

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:

1st May 2020

Issue 2:

21st August 2020

WF Report No.

426730



Prepared for:

Orlight Ltd

Victor Way
Radlett Road
Colney Street
St Albans
Hertfordshire
AL2 2FL



Test Specimen

Summary of Tested Specimen

The timber floor had overall nominal dimensions of 4300 mm long by 3000 mm wide by 254.5 mm deep and comprised 'Staircraft Group Limited', engineered, TFSi, 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 direct fixed ceiling, formed from a single layer of 12.5 mm thick British Gypsum Wall Board plasterboard, the ceiling was screw fixed to the underside of the floor joists.

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 1.07 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>	4105
(d) Depth of Structural Section, <i>in mm</i>	220
Max Deflection ($L^2/400d$) - <i>in mm</i>	191.5
Rate ($L^2 / 9000d$) - <i>in mm</i>	8.5
Max Deflection ($L^2/400d$) * 1.5 - <i>in mm</i>	287.2

This criterion was satisfied for 36 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

36 minutes – No failure*

Gap gauge

36 minutes – No failure*

Cotton pad

36 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

36 minutes – No failure*

*Test duration. The test was discontinued after a period of 36 minutes.

Date of Test

1st May 2020

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Signatories



Responsible Officer

C. Sweeney*

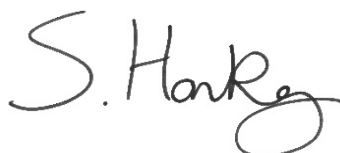
Technical Officer



Approved

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Technical Manager – Fire Resistance



Head of Department

S. Hankey*

Business Unit Head – Fire Resistance

* For and on behalf of **Warringtonfire**.Report Issued: 13th May 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:	

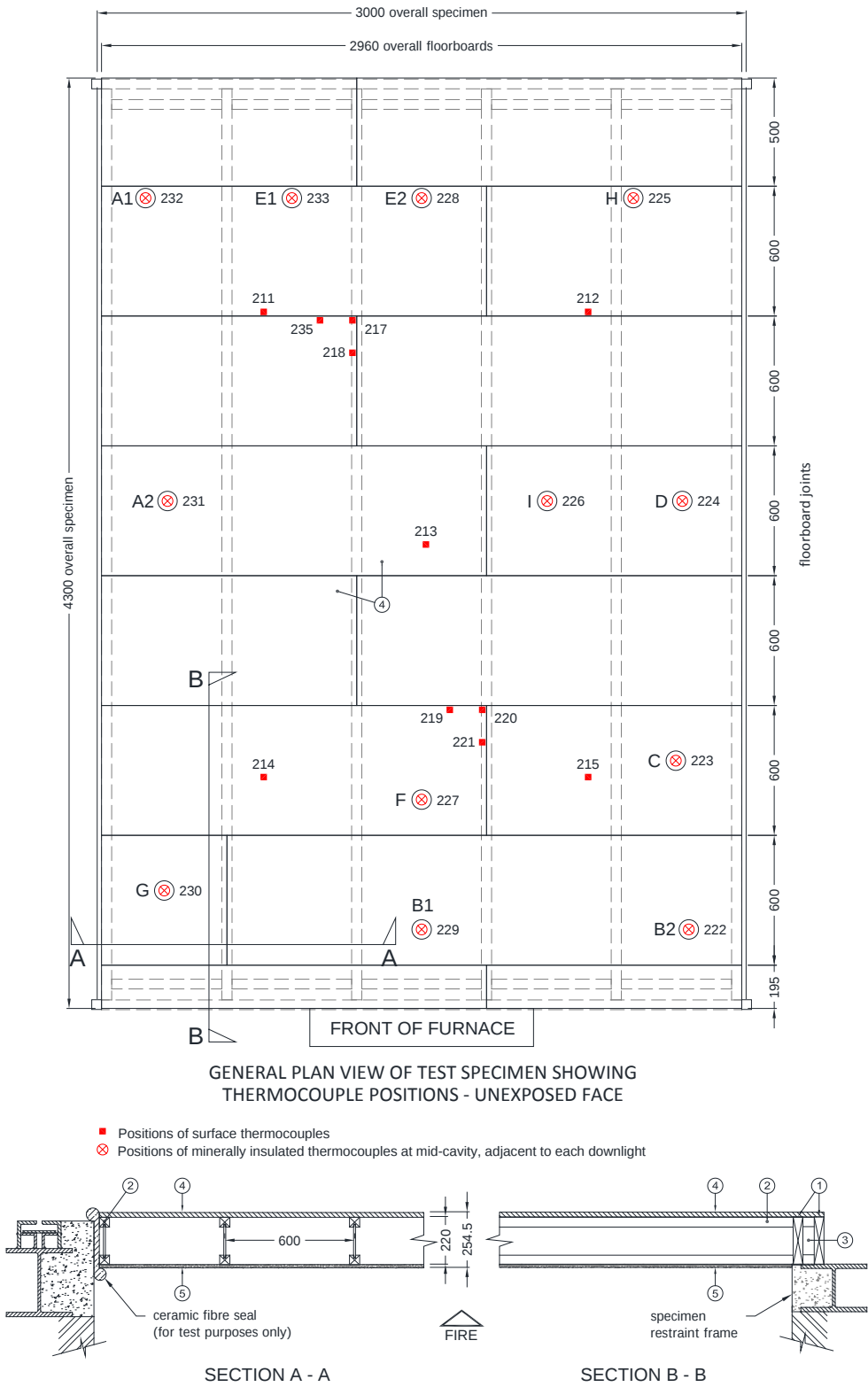
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Test Conditions

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 16th and 17th April 2020. Representatives of Staircraft Group Limited installed the plasterboard ceiling and downlighters on the 29th April 2020.
Conditioning	The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 16 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 15°C to 24°C and 29% to 53% respectively.
Instruction to Test	The test was conducted on the 1st 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 32°C at the start of the test with a maximum variation of +1 and -6°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 18 (± 5) Pa between 5 and 10 minutes and 18 (± 3) Pa thereafter.

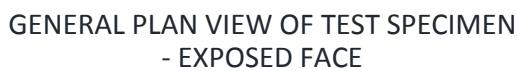
Test Specimen

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



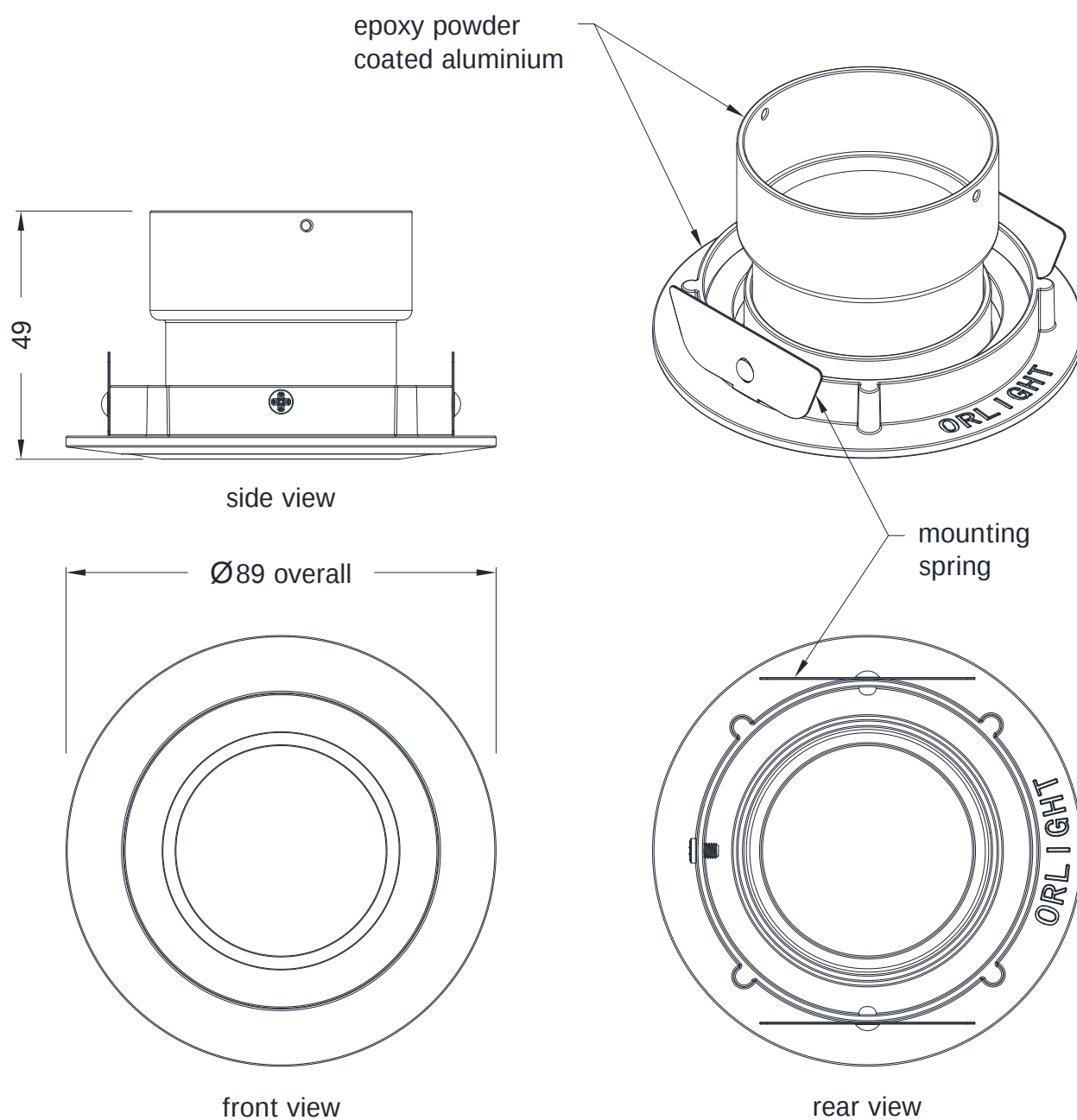
Do not scale. All dimensions are in mm

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



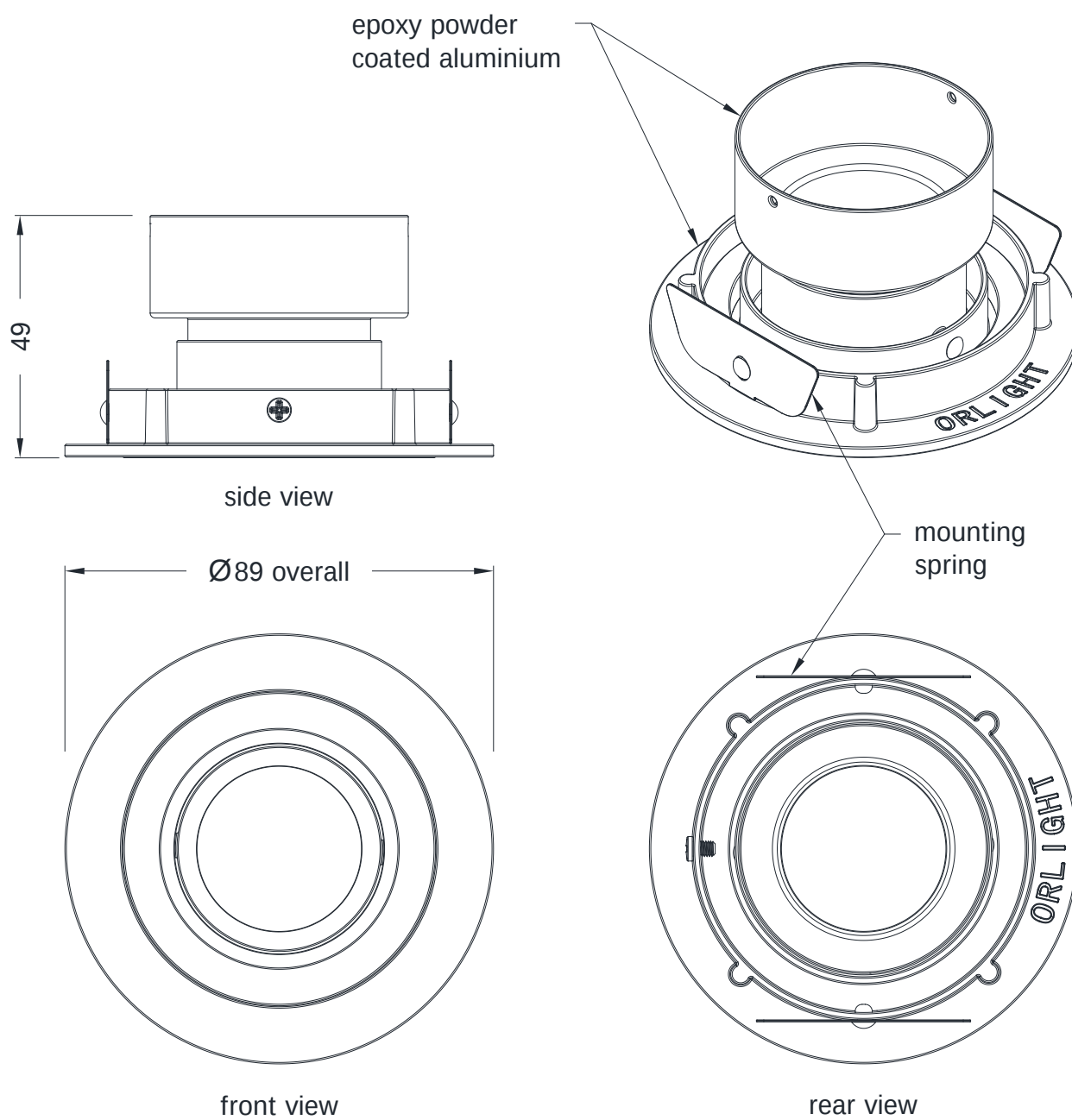
Do not scale. All dimensions are in mm

Figure 3 – Details of Specimens A1 & A2 - ORL1009



ORL1009

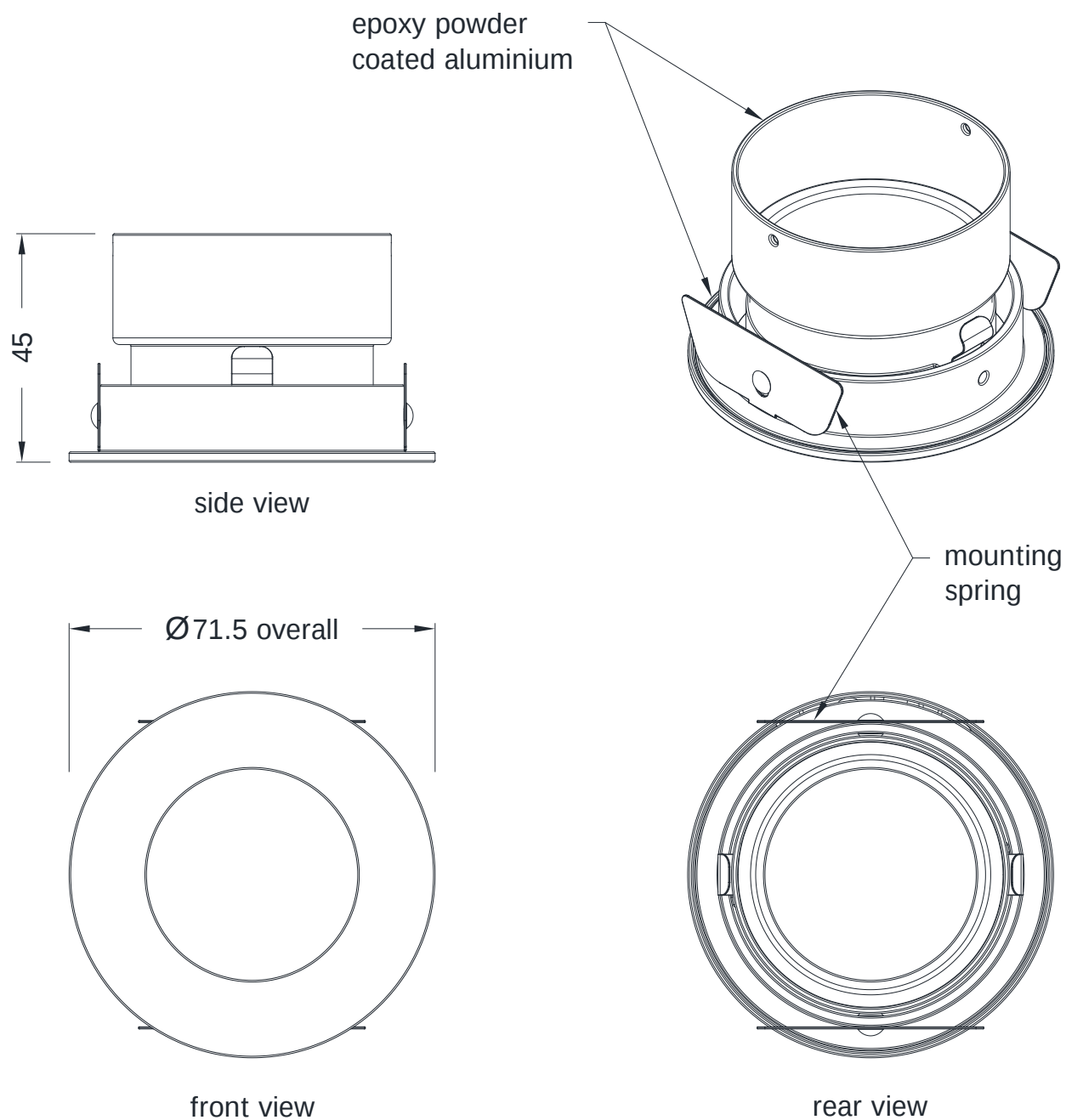
Do not scale. All dimensions are in mm

Figure 4 – Details of Specimens B1 & B2 - ORL1019

ORL1019

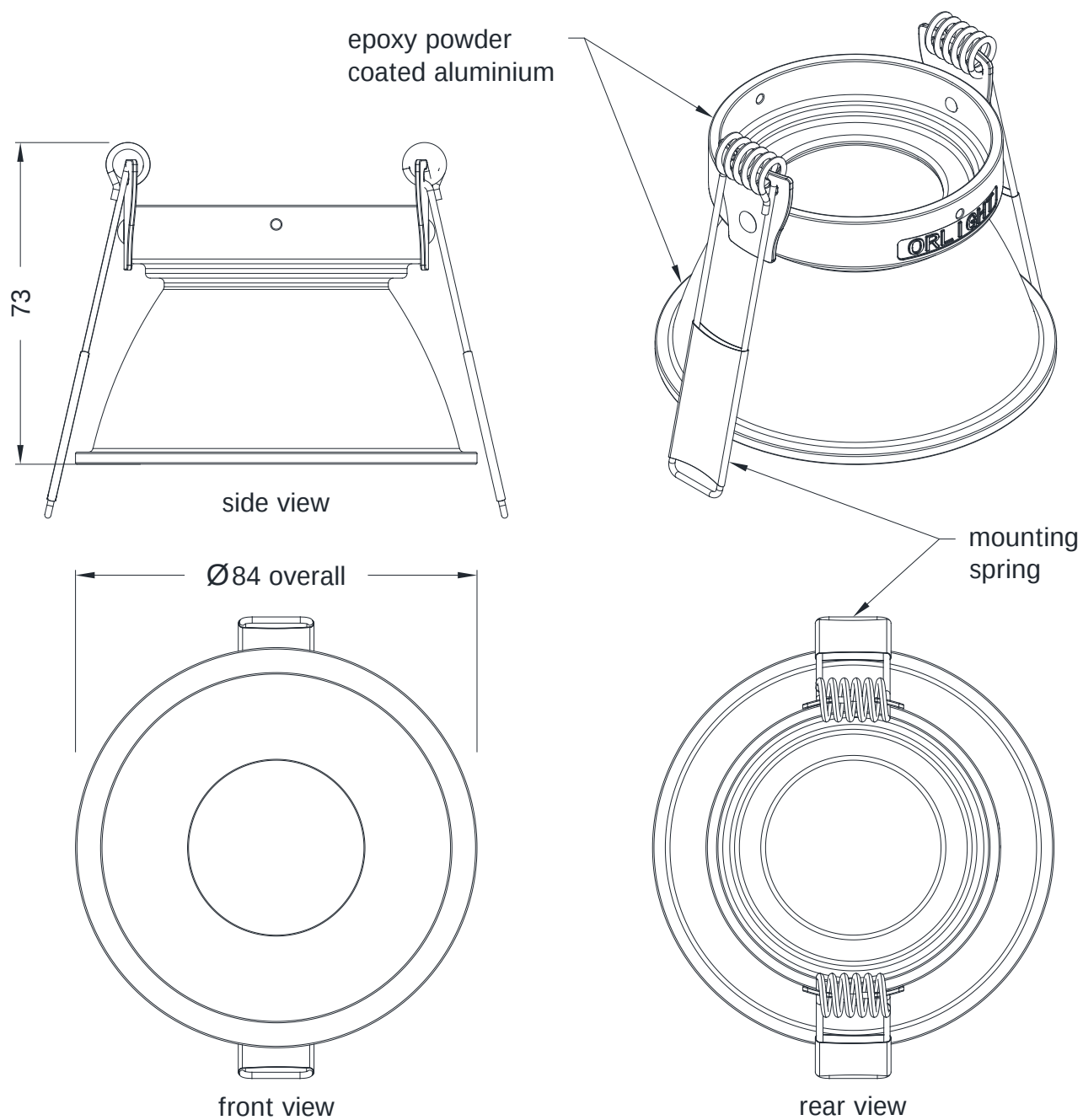
Do not scale. All dimensions are in mm

Figure 5 – Details of Specimen C - ORL009

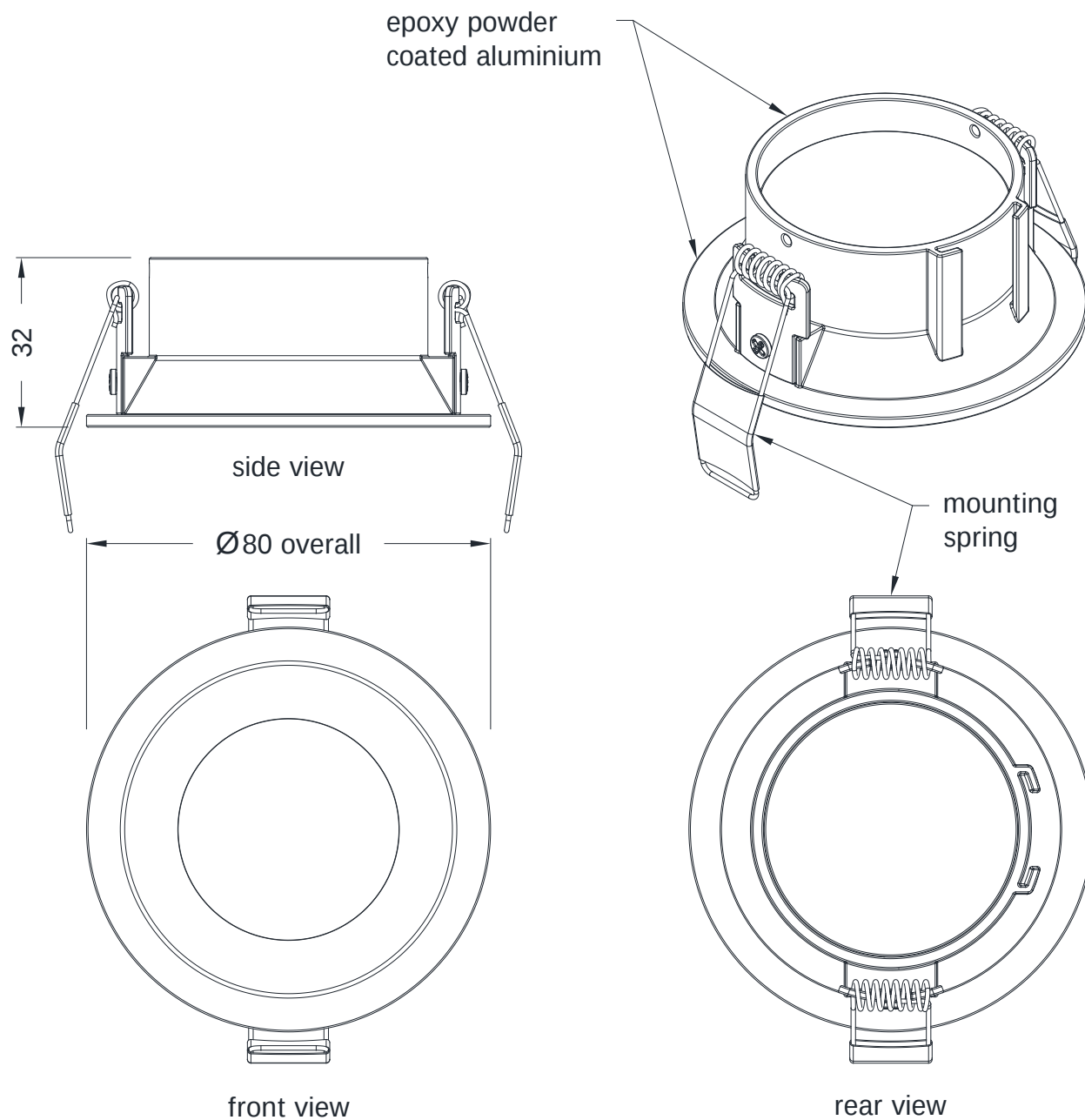


ORL009

Do not scale. All dimensions are in mm

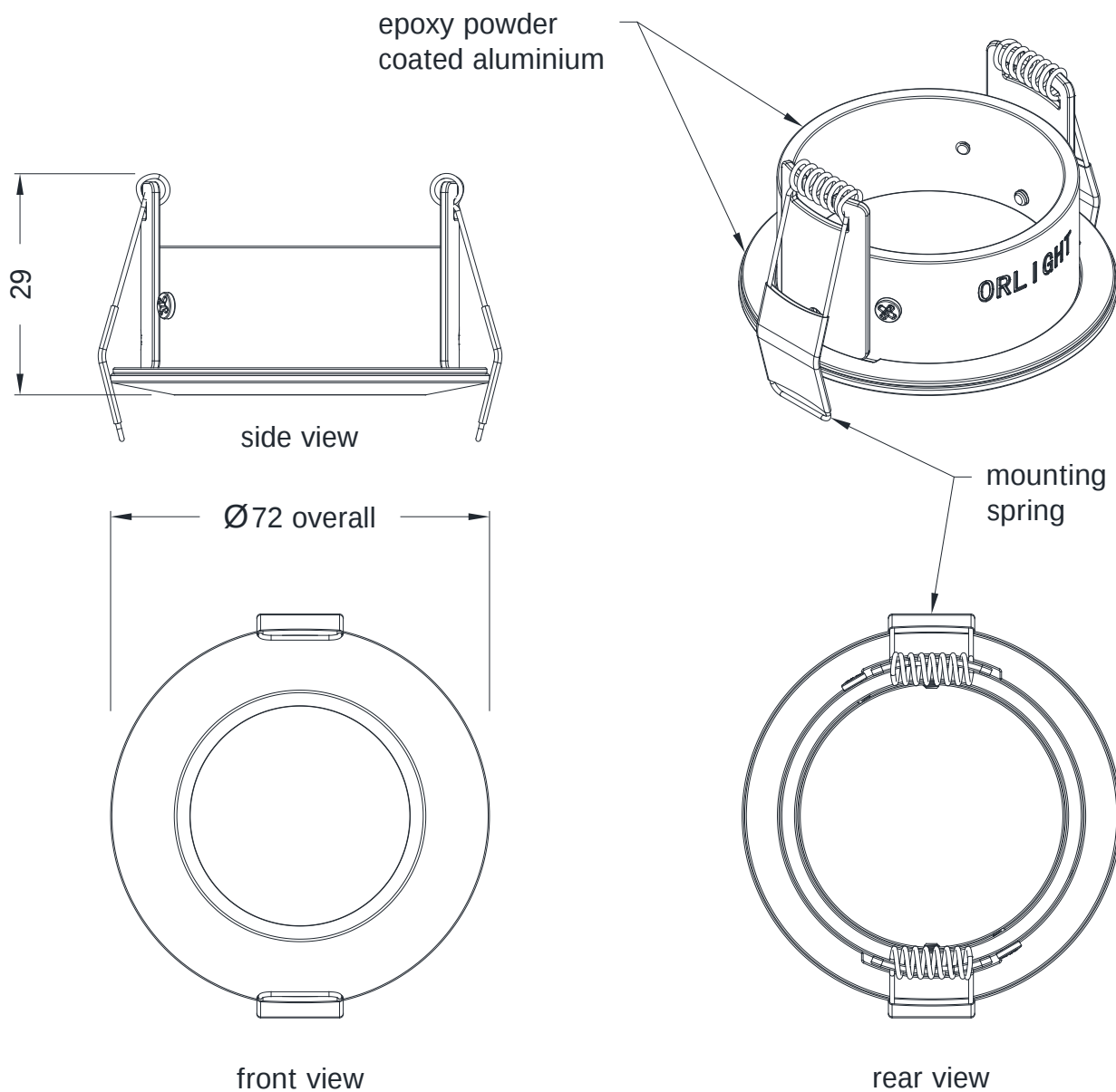
Figure 6 – Details of Specimen D - ORLCL-IP54**ORLCL-IP54**

Do not scale. All dimensions are in mm

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

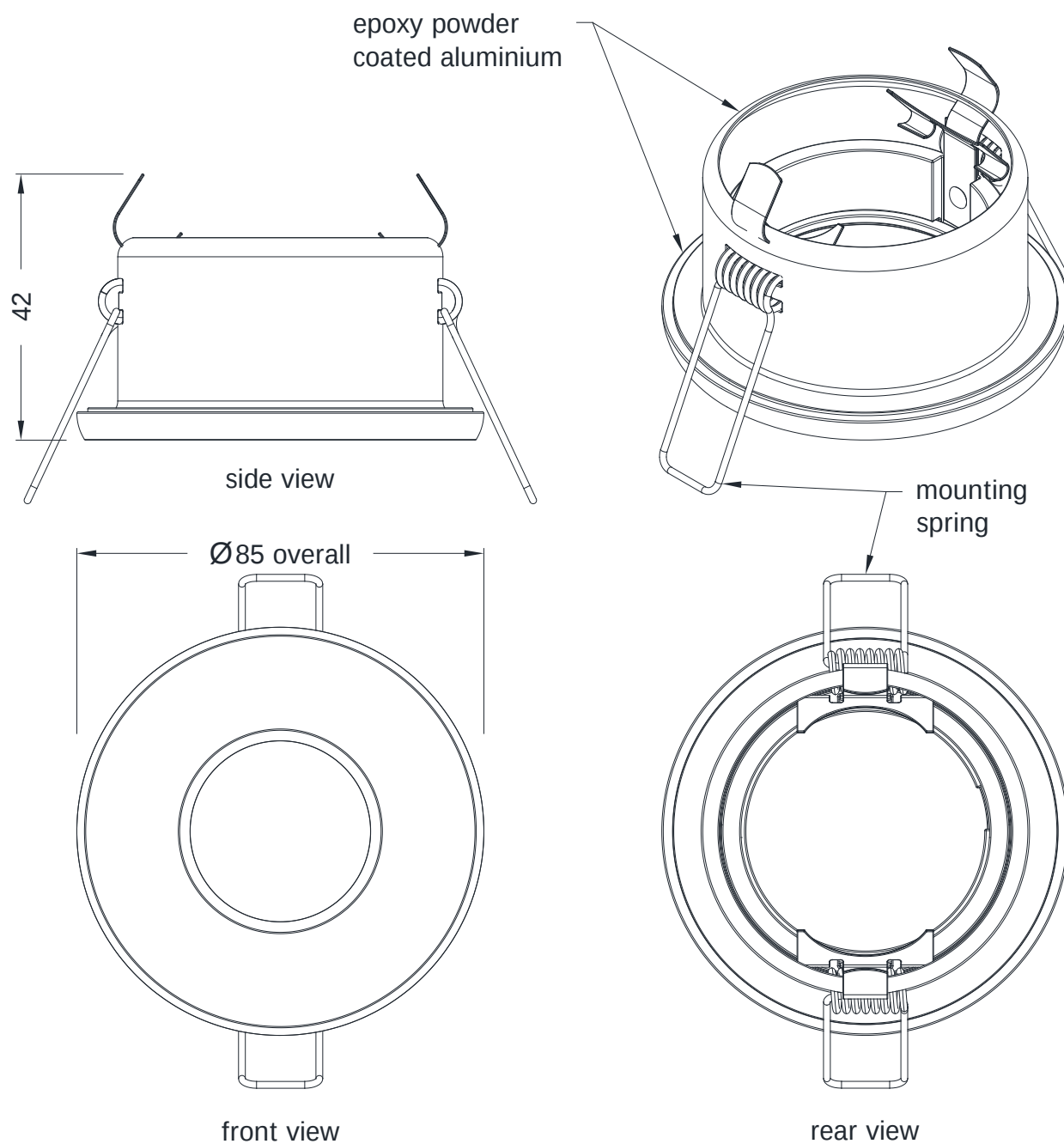
Do not scale. All dimensions are in mm

Figure 8 – Details of Specimen F - STEAMSPOT



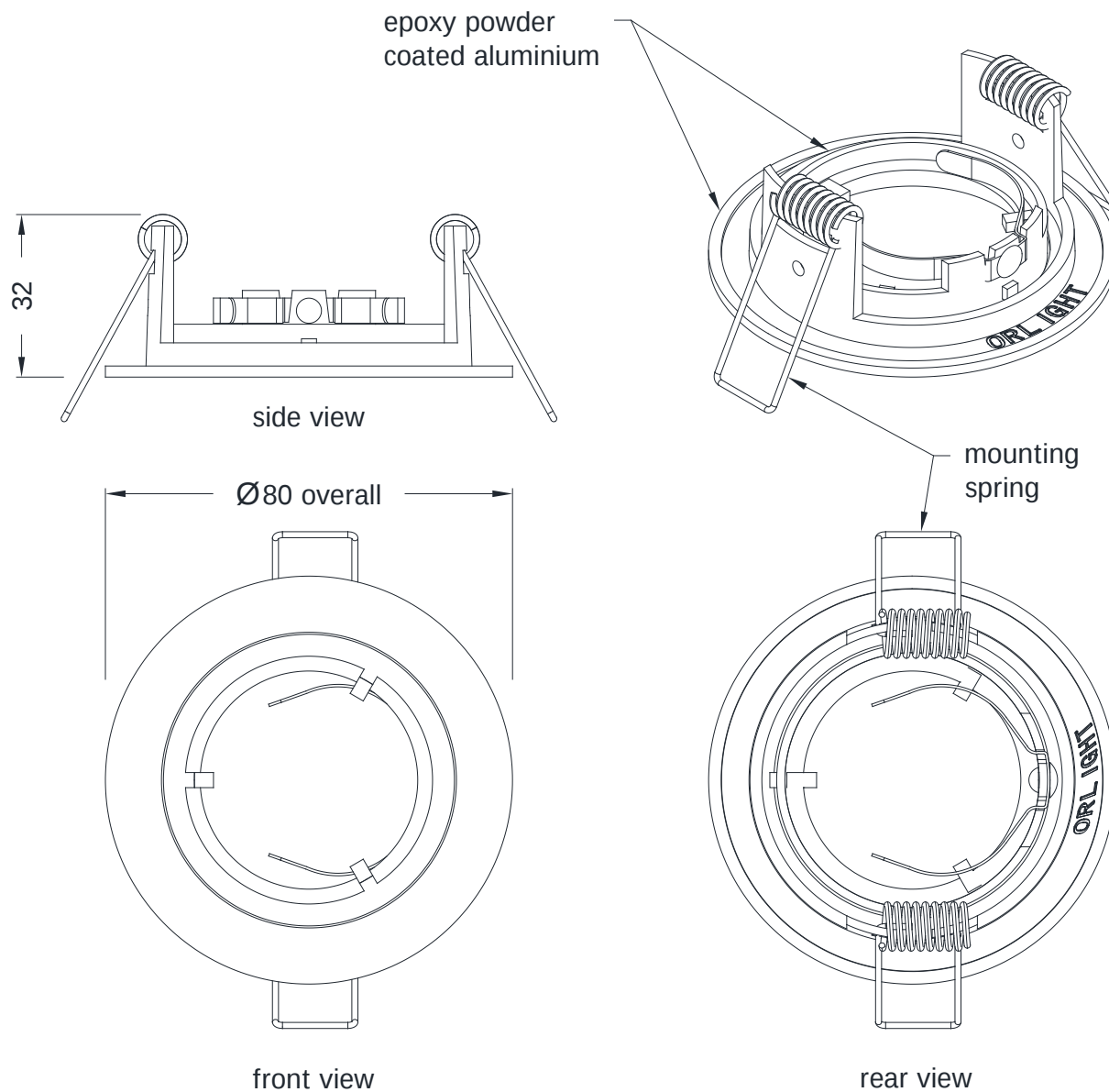
STEAMSPOT

Do not scale. All dimensions are in mm

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

Do not scale. All dimensions are in mm

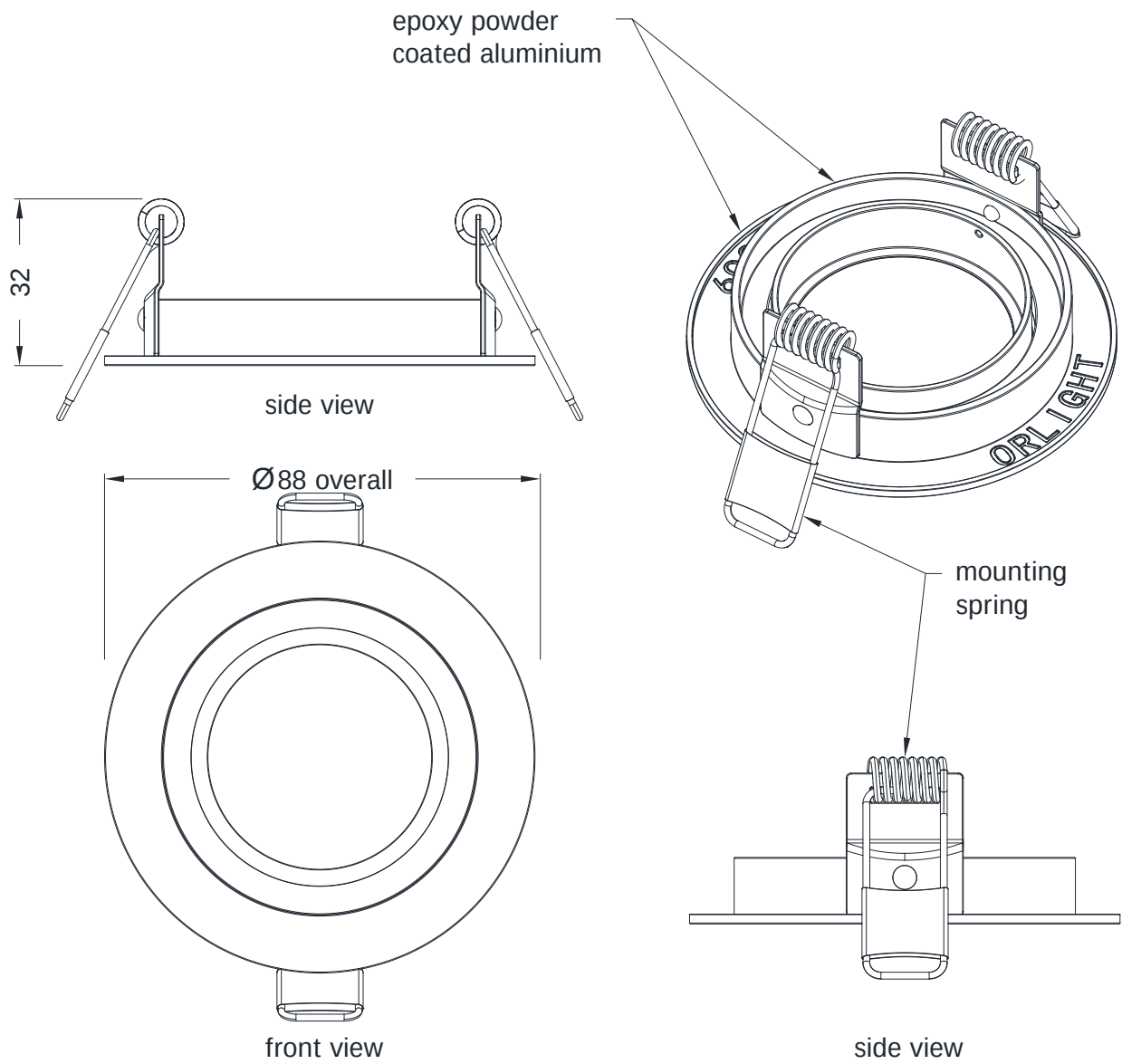
Figure 10 – Details of Specimen H – ORL1005



ORL1005

Do not scale. All dimensions are in mm

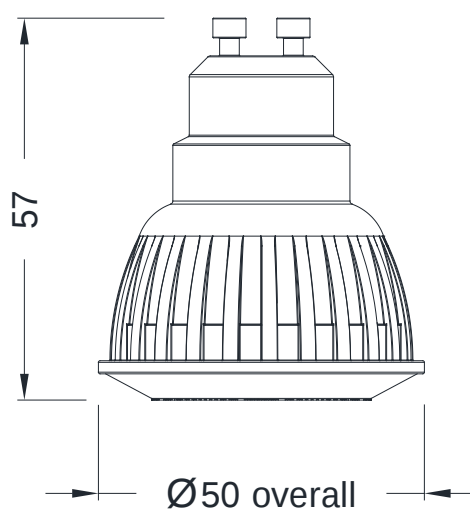
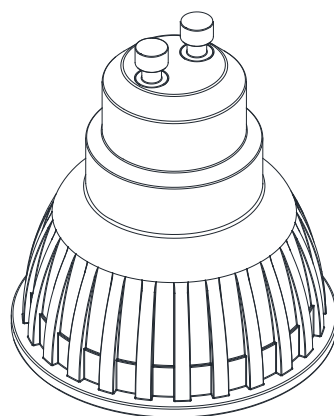
Figure 11 – Details of Specimen I – ORL6009



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 noggings	
Manufacturer	: Staircraft Group Limited
Reference	: Glulam
Material	: Glued laminated timber
Section size	: 47 mm wide x 220 mm deep
Density	: 450 kg/m ³ (stated)
Fixing method	: Through fixed to joists with two nails to top and bottom flanges at each 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 Plus
Material	: Softwood flange and 11 mm thick OSB web.
Section size	: 47 mm wide x 220 mm deep spaced at 600 mm centres
Density	: 450 kg/m ³ (flange – measured) 663 kg/m ³ (web – measured)
3. End Blocks	
Material	: MDF (Medium-density fibreboard)
Thickness	: 18 mm
Overall size	: 115 mm long x 125 mm wide
Fixing method	: Fixed to ends of joists with adhesive and through web with two screws per block
Fixings	
i. manufacturer	: DeWatt
ii. reference	: DWF40100 Drywall screws
iii. type	: Black phosphate coated steel
iv. size	: 35 mm long x 3.5 mm diameter
Adhesive	
i. reference	: HB Fuller
ii. type	: PVA

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. manufacturer	:	Timco
ii. reference	:	BAR65B
iii. type	:	Bright annular ring shank nails
iv. size	:	65 mm long x 3.35 mm diameter
v. centres	:	600 mm

Adhesive

i. reference	:	Norbord Caberfix D4
ii. type	:	Polyurethane adhesive

5. Ceiling boards

Manufacturer	:	British Gypsum
Reference	:	Gyproc Wallboard (Standard Edge)
Material	:	Aerated high-density gypsum core encased in strong paper liners
Thickness	:	12.5 mm
Density	:	654 kg/m ³ (measured)
Fixing method	:	Through fixed to timber framework with screws. The boards had a nominal 2 mm gap at transverse joints, which was filled with joint filler.

Fixings

i. manufacturer	:	DeWalt
ii. reference	:	DWF401001 Drywall Screws
iii. type	:	Black phosphate coated steel
iv. size	:	35 mm long x 3.5 mm diameter
v. centres	:	230 mm (edge), 230 mm (field)

Filler

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

6. 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 15). (See Figure 3)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	49 mm
ii. height (including lamp)	:	103 mm
iii. overall diameter	:	89 mm
iv. cut-out diameter	:	70 mm

Item**Description****7. 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 15). (See Figure 4)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	49 mm
ii. height (including lamp)	:	117 mm
iii. overall diameter	:	89 mm
iv. cut-out diameter	:	70 mm

8. Specimen C

Manufacturer	:	Orlight Limited
Reference	:	ORL009
Description	:	Fixed downlight with anti-glare baffle. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (See Figure 5)
Material	:	Aluminium
Finish	:	Epoxy powder coat – all white (AW)
Overall sizes	:	
i. height (excluding lamp)	:	45 mm
ii. height (including lamp)	:	103 mm
iii. overall diameter	:	71.5 mm
iv. cut-out diameter	:	65 mm

9. Specimen D

Manufacturer	:	Orlight Limited
Reference	:	ORLCL
Description	:	Fixed IP54-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (See Figure 6)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	73 mm
ii. height (including lamp)	:	113 mm
iii. overall diameter	:	84 mm
iv. cut-out diameter	:	70 mm

10. Specimens E1 & E2

Manufacturer	:	Orlight Limited
Reference	:	AQUASPOT-FG
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (See Figure 7)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	32 mm
ii. height (including lamp)	:	95 mm
iii. overall diameter	:	80 mm
iv. cut-out diameter	:	70 mm

Item**Description****11. Specimen F**

Manufacturer	:	Orlight Limited
Reference	:	STEAMSPOT-FG
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (See Figure 8)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	29 mm
ii. height (including lamp)	:	75 mm
iii. overall diameter	:	72 mm
iv. cut-out diameter	:	65 mm

12. Specimen G

Manufacturer	:	Orlight Limited
Reference	:	SHOWERSPOT
Description	:	Fixed IP65-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (see Figure 9)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	42 mm
ii. height (including lamp)	:	78 mm
iii. overall diameter	:	85 mm
iv. cut-out diameter	:	70 mm

13. Specimen H

Manufacturer	:	Orlight Limited
Reference	:	ORL1005
Description	:	Fixed IP20-rated downlight. Fitted with Lumenplus 3 (LP3) 7W LED lamp (item 15). (See Figure 10)
Material	:	Aluminium
Finish	:	Epoxy powder coat – white (WH)
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

14. 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 15). (See Figure 11)
Material	:	Steel / Magnetic Suspension
Finish	:	Epoxy powder coat – white (WH)
Overall sizes	:	
i. height (excluding lamp)	:	32 mm
ii. height (including lamp)	:	68 mm
iii. overall diameter	:	88 mm
iv. cut-out diameter	:	70 mm

15. 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 exposed face unless noted otherwise.
mins	secs	
-60	00	Load applied.
00	00	The test commences.
04	00	The paper face of the plasterboard is glowing/burning away.
10	00	Flaming at light fittings 'A2', 'I' and 'C' as they begin to fall from the ceiling.
12	00	Joint and fixing covering falling away.
15	00	Flaming at light fittings 'E1' and 'E2'. Light fitting 'I' has fallen, joint cable is hanging.
19	00	Flaming at light fitting 'D'.
20	00	Gap between plasterboards is around 5 mm on the long edges.
21	00	Long edges of the plasterboard are beginning to ripple.
24	00	Light fitting 'D' is hanging from the ceiling and flaming intensely.
25	00	Light fitting 'B1' falls from the ceiling. Plasterboard ceiling is starting to sag in its centre. Gaps between the boards are around 10 mm.
27	30	Creaking noises from the floor.
28	30	Plasterboard is glowing bright red.
29	00	Light fitting 'E1' is hanging from the ceiling and flaming intensely.
30	00	Flaming at plasterboard joints at the joist positions.
33	00	Flaming across the plasterboard, gaps between the boards are around 20 mm.
36	00	Test discontinued for safety reasons.

Test Photographs

The exposed face of the floor assembly prior to test



The unexposed face of the floor assembly after 10 minutes of testing



The unexposed face of the floor assembly after 20 minutes of testing



The unexposed face of the floor assembly after 30 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	47
1	349	249
2	445	469
3	502	496
4	544	548
5	576	585
6	603	598
7	626	616
8	646	641
9	663	653
10	678	667
11	693	710
12	706	727
13	717	730
14	728	738
15	739	744
16	748	749
17	757	756
18	766	763
19	774	770
20	781	776
21	789	787
22	796	796
23	802	803
24	809	810
25	815	815
26	820	820
27	826	824
28	832	831
29	837	836
30	842	841
31	847	845
32	852	851
33	856	858
34	860	866
35	865	875
36	869	888

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	34	34	37	32	33	34
1	34	34	37	32	33	34
2	33	33	37	32	33	34
3	33	33	37	32	33	34
4	33	33	36	32	33	33
5	33	33	36	32	33	33
6	33	33	36	31	33	33
7	33	33	36	32	33	33
8	34	33	36	32	33	34
9	34	34	37	32	33	34
10	35	34	37	33	34	35
11	35	34	37	34	34	35
12	36	35	38	34	35	36
13	36	35	38	35	36	36
14	37	36	39	36	36	37
15	38	37	40	36	37	38
16	38	37	40	37	38	38
17	39	38	41	38	38	39
18	40	39	42	39	39	40
19	41	39	42	39	40	40
20	41	40	43	40	40	41
21	42	41	44	41	41	42
22	44	43	45	41	42	43
23	46	44	48	42	44	45
24	48	47	51	43	46	47
25	51	50	54	45	49	50
26	55	55	59	47	53	54
27	59	59	64	50	57	58
28	63	63	69	53	62	62
29	67	66	73	57	68	66
30	71	70	77	62	73	71
31	74	73	81	66	78	74
32	77	65	83	71	81	75
33	79	56	85	74	84	76
34	81	53	87	78	86	77
35	83	51	88	81	87	78
36	83	50	88	83	88	78

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

Time Mins	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	T/C Number 235 Deg. C
0	38	38	35	32	35	36
1	37	38	35	32	34	35
2	37	38	35	32	34	35
3	37	38	35	32	34	35
4	37	37	35	32	34	35
5	37	37	34	32	34	35
6	37	37	34	32	34	35
7	36	37	34	32	34	35
8	36	37	35	32	34	35
9	36	37	35	32	34	35
10	37	37	35	32	34	36
11	37	37	36	32	34	36
12	37	37	36	32	34	37
13	37	37	37	33	34	38
14	37	37	38	33	35	38
15	38	37	38	33	35	39
16	38	37	39	34	35	40
17	38	38	39	34	35	41
18	39	38	40	34	35	41
19	39	39	41	35	36	42
20	40	39	42	36	36	43
21	40	39	42	36	37	44
22	41	40	43	36	37	46
23	41	40	44	37	37	48
24	42	41	45	38	38	51
25	42	42	47	38	38	54
26	43	43	50	39	39	57
27	44	44	53	39	40	61
28	45	46	56	40	41	64
29	47	48	59	41	41	67
30	48	50	63	42	43	67
31	49	54	66	43	44	66
32	51	59	69	44	46	66
33	53	64	72	46	48	66
34	54	70	73	47	51	67
35	51	74	74	49	55	68
36	49	78	71	51	60	68

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	34	32	32	48	34	34
1	45	34	35	45	35	35
2	48	53	58	57	61	57
3	56	61	65	63	66	64
4	60	67	71	70	70	70
5	65	72	79	75	75	76
6	71	79	85	79	82	82
7	78	87	92	85	88	88
8	82	89	95	90	91	92
9	85	95	99	95	94	96
10	86	114	104	101	96	101
11	88	113	108	104	100	106
12	91	105	113	114	103	108
13	95	110	118	167	107	111
14	96	111	125	146	111	113
15	100	117	129	149	121	120
16	104	124	149	161	146	130
17	111	147	170	176	173	150
18	123	169	193	190	198	170
19	135	190	210	202	214	194
20	148	204	219	214	232	211
21	160	216	229	244	243	225
22	172	224	241	279	250	231
23	180	242	248	284	262	247
24	193	249	257	319	270	254
25	202	260	268	315	278	259
26	207	265	280	343	293	271
27	214	280	288	346	303	280
28	222	280	297	361	316	288
29	227	292	302	370	324	293
30	234	299	316	371	332	301
31	241	299	368	383	339	311
32	248	311	366	385	345	317
33	255	316	375	389	359	328
34	262	325	370	397	367	335
35	266	332	361	393	378	347
36	274	337	369	388	391	359

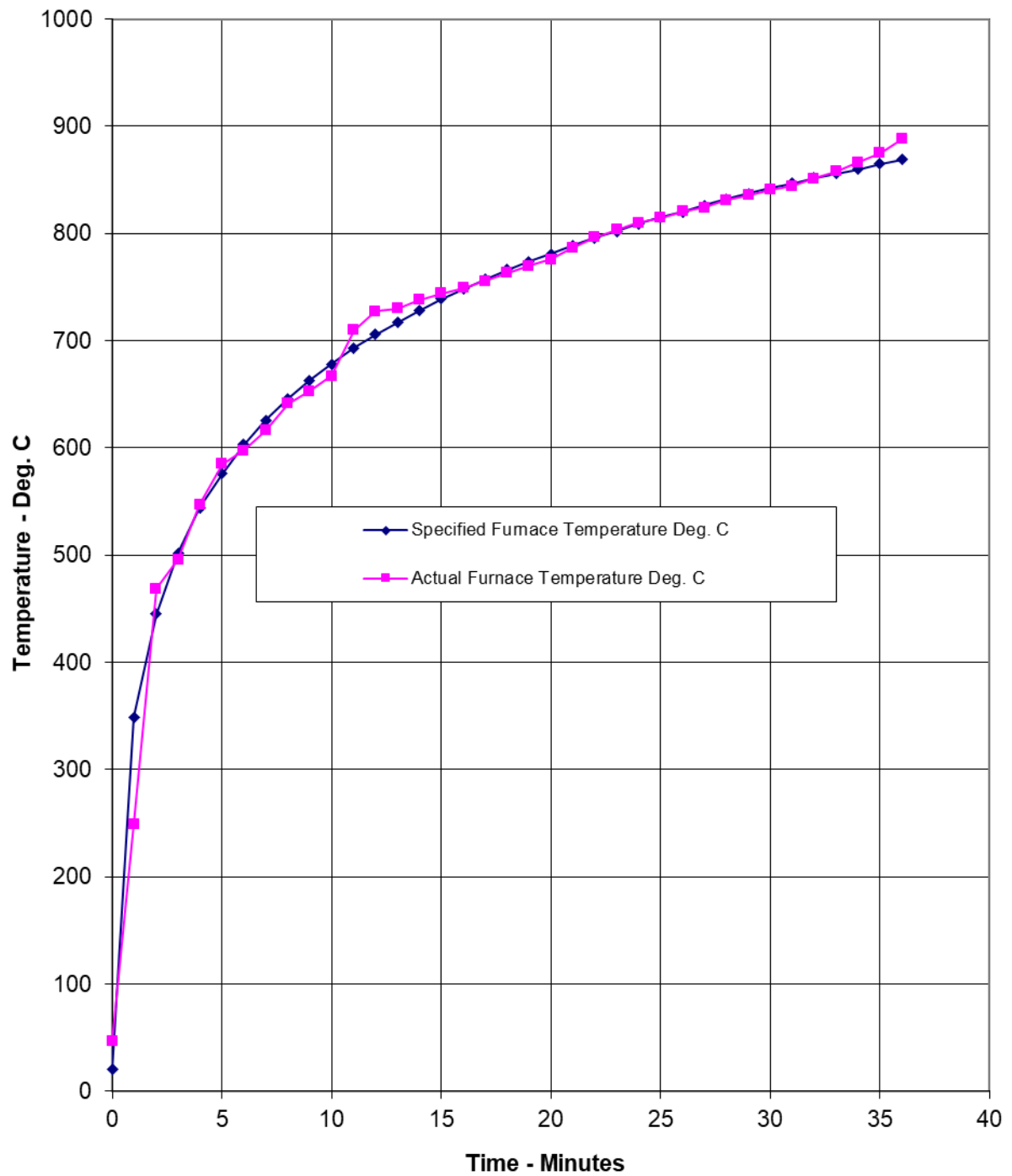
Individual Temperatures Recorded At Mid-Height Of The Cavity Coincidental With The Light Fittings (continued)

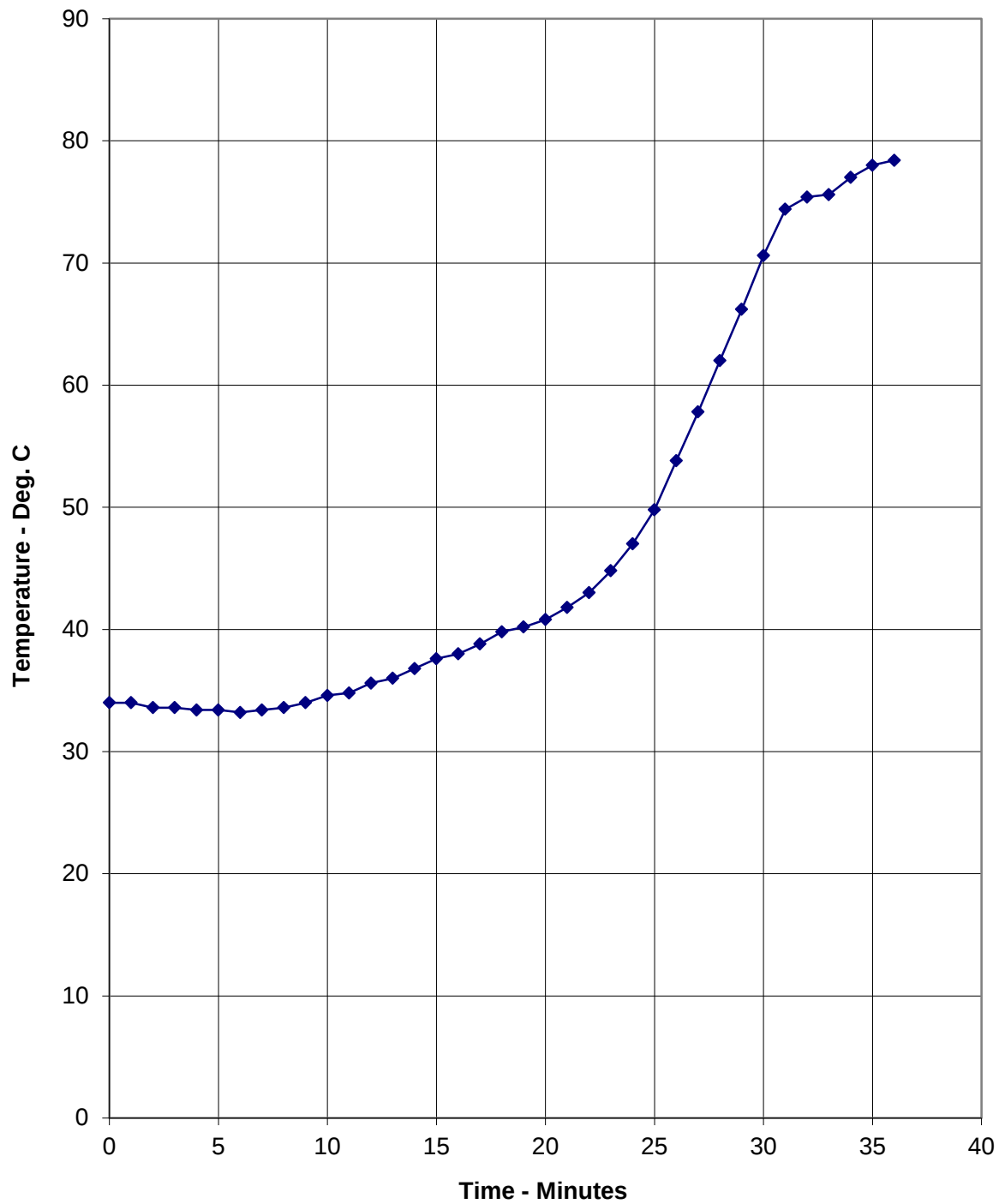
Time Mins	T/C Number 228 Deg. C	T/C Number 229 Deg. C	T/C Number 230 Deg. C	T/C Number 231 Deg. C	T/C Number 232 Deg. C	T/C Number 233 Deg. C
0	35	34	32	32	34	33
1	39	40	32	33	37	35
2	59	51	45	55	51	56
3	65	61	61	62	61	63
4	70	66	67	69	66	68
5	76	69	71	74	71	74
6	82	72	74	83	75	80
7	87	78	75	89	81	84
8	91	83	77	94	85	88
9	94	87	79	99	89	92
10	97	89	80	101	93	94
11	101	92	93	107	96	97
12	105	95	96	107	98	100
13	108	97	98	111	100	105
14	115	100	100	110	101	109
15	138	103	104	117	106	120
16	164	108	107	128	114	140
17	177	118	111	148	132	161
18	194	134	116	180	148	176
19	201	147	127	192	163	189
20	212	161	140	208	176	198
21	220	171	152	210	187	206
22	230	180	162	228	195	215
23	240	187	171	238	206	223
24	254	196	178	259	219	232
25	260	202	186	263	227	242
26	288	218	194	281	232	252
27	289	230	202	287	240	255
28	301	238	207	303	245	271
29	308	246	214	307	253	282
30	322	254	220	339	262	288
31	324	262	225	332	268	297
32	334	269	233	364	274	306
33	342	277	246	393	281	313
34	347	285	255	366	289	323
35	357	295	260	363	293	333
36	371	306	270	363	302	346

Central Vertical Deflection Of The Specimen

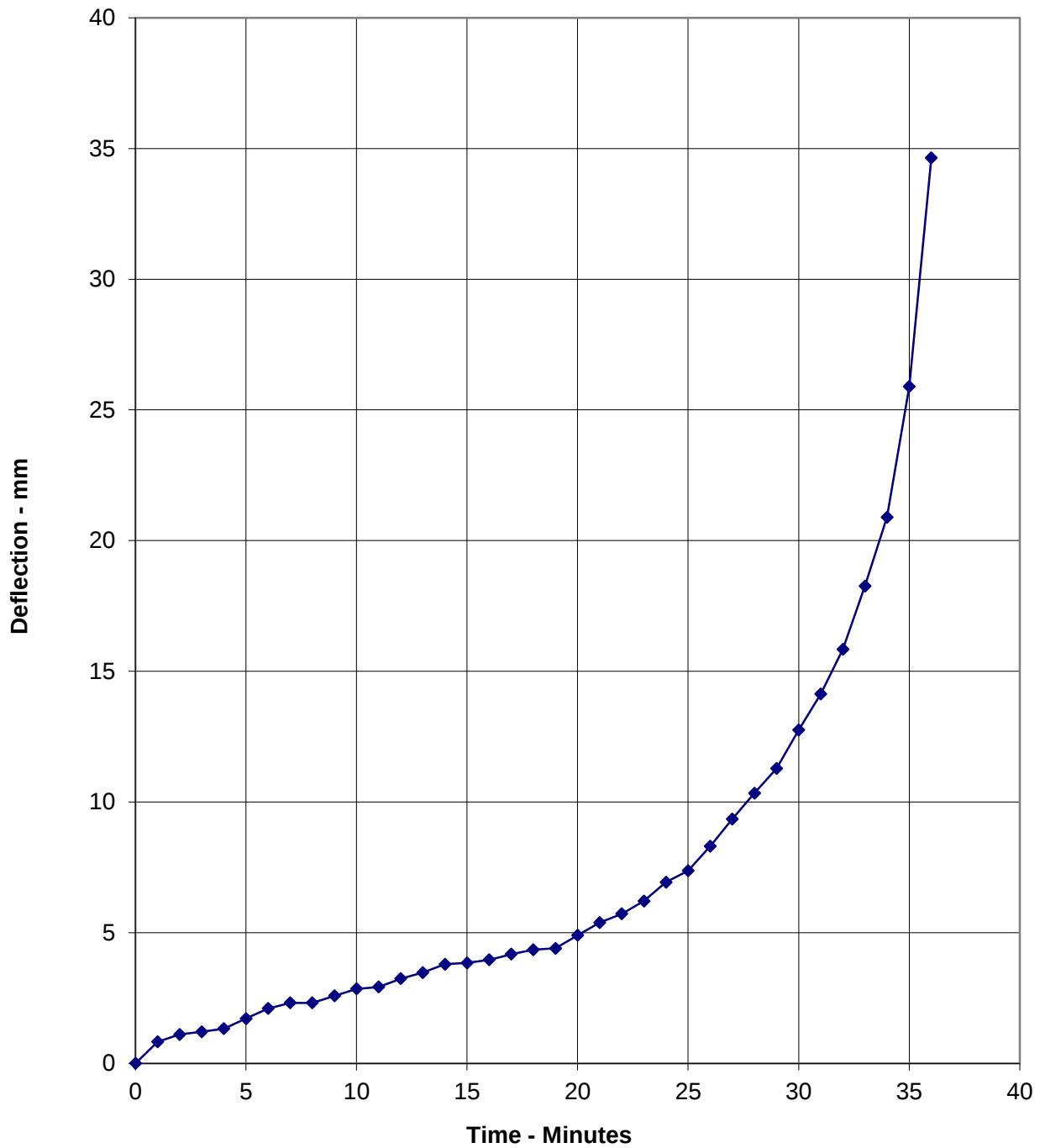
Time Mins	Central Vertical Deflection mm	Rate Of Deflection mm/min
0	0.000	0.000
1	0.823	0.823
2	1.108	0.285
3	1.209	0.101
4	1.326	0.117
5	1.712	0.386
6	2.098	0.386
7	2.316	0.218
8	2.316	0.000
9	2.585	0.269
10	2.853	0.268
11	2.921	0.068
12	3.240	0.319
13	3.475	0.235
14	3.793	0.318
15	3.844	0.051
16	3.961	0.117
17	4.180	0.219
18	4.347	0.167
19	4.398	0.051
20	4.901	0.503
21	5.388	0.487
22	5.724	0.336
23	6.210	0.486
24	6.932	0.722
25	7.369	0.437
26	8.309	0.940
27	9.349	1.040
28	10.340	0.991
29	11.280	0.940
30	12.757	1.477
31	14.133	1.376
32	15.845	1.712
33	18.262	2.417
34	20.897	2.635
35	25.899	5.002
36	34.644	8.745

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

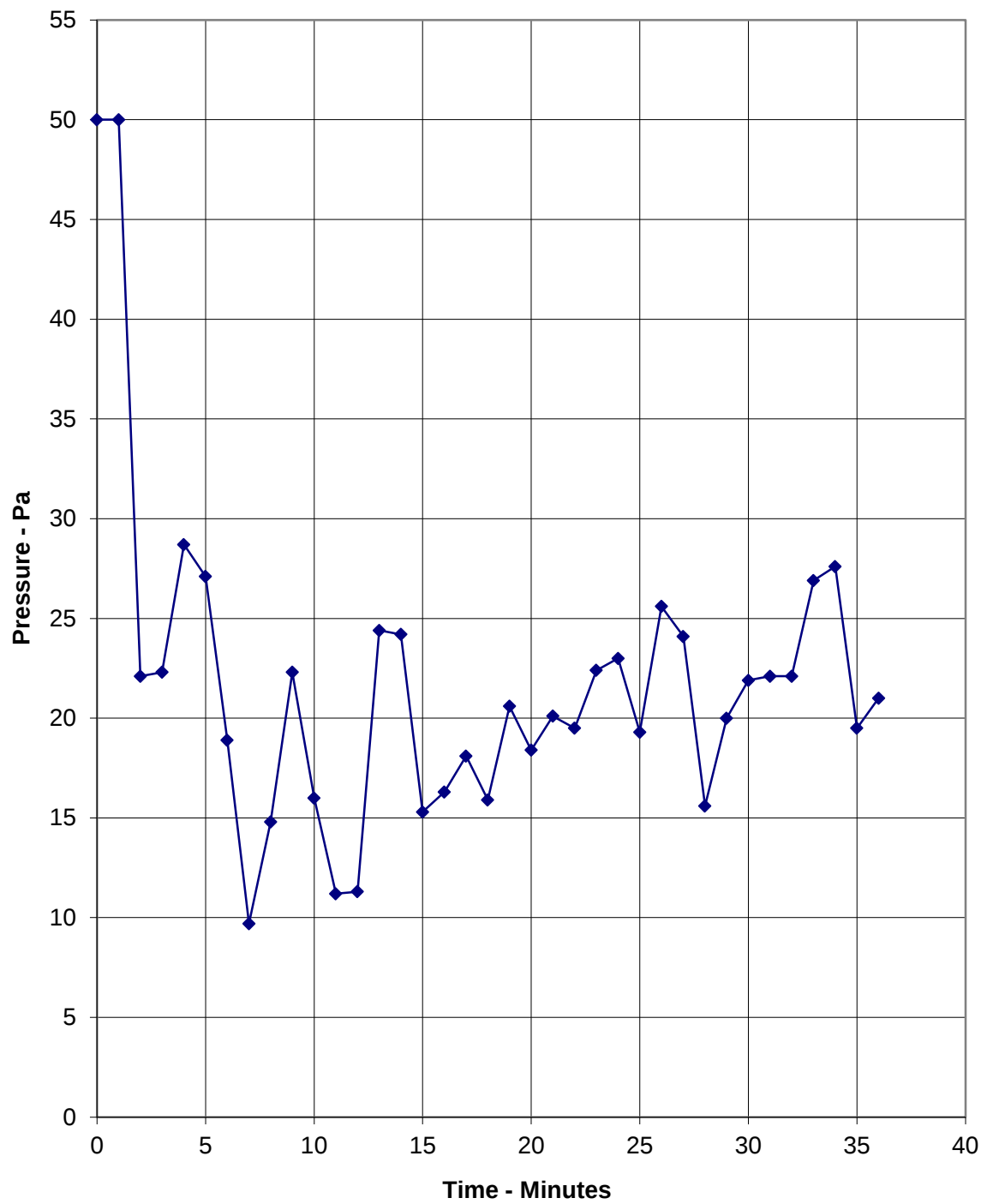


Graph Showing Mean Temperature Recorded On The Unexposed Surface Of The Specimen

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.

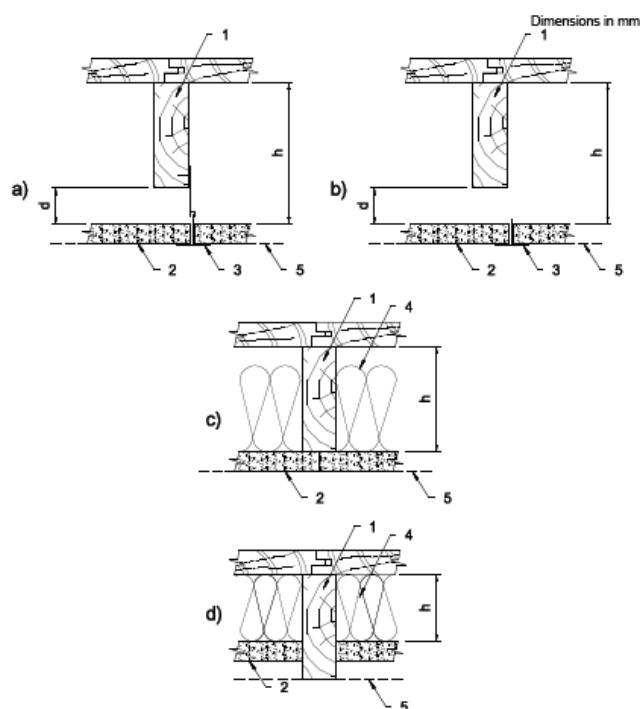
b) With respect to the ceiling system:

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 | 4 insulation |
| b) self-supported ceiling | 5 pressure reference line |
| c) and d) direct fixed ceiling with insulation in cavity | d distance between ceiling and structural members |
| 1 supporting construction (joist) | h height of cavity |
| 2 ceiling lining | |
| 3 supporting frame | |