

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 Seven
Down Lighters.

Date of Test:

28th January 2021

Issue 1:

15th June 2021

WF Report No.

436930/R



Prepared for:

**JCC Lighting
Products Ltd**

Innovation Centre,
Beeding Close
Southern Cross
Trading Estate,
West Sussex,
PO22 9TS



0249

Test Assembly

Summary of Tested Assembly

The timber floor had overall nominal dimensions of 4494 mm long by 2960 mm wide by 262 deep. The floor comprised 225 mm high by 4400 mm long 'Truss Form Ltd' joists at 600 mm centres. The unexposed face of the floor comprised nominally 22 mm thick tongue and groove chipboard referenced 'FSC E1 P5'. The floor assembly was protected on its underside by a single layer of 15 mm thick 'Gyproc Wallboard', through fixed to the joists with screws.

The ceiling incorporated seven downlighter light fittings. The lights are referenced as follows:

Test Ref.	Model Ref.	Cut Out Diameter.
1	V50 JC1001 WH/CH/BN	70 mm
2	JC010010 WH/CH/BN	72 mm
3	JC010016 WH/CH/BN	72 mm
4	V50 Tilt JC1002 WH/CH/BN	85 mm
5	V50 Tilt JC1002 WH/CH/BN	85 mm
6	V50 JC1001 WH/CH/BN	70 mm
7	JC010023 WH/CH/BN	84 mm

The floor supported a uniformly distributed load of 1.37 kN/m². This load was provided by the test sponsor as to represent the expected 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

<p>Loadbearing Capacity</p>	<p>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:</p> <table border="1" data-bbox="478 481 1412 728"> <thead> <tr> <th>Criteria</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td><i>L</i>: Clear span - in mm</td> <td>4200</td> </tr> <tr> <td><i>d</i>: Depth of structural section - in mm</td> <td>225</td> </tr> <tr> <td>Limiting deflection ($L^2/400d$) - in mm</td> <td>196.0</td> </tr> <tr> <td>Limiting rate of deflection ($L^2/9000d$) - in mm/min</td> <td>8.7</td> </tr> <tr> <td>Measured deflection $1.5 \times (L^2/400d)$ - in mm</td> <td>294.0</td> </tr> </tbody> </table> <p>Failure to support the load is deemed to have occurred when a 'Measured Deflection' greater than or equal to '1.5 x Limiting Deflection' is observed</p> <p>Or</p> <p>Both the 'Limiting rate of deflection' and 'Limiting deflection' are exceeded.</p> <p>The criterion was satisfied for 31 minutes after which time the test was discontinued.</p>	Criteria	Value	<i>L</i> : Clear span - in mm	4200	<i>d</i> : Depth of structural section - in mm	225	Limiting deflection ($L^2/400d$) - in mm	196.0	Limiting rate of deflection ($L^2/9000d$) - in mm/min	8.7	Measured deflection $1.5 \times (L^2/400d)$ - in mm	294.0
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Measured deflection $1.5 \times (L^2/400d)$ - in mm	294.0												
<p>Integrity</p>	<p>It is required that the specimen retains its separating function, without:</p> <ul style="list-style-type: none"> ▪ 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 <p>These requirements were satisfied for the periods shown below:</p> <p>Sustained flaming 31 minutes*</p> <p>Gap gauge 31 minutes*</p> <p>Cotton pad 31 minutes*</p>												
<p>Insulation</p>	<p>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:</p> <p>Specimen 31 minutes No failure*</p> <p>*Test duration. Test was discontinued after a period of 31 minutes.</p>												

Date of Test 28th January 2021

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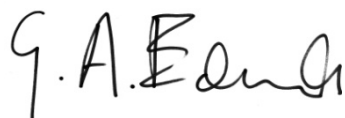
Signatories



Responsible Officer

C. Sweeney*

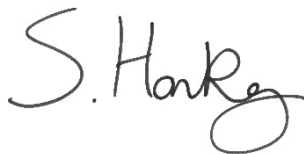
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* For and on behalf of **Warringtonfire**.

Report Issued: 15th June 2021

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Revision History

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

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CONTENTS**PAGE NO.**

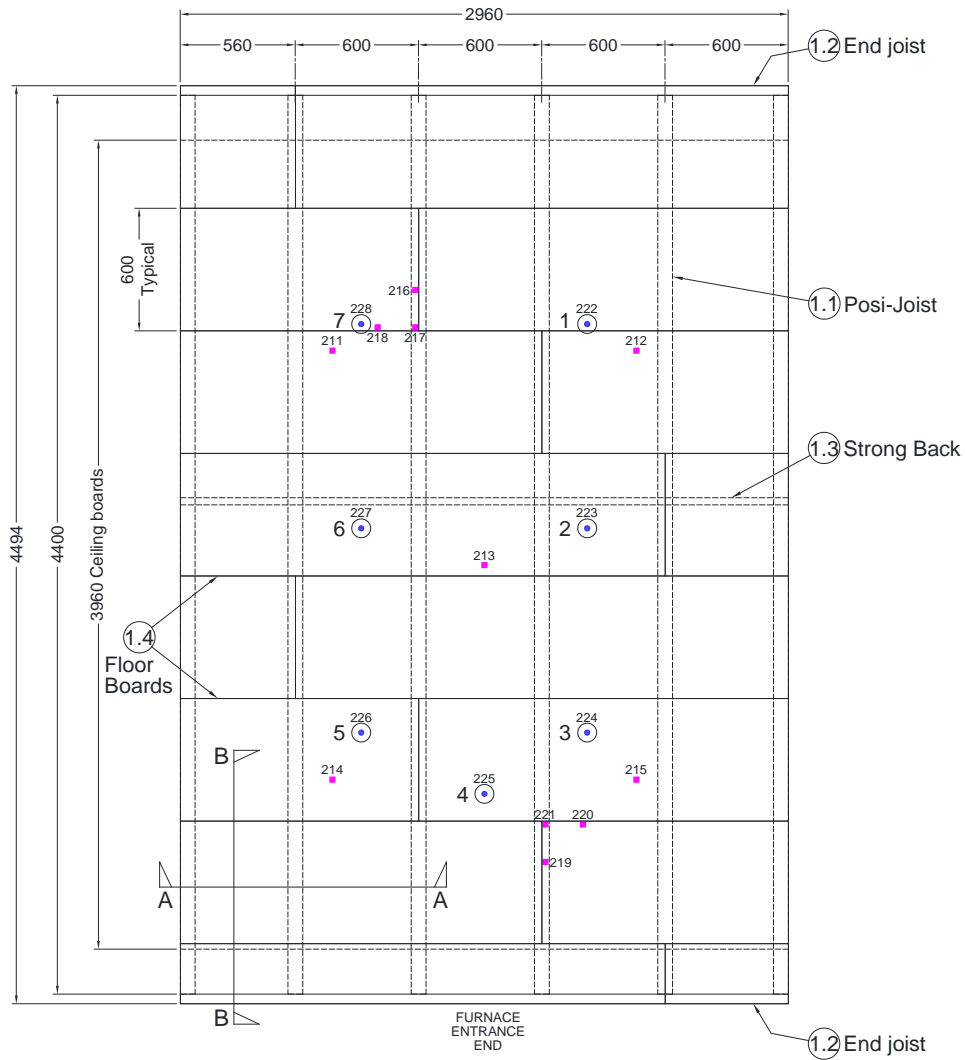
TEST SPECIMEN	2
PERFORMANCE CRITERIA AND TEST RESULTS.....	3
SIGNATORIES.....	4
REVISION HISTORY	5
TEST CONDITIONS.....	7
TEST SPECIMEN DRAWINGS	8
SCHEDULE OF COMPONENTS.....	15
TEST OBSERVATIONS	19
TEST PHOTOGRAPHS	20
TEMPERATURE, PRESSURE AND DEFLECTION DATA.....	22
ON-GOING IMPLICATIONS.....	31
FIELD OF DIRECT APPLICATION	32

Test Conditions

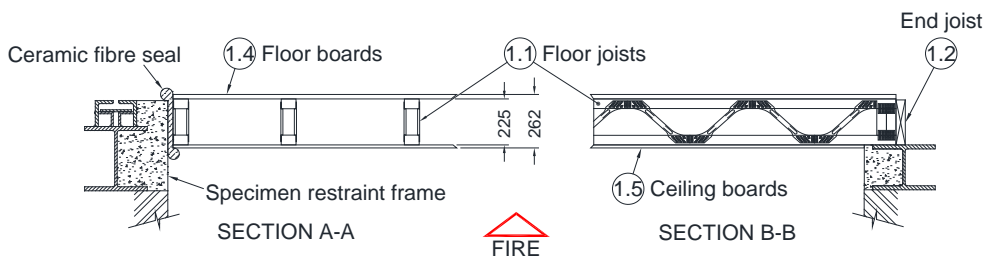
Standard	<p>BS EN 1365-2: 2014, 'Fire resistance tests for loadbearing elements – Part 2: Floors and Roofs'</p> <p>The purpose of the test was to evaluate the performance of a timber floor construction protected by a ceiling of known fire resistance, when incorporating down lighter light fitting assemblies.</p>
Sampling	<p>Warringtonfire was not involved in the sampling or selection of the tested specimen or any of the components.</p> <p>The results obtained during the test only apply to the test samples as received and tested by Warringtonfire.</p>
Installation	<p>Representatives of Warringtonfire assembled the floor construction and installed the downlighters between the 27th and 28th January 2021.</p>
Conditioning	<p>The specimen's storage, construction, and test preparation took place in the test laboratory over a total, combined time of 2 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 11.5°C to 16.5°C and 66.5% to 77.5% respectively.</p>
Instruction to Test	<p>The test was conducted on the 28th January 2021 at the request of JCC Lighting Products Ltd, the test sponsor.</p>
Ambient Temperature	<p>The ambient air temperature in the vicinity of the test construction was 16°C at the start of the test with a maximum variation of +4°C during the test.</p>
Furnace	<p>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.</p>
Thermocouples	<p>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.</p>
Application of the load	<p>The full test load was applied via dead load uniformly distributed over the test Specimen 60 minutes before the commencement of the test.</p>
Loadbearing Capacity Criteria	<p>A linear deflection transducer was provided at the approximate centre on the unexposed surface of the specimen to record its vertical deflection.</p>
Furnace Pressure	<p>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.</p>

Test Assembly

Figure 1- Plan View of Test Specimen

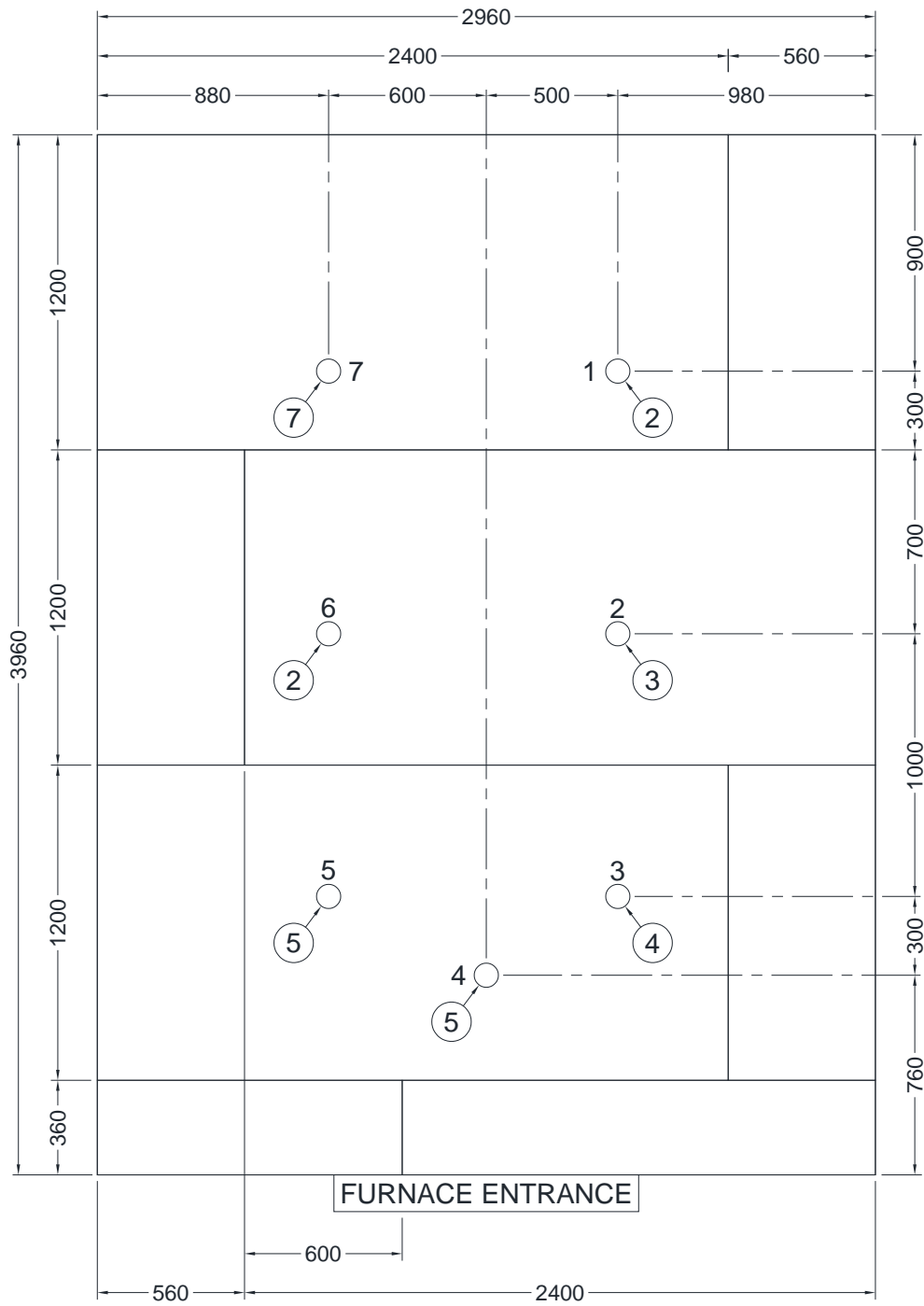


- Positions of thermocouples
- Mid-depth of cavity above light fitting



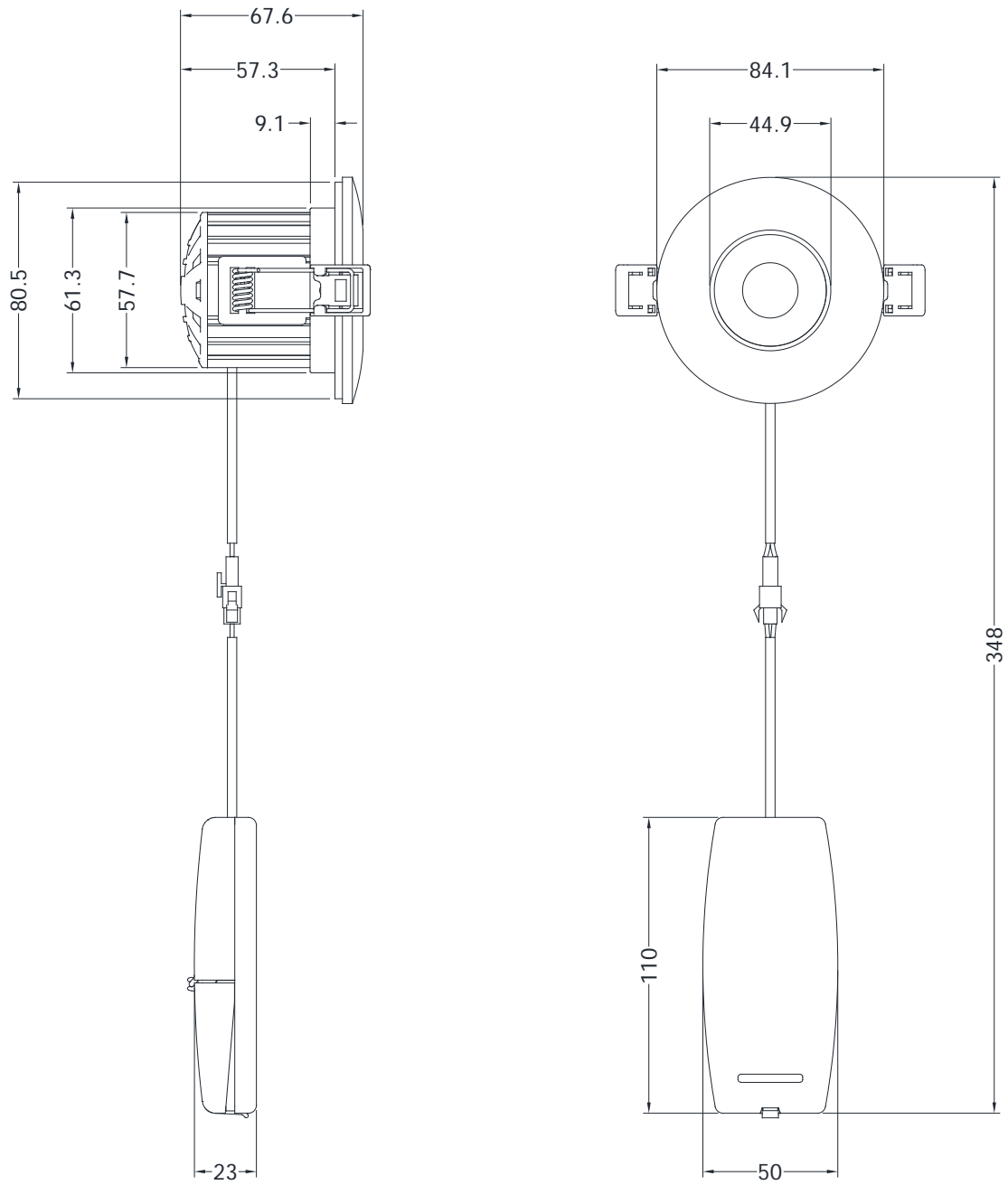
Do not scale. All dimensions are in mm

Figure 2 – Details of Downlighter Positions



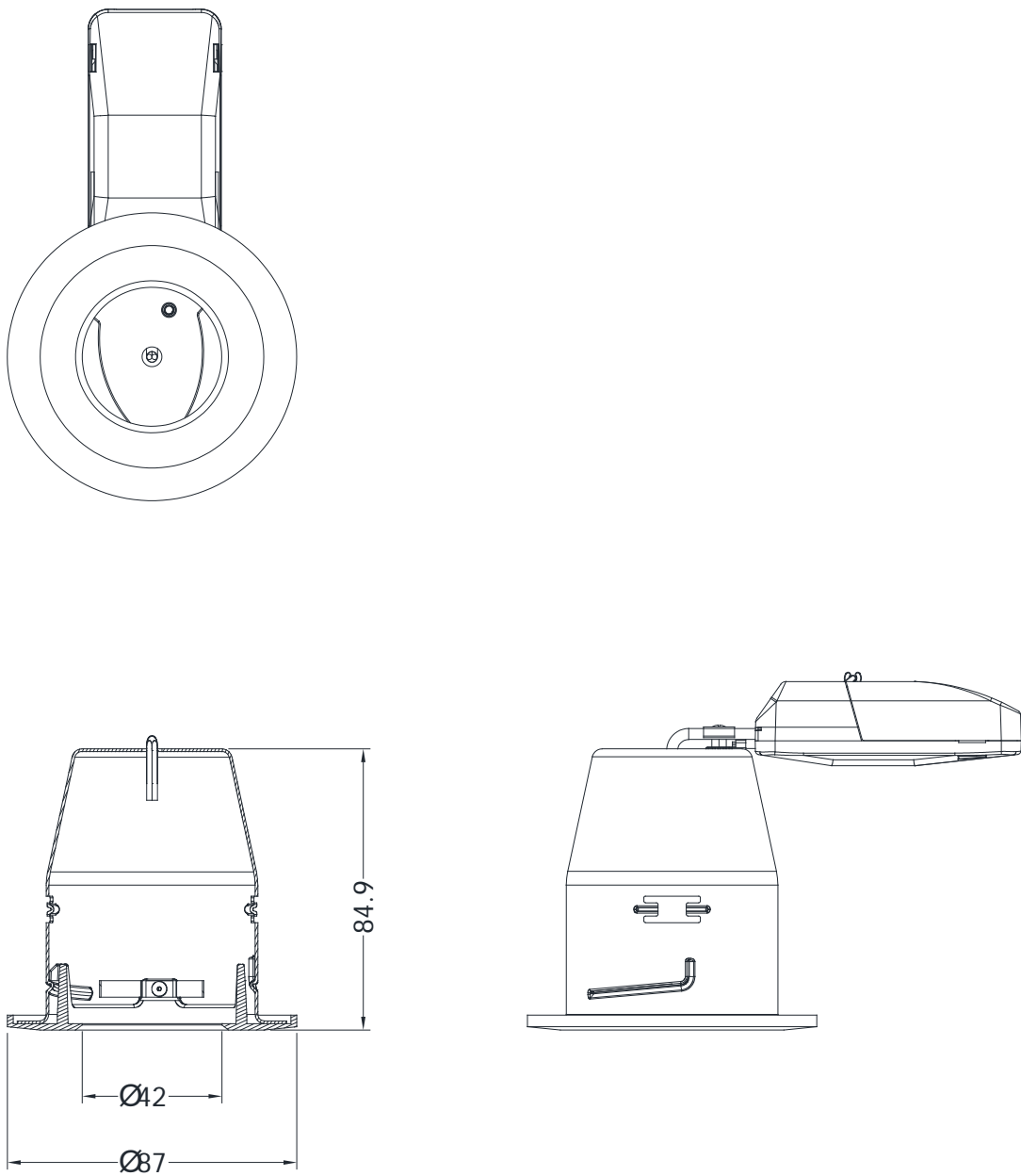
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Figure 3 – Details of Downlighter Specimens 1 & 6



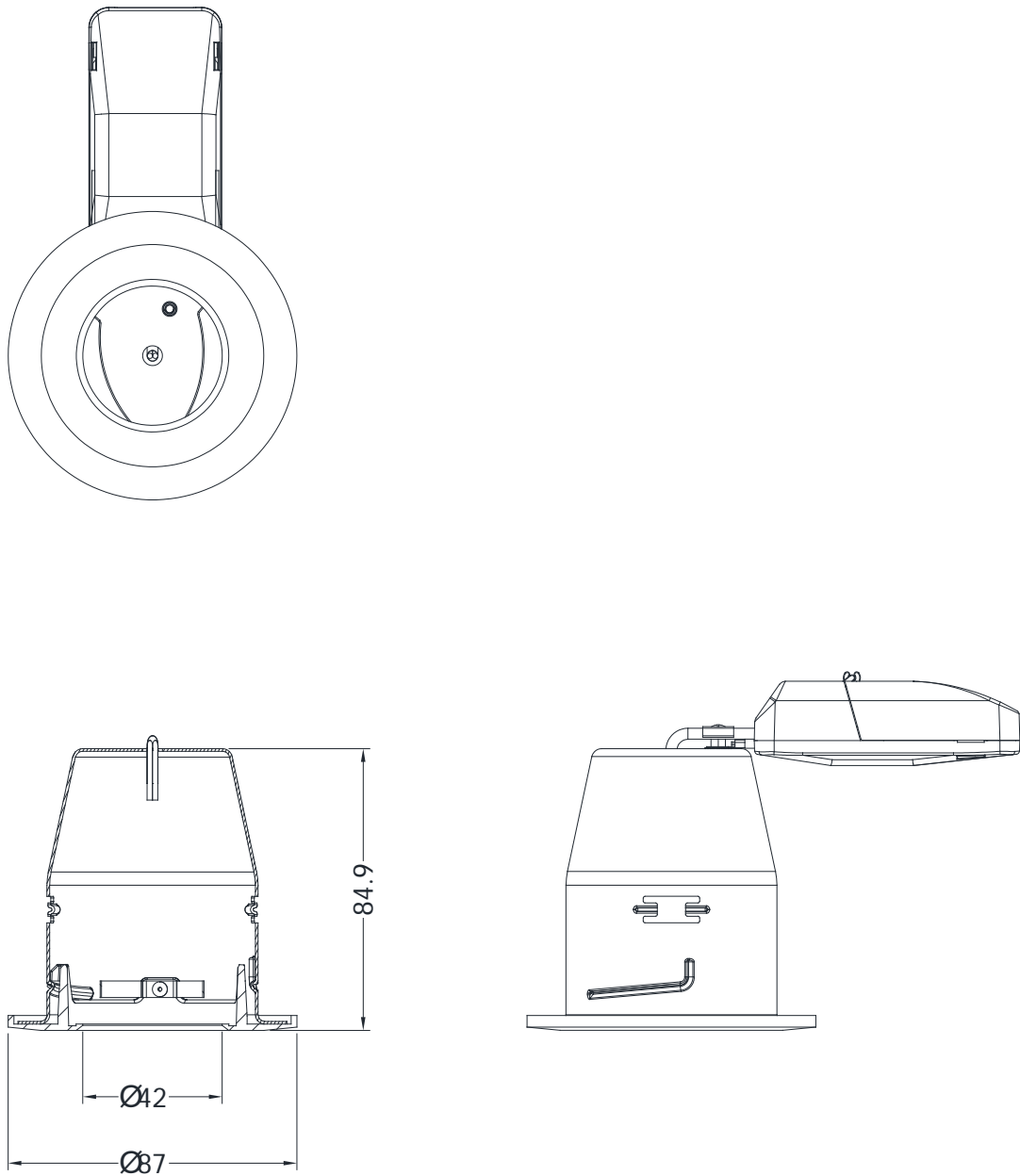
Do not scale. All dimensions are in mm

Figure 4 – Details of Downlighter Specimen 2



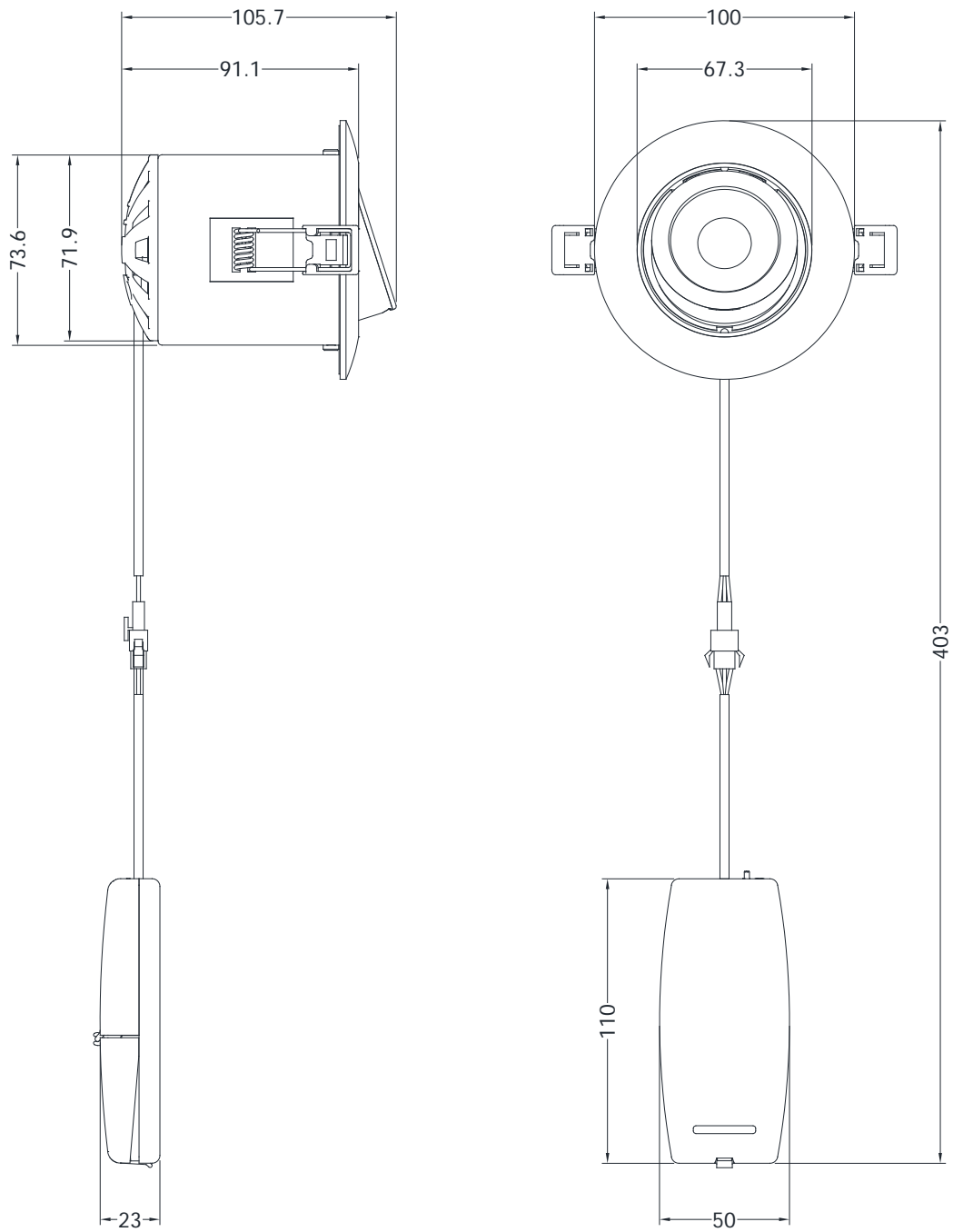
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Figure 5 – Details of Downlighter Specimen 3



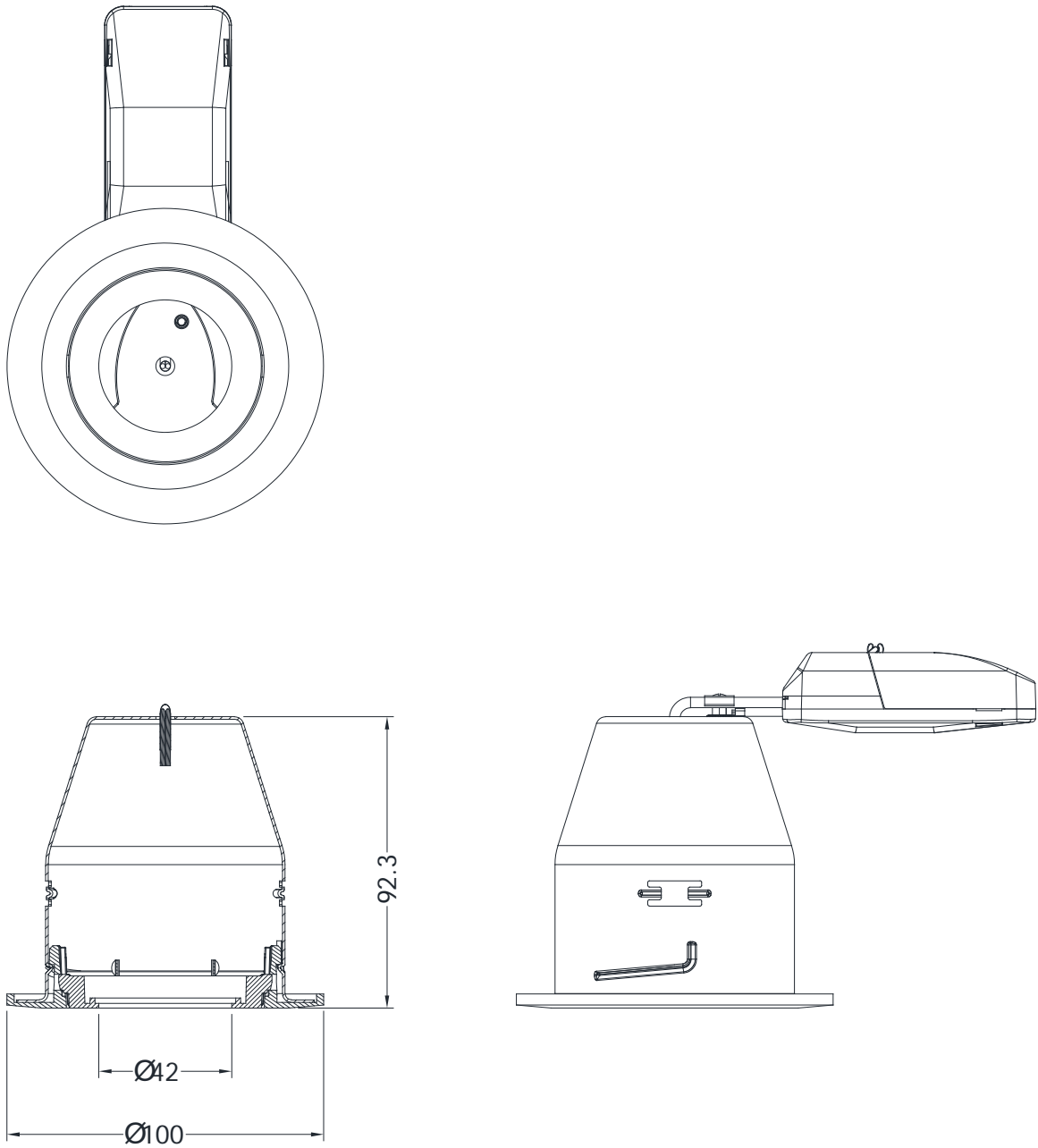
Do not scale. All dimensions are in mm

Figure 6 – Details of Downlighter Specimens 4 & 5



Do not scale. All dimensions are in mm

Figure 7 – Details of Downlighter Specimen 7



Do not scale. All dimensions are in mm

Schedule of Components

(Refer to Figures 1 to 7)

(All other details are as stated by the sponsor)

<u>Item</u>	<u>Description</u>
1. Timber Floor	
1.1. Engineered-Joints	
Manufacturer	: Truss Form Ltd
Reference	: J01
Assembled joist size	: 73 mm wide x 225 mm deep x 4400 mm long
Top and bottom chords	
i. material	: TR26 grade European whitewood
ii. density	: 450 kg/m ³ , stated
iii. cross section	: 73 mm horizontal x 47 mm vertical x 4400 mm long
End and Internal Blocks	
i. material	: TR26 grade European whitewood
ii. density	: 450 kg/m ³ , stated
iii. cross section	: 72 mm x 48 mm x 129 mm
Metal Webs	
i. reference	: Mitek PS10+ webs
ii. material	: Galvanised mild steel
iii. section size	: 241 mm high x 300 mm long x 0.9 mm thick, 12 off each side of joist
iv. fixing method	: Fitted between top and bottom chords and fixed via integral nailplate
Centres	: 600 mm, please see Figure 1
1.2. End Joists	
Material	: British home-grown, rough sawn softwood, kiln dried
Grade	: C16, to BS EN 519
Density	: 375 kg/m ³ , nominal
Size	: 45 mm wide x 220 mm deep x 2960 long
Fixing method	: Fitted across the ends of the posi-joists and through screwed to the top and bottom chords of each joist
1.3. Strong Back	
i. material	: TR26 grade European whitewood
ii. density	: 471.6 kg/m ³ , measured
iii. cross section	: 35.2 mm wide x 96.6 mm high x 2960 mm long
iv. fixing method	: Fitted at 90° to joists and screwed to an internal block near mid-span using 2 off 90mm long 5mm diameter screws per joist
1.4. Floor Boards	
Material	: Flooring grade tongue and groove chipboards
Reference	: FSC E1 P5
Density	: 691.3 kg/m ³
Thickness	: 22 mm
Size	: 600 mm wide
Fixing	: Fitted in a single layer and bonded with Egger D4 Floorboard Adhesive to the top chords of each joist and the top of the rim joists as well as in the tongue and groove of adjoining boards. Also, fixed with 64.3 mm long x 4.4 mm diameter countersunk steel screws to floor joists at 300 mm centres

<u>Item</u>	<u>Description</u>
1. Timber Floor (Continued)	
1.5. Ceiling Boards	
i. manufacturer	: British Gypsum
ii. reference	: Gyproc Wallboard SE
iii. material	: Type A gypsum complete with strong paper liners
iv. thickness	: 1 off layer 15 mm thick
v. density	: 763.8 kg/m ³ , measured
vi. fixing method	The boards were screw fixed to the soffit of the joists with all joints staggered, paper taped and skimmed with British Gypsum jointing compound
2. Specimens 1 & 6	
Manufacturer	: JCC Lighting
References	
i. specimen 1	: V50 JC1001 WH/CH/BN
ii. specimen 6	: V50 JC1001 WH/CH/BN
Overall dimensions and construction	: See Figure 3 for details
Luminaire Details	
i. body materials	: Steel, Heat Sink of extruded aluminium, Lens of Polycarbonate, Rim of Die cast aluminium
ii. diffuser material	: PMMA
iii. diffuser rating	: 650°C
iv. chipset	: SUNPU 2828
v. weight	: 0.29Kg
vi. input voltage	: 230-240V
vii. input frequency	: 50-60Hz
viii. inrush current	: ≤5A 2.2μS
ix. running current	: 175mA
x. electrical class	: II
xi. lamp type	: LED
xii. dimmable	: Yes
xiii. MacAdam steps	: 5
xiv. lumen depreciation	: L70 @ 51,000hrs
xv. LED driver manufacturer	: JCC Lighting
xvi. IP rating	: IP65
xvii. operating temperature	: -5 °C to 25 °C
xviii. correlated colour temperature	: 3000K & 4000k
xix. colour rendering index	: Ra80
xx. forward voltage	: 36V DC
xxi. total power	: 7W
xxii. power factor	: 0.9
xxiii. intumescent	: 80 mm x diameter x 1 mm thick graphite based intumescent
xxiv. sealing ring	: 10 mm x wide x 1 mm thick silicone rubber based seal
xxv. cut out size	: 70 mm

<u>Item</u>	<u>Description</u>
3. Specimen 2	
Manufacturer	: JCC Lighting
Reference	: JC010010 WH/CH/BN
Overall dimensions and construction	: See Figure 4 for details
Luminaire Details	
i. body materials	: Mild Steel
ii. bezel materials	: Die Cast Aluminium
iii. weight	: 0.24kg
iv. input voltage	: 220-240vAC
v. electrical class	: Class I
vi. lamp type	: GU10 Cap
vii. maximum lamp size	: LED GU10 Lamps Only – 10W
viii. IP rating	: IP20
ix. operating temperature	: Ambient 26°C
x. sealing ring	: 9.5 mm wide x 1 mm thick silicone rubber based seal
xi. cut out size	: 72 mm
4. Specimen 3	
Manufacturer	: JCC Lighting
Reference	: JC010016 WH/CH/BN
Overall dimensions and construction	: See Figure 9 for details
Luminaire Details	
i. body materials	: Mild Steel
ii. bezel materials	: Die Cast Aluminium
iii. weight	: 0.30kg
iv. input voltage	: 220-240vAC
v. electrical class	: Class I
vi. lamp type	: GU10 Cap
vii. maximum lamp size	: LED GU10 Lamps Only – 10W
viii. IP rating	: IP65
ix. operating temperature	: Ambient 26°C
x. sealing ring	: 9.5 mm wide x 1 mm thick silicone rubber based seal
xi. cut out size	: 72 mm
5. Specimens 4 & 5	
Manufacturer	: JCC Lighting
Reference	
i. specimen 4	: V50 Tilt JC1002 WH/CH/BN
ii. specimen 5	: V50 Tilt JC1002 WH/CH/BN
Overall dimensions and construction	: See Figure 6 for details
Luminaire Details	
i. body materials	: Steel, Heat Sink of extruded aluminium, Lens of Polycarbonate, Rim of Die cast aluminium
ii. diffuser material	: PMMA
iii. diffuser rating	: 650°C
iv. chipset	: SUNPU 2828
v. weight	: 0.46Kg
vi. input voltage	: 230-240V
vii. input frequency	: 50-60Hz
viii. inrush current	: ≤5A 2.2μS
ix. running current	: 175mA
x. electrical class	: II
xi. lamp type	: LED

<u>Item</u>	<u>Description</u>
5. Specimens 4 & 5 (Continued)	
Luminaire Details	
xii. dimmable	: Yes
xiii. MacAdam steps	: 5
xiv. lumen depreciation	: L70 @ 51,000hrs
xv. LED driver manufacturer	: JCC Lighting
xvi. IP rating	: IP65
xvii. operating temperature	: -5 °C to 25 °C
xviii. correlated colour temperature	: 3000K & 4000k
xix. colour rendering index	: Ra80
xx. forward voltage	: 36V DC
xxi. total power	: 7W
xxii. power factor	: 0.9
xxiii. intumescent	: 92 mm x diameter x 1 mm thick graphite based intumescent (top of can)
xxiv. sealing ring	: 10 mm x wide x 1 mm thick silicone rubber based seal
xxv. cut out size	: 85 mm
6. Specimen 7	
Manufacturer	: JCC Lighting
Reference	: JC010023 WH/CH/BN
Overall dimensions and construction	: See Figure 10 for details
Luminaire Details	
i. body materials	: Mild Steel
ii. bezel materials	: Die Cast Aluminium
iii. weight	: 0.30kg
iv. input voltage	: 220-240vAC
v. electrical class	: Class I
vi. lamp type	: GU10 Cap
vii. maximum lamp size	: LED GU10 Lamps Only – 10W
viii. IP rating	: IP65
ix. operating temperature	: Ambient 26°C
x. sealing ring	: 9.5 mm wide x 1 mm thick silicone rubber based seal
xi. cut out size	: 84 mm

Test Observations

Time		All observations are from the exposed face unless noted otherwise.
mins	secs	
-60	00	Load applied.
00	00	The test commences.
01	30	Bright flames across the specimen ceiling.
04	00	Light fitting 2 has dropped out and is flaming.
05	00	Glowing embers appear as paper layer of plasterboard starts to burn away.
08	00	Light fitting 1 has dropped out and is flaming.
10	00	The tape and jointing work is falling away.
12	00	Light fitting 3 has dropped out and is flaming.
13	00	Light fitting 7 has dropped out and is flaming.
15	00	The plasterboards are glowing bright red within the furnace.
16	00	Light fitting 4 is now flaming.
16	30	The plasterboards are beginning to ripple along the edges.
21	00	Heavy steam/smoke release from both ends of the specimen from the unexposed face.
22	00	The joints between the plasterboards have opened up to approximately 5 mm.
25	30	Increased volumes of smoke continue to escape from the ends of the specimen of the unexposed face.
26	00	Sections of the plasterboard begin to detach from the specimen into the furnace.
27	00	The furnace has become engulfed in flames owing to the now exposed timber joists igniting.
29	00	More sections of plasterboard continue to detach from the specimen.
31	00	The test is discontinued due to safety concerns owing to the rate of deflection sharply increasing.

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 15 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	35
1	349	348
2	445	510
3	502	488
4	544	547
5	576	571
6	603	601
7	626	621
8	646	645
9	663	660
10	678	677
11	693	692
12	706	706
13	717	718
14	728	728
15	739	739
16	748	750
17	757	758
18	766	767
19	774	773
20	781	782
21	789	793
22	796	797
23	802	802
24	809	810
25	815	815
26	820	820
27	826	832
28	832	841
29	837	844
30	842	847
31	847	880

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	18	19	18	18	18	18
1	18	19	18	18	18	18
2	18	19	18	18	18	18
3	18	19	18	18	18	18
4	18	19	18	18	18	18
5	18	19	18	18	18	18
6	18	19	18	18	18	18
7	19	19	18	19	18	19
8	19	19	18	19	19	19
9	19	20	18	19	19	19
10	20	20	19	20	19	20
11	21	21	19	20	20	20
12	21	21	20	21	21	21
13	22	22	20	22	21	21
14	23	23	21	22	22	22
15	24	24	21	23	23	23
16	25	25	22	24	24	24
17	26	26	22	25	25	25
18	27	27	23	25	26	26
19	28	28	23	26	27	26
20	29	29	24	27	28	27
21	34	29	24	28	29	29
22	44	30	25	29	30	32
23	56	31	25	30	31	35
24	66	33	26	30	32	37
25	73	36	26	31	34	40
26	78	45	27	32	37	44
27	81	56	29	34	41	48
28	82	66	34	36	49	53
29	83	73	44	39	61	60
30	84	78	53	43	72	66
31	84	81	58	47	80	70

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	18	19	19	18	19	18
1	18	19	19	18	19	18
2	18	19	19	18	19	18
3	18	19	19	18	19	18
4	18	19	19	18	19	18
5	18	19	19	18	19	18
6	18	19	19	18	19	18
7	18	19	20	18	19	19
8	18	20	20	18	19	19
9	18	20	20	18	19	19
10	18	20	21	18	20	19
11	18	21	21	18	20	20
12	18	22	22	18	21	20
13	18	23	23	18	21	21
14	19	24	24	18	22	21
15	19	24	25	19	23	22
16	19	25	25	19	23	23
17	19	26	26	19	24	24
18	20	27	27	19	25	24
19	20	29	28	19	26	25
20	20	32	29	20	27	26
21	21	38	30	20	27	26
22	21	47	32	20	28	27
23	23	56	35	21	29	28
24	23	63	43	21	30	29
25	24	70	51	21	31	30
26	26	75	60	22	32	31
27	30	78	67	22	33	32
28	36	80	72	22	36	33
29	43	81	78	23	40	35
30	48	82	85	23	45	38
31	53	83	85	24	51	41

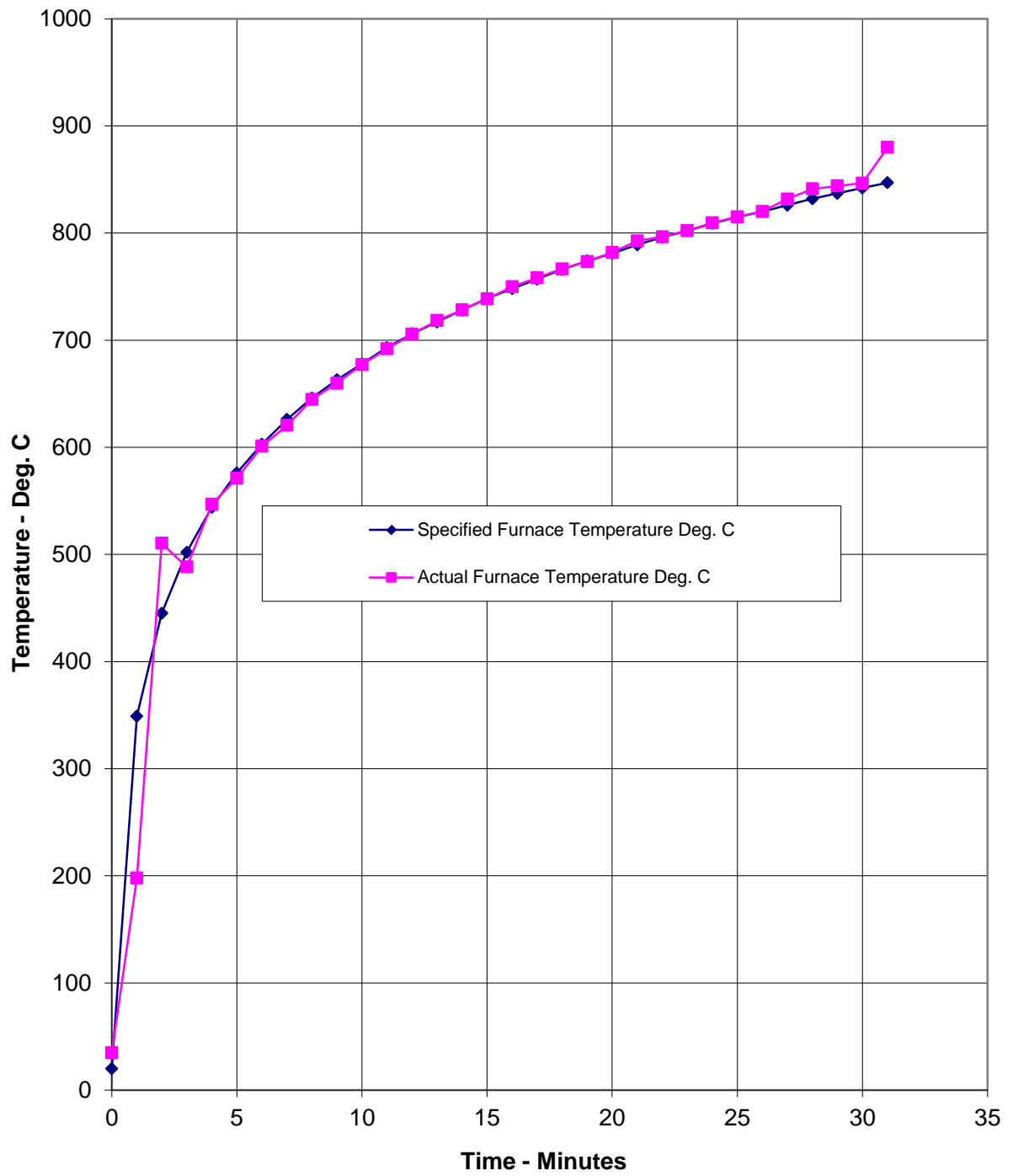
Individual Temperatures Recorded At Mid-Height Of The Cavity Coincidental With The Light Fittings

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	T/C Number 228 Deg. C
0	17	18	17	18	18	18	18
1	18	18	23	24	19	19	20
2	30	34	34	36	30	32	31
3	48	52	52	50	46	51	49
4	55	69	63	54	52	56	56
5	66	86	68	57	56	74	71
6	72	97	75	61	58	72	83
7	78	104	77	65	60	75	87
8	80	209	77	68	63	78	92
9	95	215	82	79	66	85	93
10	96	224	91	84	68	88	101
11	97	214	241	87	75	93	114
12	103	215	308	88	91	96	122
13	103	233	332	91	96	96	125
14	104	253	331	95	99	106	313
15	110	254	340	105	104	118	295
16	112	269	340	113	109	175	267
17	119	238	320	116	112	219	405
18	207	284	313	124	118	210	560
19	294	316	318	150	140	218	575
20	344	336	311	175	164	270	573
21	542	399	364	199	192	327	598
22	580	389	394	224	227	344	609
23	601	443	414	252	261	354	612
24	615	486	426	288	293	388	642
25	623	685	417	314	311	355	606
26	636	696	441	327	330	350	617
27	623	819	461	291	314	376	434
28	662	854	496	297	314	372	418
29	694	875	538	301	328	380	445
30	704	872	552	308	345	384	452
31	660	766	531	617	386	465	756

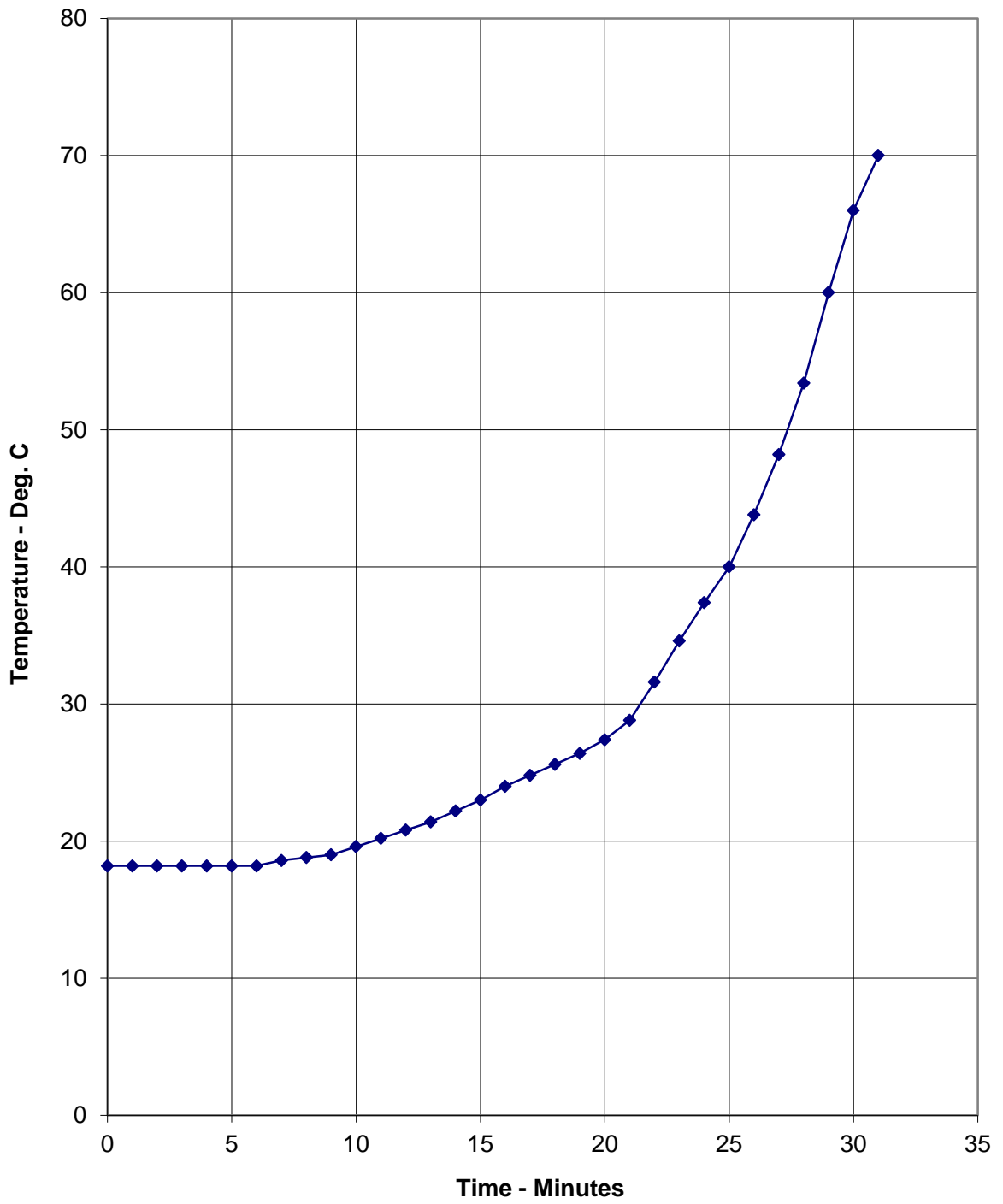
Central Vertical Deflection Of The Specimen

Time Mins	Central Vertical Deflection mm	Rate Of Deflection mm/min
0	0.1	0.0
1	0.6	0.6
2	1.0	0.4
3	0.7	0.0
4	0.9	0.3
5	1.0	0.1
6	1.2	0.2
7	1.4	0.2
8	1.5	0.2
9	1.7	0.2
10	1.9	0.2
11	2.0	0.1
12	2.2	0.2
13	2.2	0.1
14	2.5	0.2
15	2.6	0.2
16	2.8	0.2
17	2.9	0.1
18	3.1	0.2
19	3.2	0.1
20	3.5	0.3
21	3.7	0.2
22	3.9	0.2
23	4.2	0.3
24	4.6	0.3
25	5.5	0.9
26	6.5	1.0
27	9.0	2.5
28	12.2	3.2
29	18.1	5.9
30	25.5	7.4
31	43.9	18.5

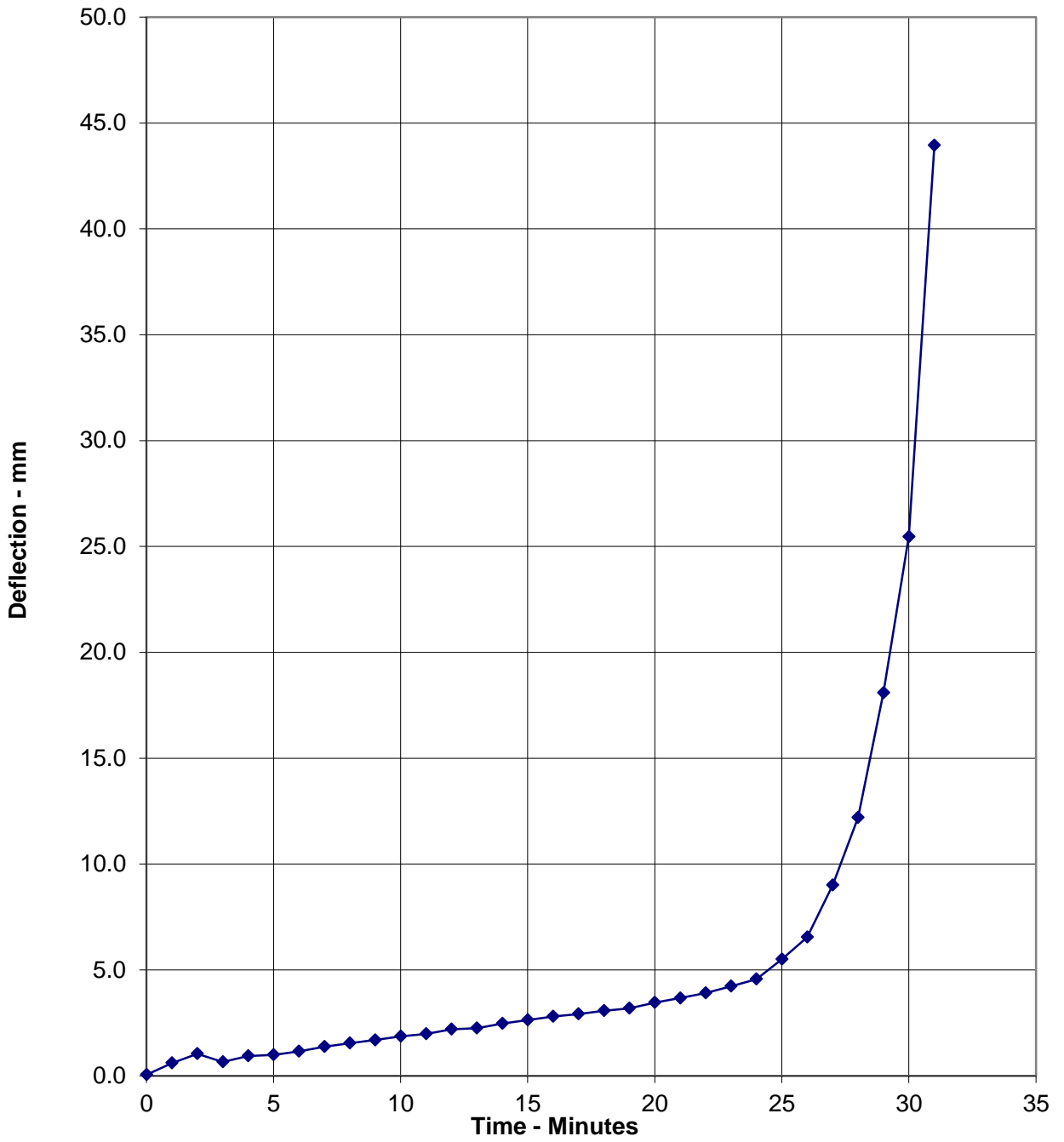
Graph Showing Mean Furnace Temperature, Together With The Temperature/Time Relationship Specified In The Standard



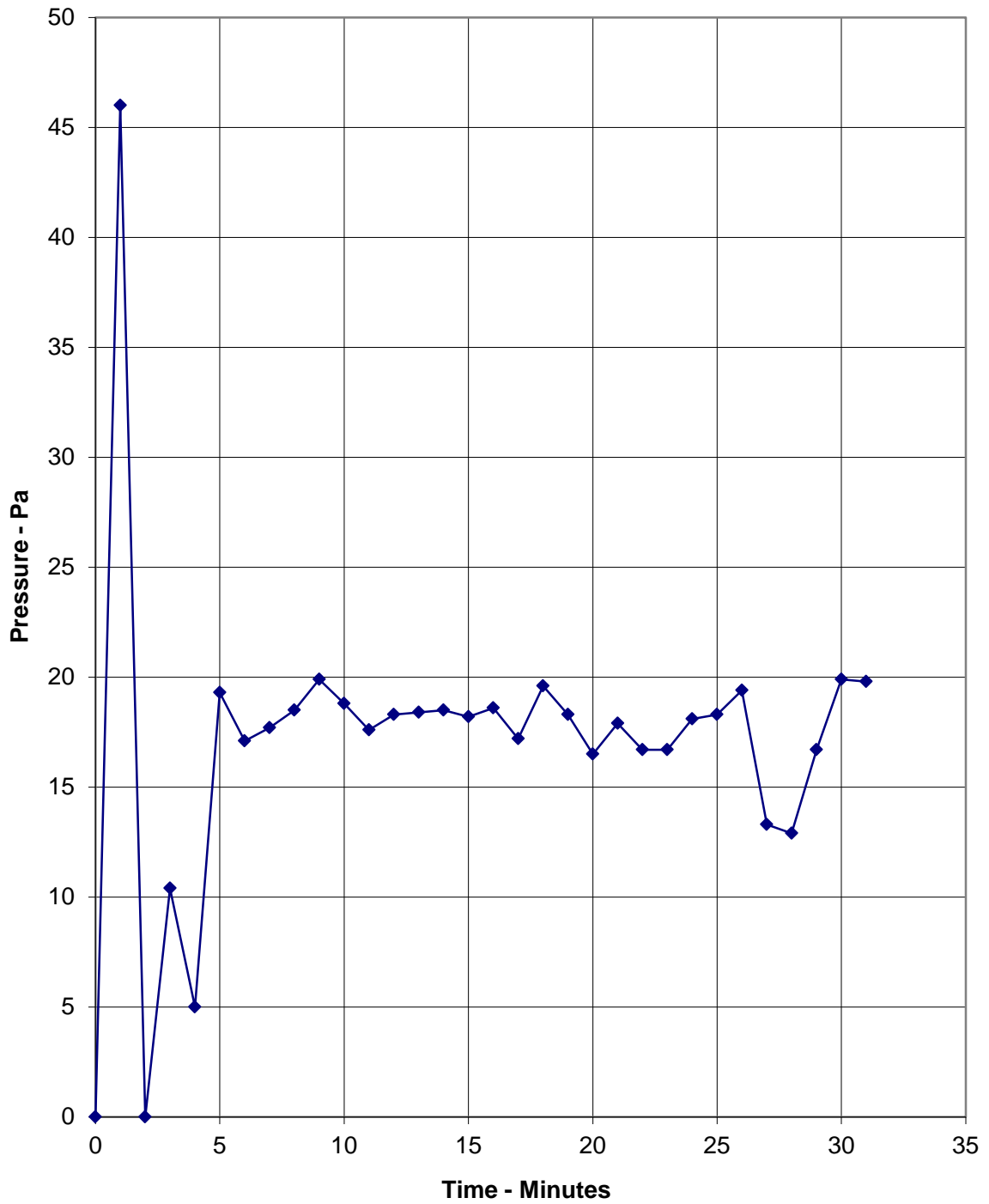
Graph Showing Mean Temperature Recorded On The Unexposed Surface Of The Specimen



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.

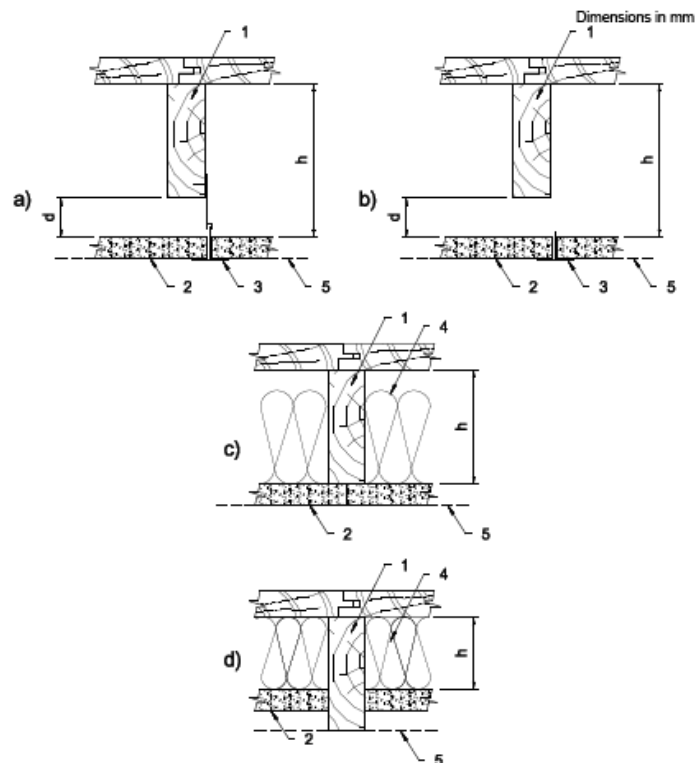
b) With respect to the ceiling system:

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