures And Mean Recorded On The Unexposed Surface Of The Specimen

Time Mins	T/C Number 211 Deg. C	T/C Number 212 Deg. C	T/C Number 213 Deg. C	T/C Number 214 Deg. C	T/C Number 215 Deg. C	Mean Temp Deg. C
0	25	25	24	25	24	25
3	25	25	24	25	24	25
6	25	25	24	25	24	25
9	25	25	24	25	24	25
12	25	25	24	25	24	25
15	25	25	24	26	25	25
18	25	26	25	27	25	26
21	26	27	25	29	27	27
24	27	29	26	31	29	28
27	29	31	27	33	31	30
30	31	33	28	35	33	32
33	33	35	30	37	35	34
36	35	37	31	39	37	36
39	37	39	32	41	39	38
42	39	40	33	42	40	39
45	41	42	34	44	42	41
48	43	43	35	45	43	42
51	45	44	36	47	44	43
54	46	46	37	48	45	44
57	48	47	38	49	46	46
60	49	48	39	50	47	47
63	50	48	40	51	48	47
66	51	49	40	52	48	48
69	52	50	41	53	49	49
72	52	50	41	53	49	49
75	52	51	41	53	49	49
78	52	52	42	53	50	50
81	53	53	42	54	50	50
84	54	69	42	54	51	54
87	55	78	58	54	51	59
90	61	86	72	54	61	67

Individual Temperatures Recorded On The Unexposed Surface Of The Specimen Adjacent to Joints

Time Mins	T/C Number 216 Deg. C	T/C Number 217 Deg. C	T/C Number 218 Deg. C	T/C Number 219 Deg. C	T/C Number 220 Deg. C	T/C Number 221 Deg. C
0	32	24	25	24	25	25
3	32	25	25	24	25	25
6	33	25	25	24	25	25
9	40	24	25	24	25	25
12	*	25	25	24	25	25
15	*	25	25	24	25	26
18	*	25	25	24	25	26
21	*	25	26	25	26	28
24	*	26	26	25	27	30
27	*	27	27	26	28	32
30	*	28	28	27	29	34
33	*	29	30	28	30	36
36	*	30	31	29	32	38
39	*	32	33	29	33	40
42	*	33	34	30	34	41
45	*	35	35	31	35	43
48	*	36	37	32	37	44
51	*	38	38	32	38	46
54	*	39	39	33	39	47
57	*	41	41	34	40	48
60	*	42	42	34	42	49
63	*	43	43	35	43	49
66	*	44	44	36	43	50
69	*	45	44	36	44	50
72	*	46	45	37	45	51
75	*	47	46	37	45	51
78	*	47	46	38	46	51
81	*	48	46	38	46	52
84	*	50	47	38	46	52
87	*	62	47	38	47	53
90	*	69	49	40	48	65

*Thermocouple malfunction

Individual Temperatures Recorded At Mid-Height Of The Cavity Coincidental With The Light Fittings

Time Mins	T/C Number 222 Deg. C	T/C Number 223 Deg. C	T/C Number 224 Deg. C	T/C Number 225 Deg. C	T/C Number 226 Deg. C	T/C Number 227 Deg. C
0	23	24	19	24	27	24
3	33	27	19	31	29	24
6	35	30	19	34	54	32
9	46	39	*	42	70	41
12	59	48	*	51	73	52
15	68	56	*	62	77	65
18	75	62	*	68	79	78
21	78	68	*	74	83	86
24	78	72	*	75	90	87
27	78	75	*	77	92	89
30	86	78	*	79	99	93
33	91	81	80	81	103	97
36	92	84	81	82	108	102
39	92	86	82	82	109	106
42	92	89	81	84	108	111
45	93	91	81	87	109	115
48	93	93	80	88	109	121
51	94	94	84	90	110	130
54	94	96	90	91	110	137
57	95	96	91	93	111	146
60	96	97	94	96	112	157
63	97	97	95	101	115	175
66	99	98	97	107	119	188
69	101	99	99	112	126	195
72	104	103	100	119	137	195
75	107	108	103	126	143	203
78	110	113	114	133	149	215
81	114	118	120	141	154	229
84	116	123	122	142	165	234
87	120	143	*	163	210	299
90	149	170	*	216	263	508

*Thermocouple malfunction

Individual Temperatures Recorded At Mid-Height Of The Cavity Coincidental With The Light Fittings (continued)

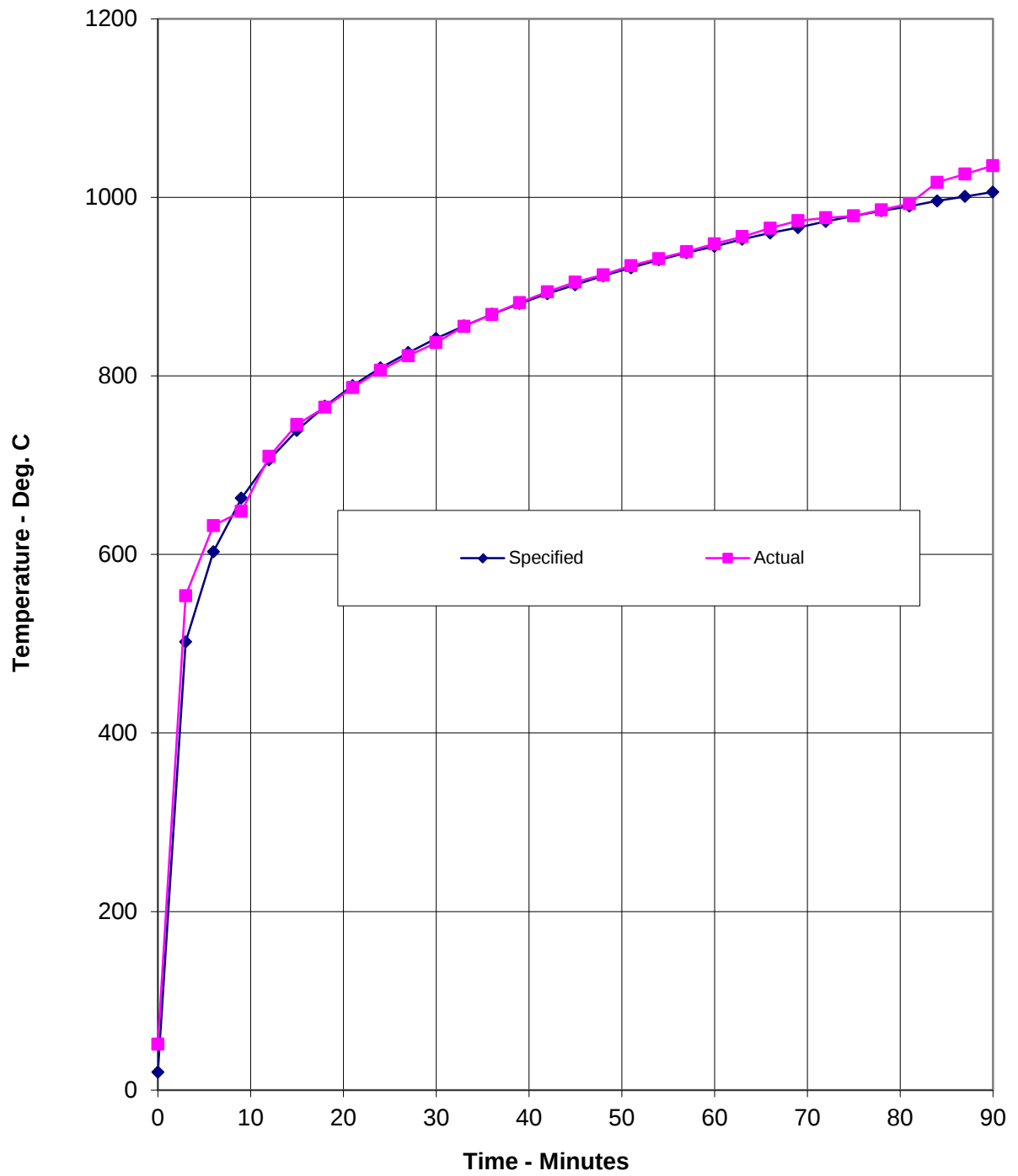
Time Mins	T/C Number 228 Deg. C	T/C Number 229 Deg. C	T/C Number 230 Deg. C	T/C Number 231 Deg. C	T/C Number 232 Deg. C	T/C Number 233 Deg. C
0	25	20	24	19	25	26
3	26	*	25	*	26	66
6	29	*	31	*	31	150
9	42	*	*	59	37	166
12	56	50	*	75	45	155
15	67	56	*	81	54	146
18	73	61	87	82	66	142
21	75	62	98	80	69	150
24	77	63	113	81	69	151
27	79	63	132	83	75	153
30	82	64	146	92	78	160
33	90	67	157	98	82	165
36	97	72	170	104	85	171
39	101	73	189	112	88	173
42	100	74	211	117	91	175
45	101	75	232	119	96	179
48	107	74	253	123	99	182
51	110	74	279	129	99	187
54	106	82	302	138	100	194
57	107	82	341	145	101	203
60	115	83	533	153	103	215
63	129	80	580	165	103	227
66	145	77	547	173	107	255
69	168	75	540	180	112	263
72	179	82	520	183	121	267
75	189	84	530	182	127	270
78	191	96	579	178	133	270
81	254	102	575	157	139	273
84	526	105	513	684	156	279
87	711	110	530	806	173	278
90	873	116	683	857	375	282

*Thermocouple malfunction

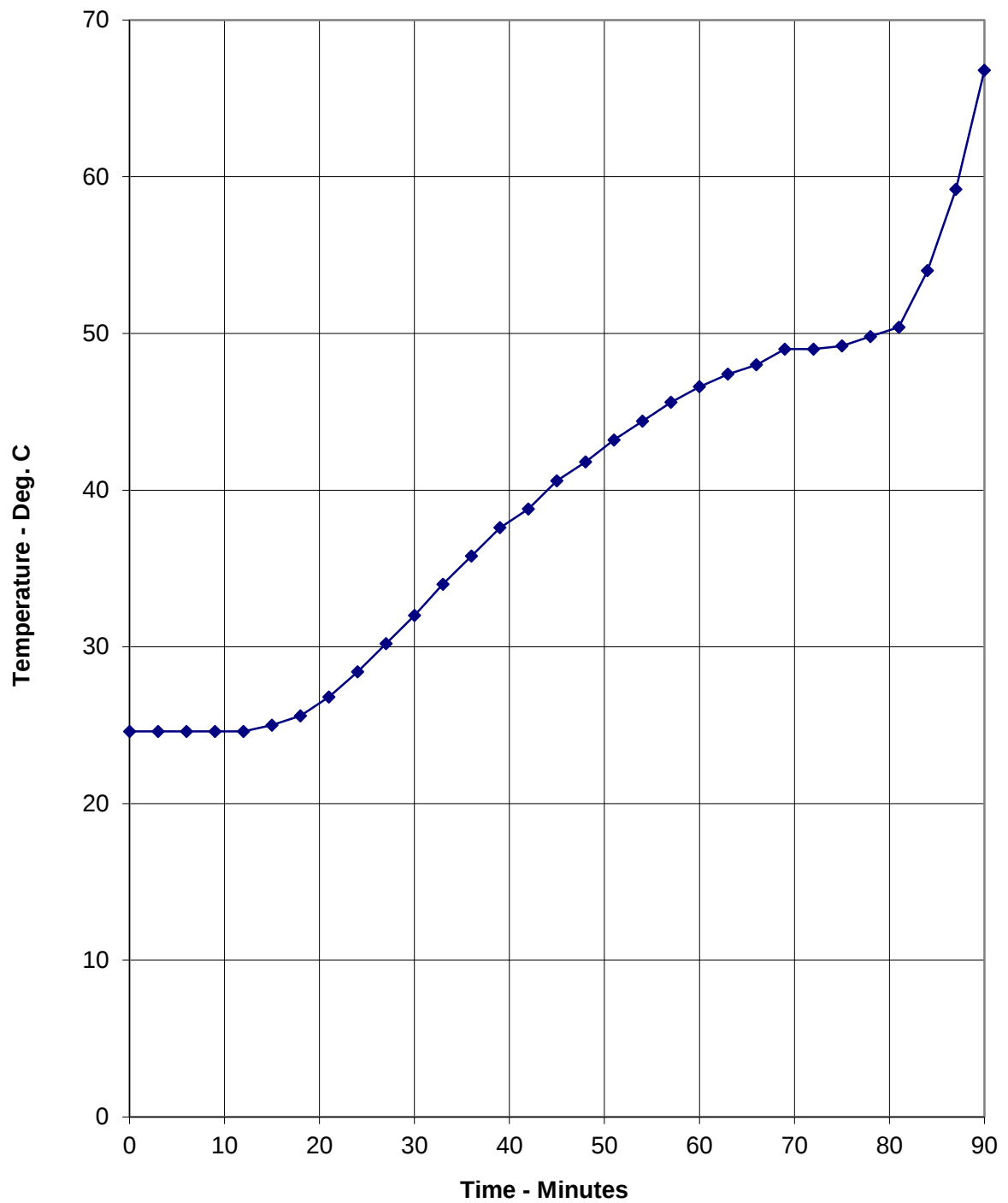
Central Vertical Deflection Of The Specimen

Time Mins	Central Vertical Deflection mm	Rate Of Deflection mm/min
0	0.0	0.0
3	0.0	0.0
6	0.0	0.0
9	1.0	1.0
12	2.0	1.0
15	3.0	1.0
18	3.0	0.0
21	4.0	1.0
24	4.0	0.0
27	5.0	0.0
30	6.0	0.0
33	7.0	0.0
36	7.0	0.0
39	7.0	0.0
42	7.0	0.0
45	8.0	1.0
48	8.0	0.0
51	9.0	0.1
54	10.0	1.0
57	10.0	0.0
60	11.0	1.0
63	11.0	0.0
66	11.0	0.0
69	11.0	0.0
72	12.0	0.0
75	13.0	1.0
78	16.0	1.0
81	25.0	7.0
84	31.0	0.0
85	38.0	7.0
86	60.0	22.0
87	75.0	15.0
90	110.0	15.0

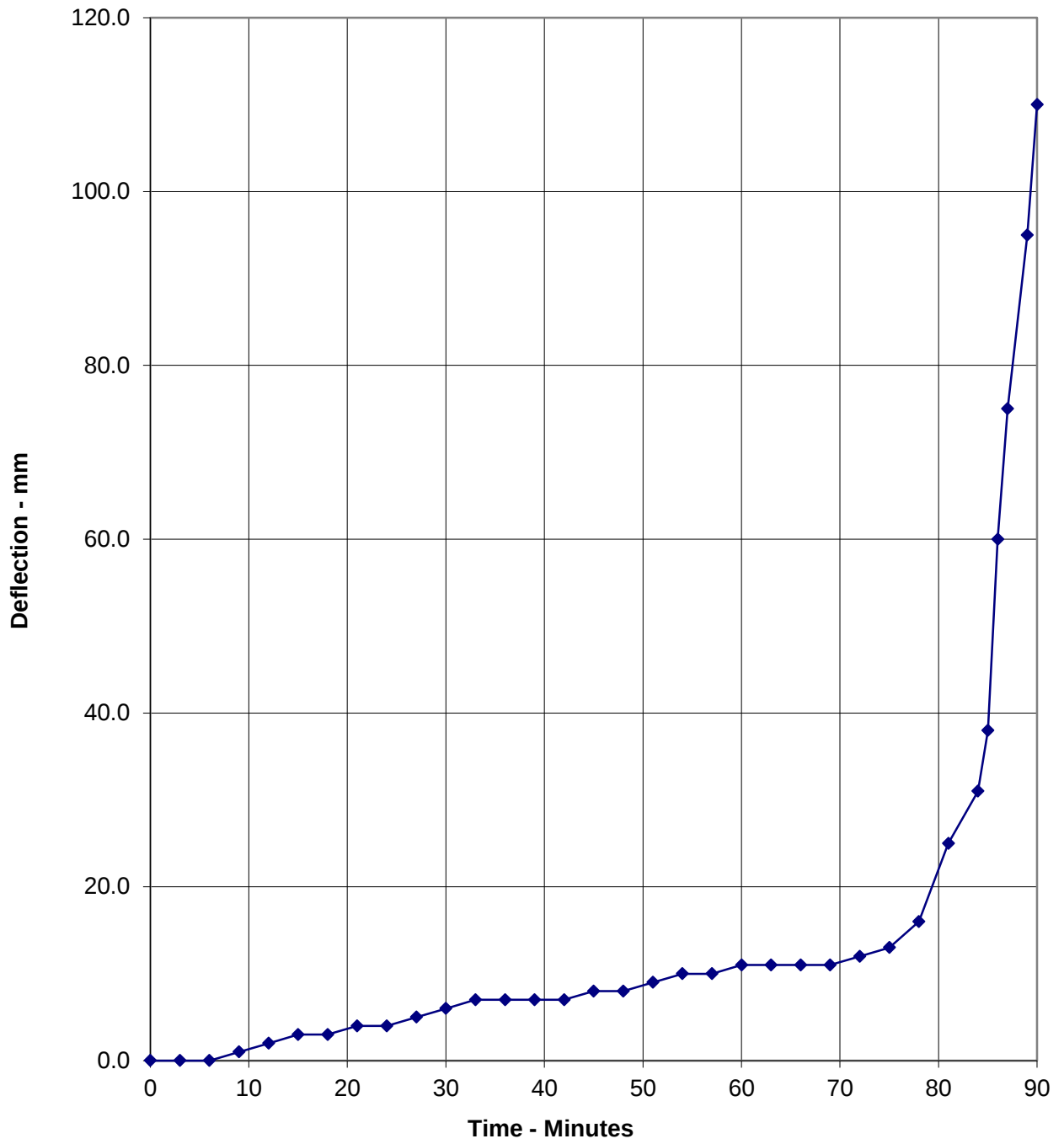
Graph Showing Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard



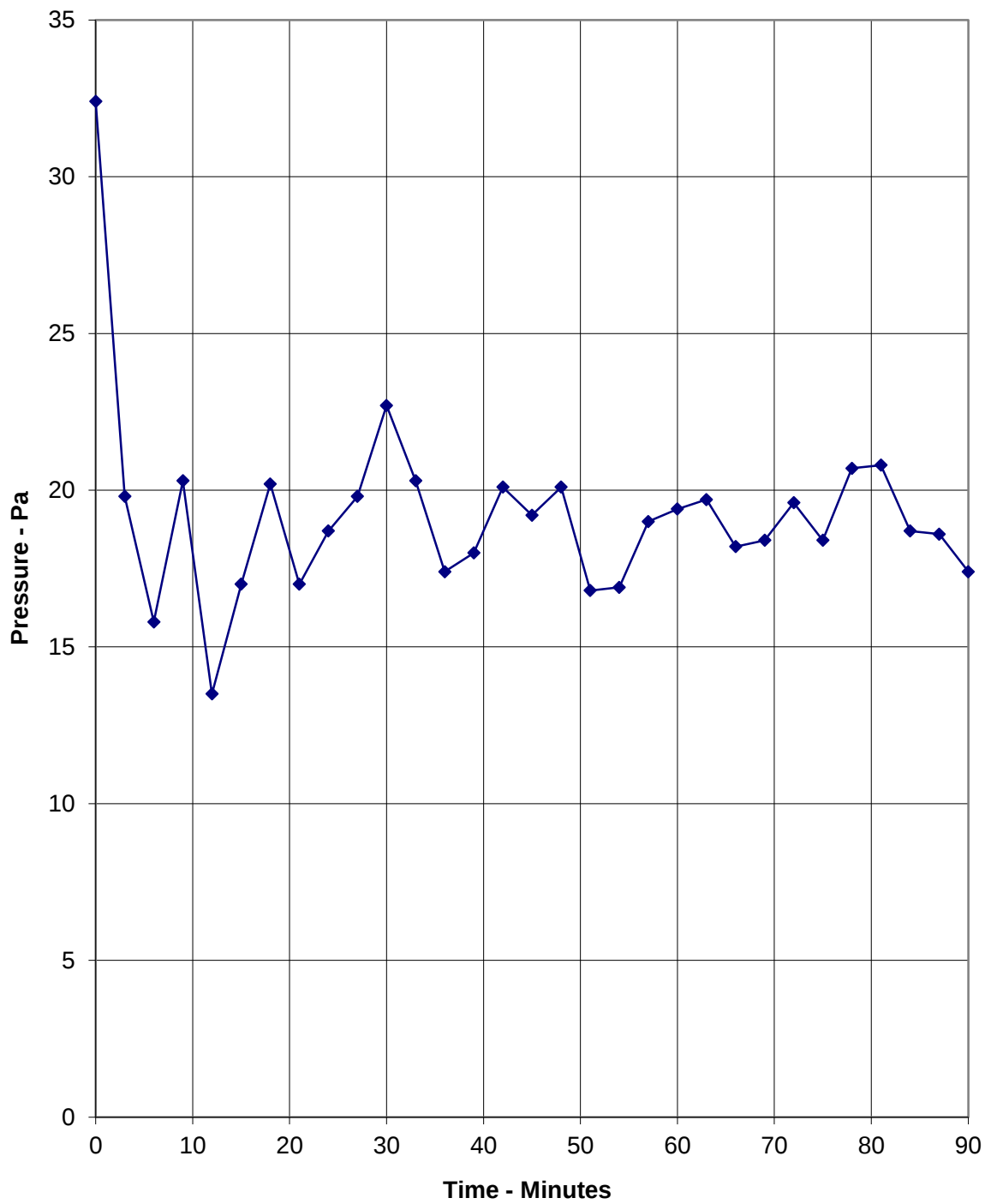
Graph Showing Mean Temperature Recorded On The Unexposed Surface Of The Specimen



Graph Showing The Recorded Vertical Deflection Of The Specimen



Graph Showing Recorded Furnace Pressure 100 mm Below The Underside Of The Specimen



On-going Implications

Limitations

This report details the method of construction, the test conditions and the results obtained when the specific elements of construction described herein were tested following the procedure outlined in BS EN 1363-1: 2020, and where appropriate BS 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 relevant test method is not covered by this report. Annex A of BS EN 1363-1: 2020, provides guidance information on the application of fire resistance tests and the interpretation of test data.

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.

EGOLF

Certain aspects of some fire test specifications are open to different interpretations. EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed

Field of Direct Application

The results are directly applicable to a similar untested floor construction provided the following is true:

a) With respect to the structural building member:

The maximum moments and shear forces, which when calculated on the same basis as the test load, shall not be greater than those tested.

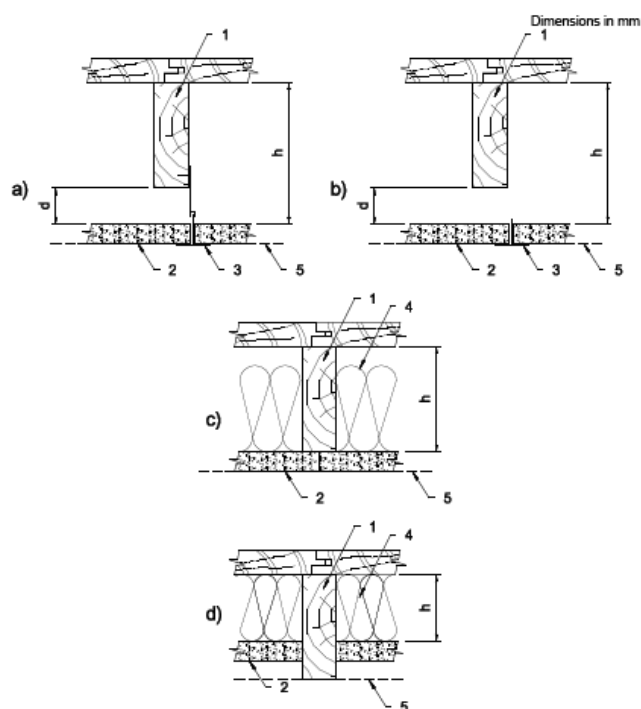
b) With respect to the ceiling system:

The size of panels of the ceiling lining may be increased by a maximum of 5 % but limited to a maximum of 50 mm. The length of the grid members can be increased accordingly.

The total area occupied by fixtures and fittings relative to the area of the ceiling lining is not increased and the maximum tested opening in the lining is not exceeded.

c) With respect to the cavity:

The height of the cavity 'h' and the minimum distance 'd' between the ceiling and the structural members (see Figure below) are equal to or greater than those tested.



KEY

a) suspended ceiling

b) self-supported ceiling

c) and d) direct fixed ceiling with insulation in cavity

1 supporting construction (joist)

2 ceiling lining

3 supporting frame

4 insulation

5 pressure reference line

d distance between ceiling and structural members

h height of cavity