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Assessment of Panel Technologies steel doorsets to BS476: Part 22: 1987

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Prepared for:	Panel Technologies Limited Clifford House 38-44 Binley Road Coventry Warwickshire CV3 1JA

This document is only valid if presented if full and the Client Declaration has been duly signed.

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Introduction

This document constitutes an assessment on the fire test evidence for Panel Technologies Ltd. The test evidence used to justify the assessment relates to steel doorsets which have been fire resistance tested to UL10B Tenth Edition (UL) – listed below as primary test evidence.
The assessment is considered in respect of 120 minutes fire resistance to BS 476: Part 22: 1987(BS).

Primary test evidence

- Test report CFR1511131 tested to UL 10B Tenth Edition covers four doorsets comprising equal width single acting single doors. Two leaves were insulated (code UL53-120-PD-BF-L12A), one inward opening and one outward opening, and two were uninsulated (code: UL51-120-MD-PF-L12A), one inward opening and one outward opening.
  The insulated leaf size was 1998(h) x 595(w) x 45 (t) and the uninsulated leaf was 1995 (h) x 595(w) x 45 (t). The leaf construction was steel with internal and external stiffeners. The door frame was steel with welded corners and an architrave. The faces of the insulated leaves were clad with GTEC Megadeco board. The latch was engaged.
  Integrity failure of the uninsulated inward opening door occurred at 10 minutes. There were no other failures when the test was discontinued at 120 minutes

Proposed specification and justification

- It is intended to assess both doorsets to BS for integrity only as insufficient measurements were made of the temperature of the unexposed faces of the doorsets.

Consideration of potential differences between BS476 and UL10B

- **Furnace temperature curve:** the two curves are similar but not identical. The maximum difference is less than 40°C and for the majority of the time the BS curve is hotter. The UL thermocouples have a higher thermal inertia that the BS thermocouples so the recorded furnace temperature using BS thermocouples would have been higher than that recorded using the UL thermocouples in the test being considered. It is our opinion that these two differences would cancel each other out.
- **Pressure conditions:** the pressure in the furnace is 0 Pa at the head of the leaf in a UL10B test whereas the requirement for a BS test is 0 Pa 1 metre above the threshold. Any flammable material in the gap between the frame

and the door could cause failure to occur in a BS test in the positive pressure region but it would less likely to do so in a UL test where the pressure is negative over most of the specimen. Consequently the foam seal which was present in the test CFR 1511131 would need to be removed to enable the assessment to be valid. This could be replaced with a seal that has satisfactory test evidence when tested to BS476: Part 22: 1987 in conjunction with a steel door and steel frame for the required test duration.

- **Cotton Pad:** was not applied during the test being considered, which is the requirement for BS Integrity only test.
- **Door to frame gaps:** the gaps were measured during the test being considered as required in BS. For the insulated doorset the gaps ranged from 0.6 to 3.4 and for the uninsulated doorset the gaps ranged from 0.0 to 4.6mm.

Installation

- Doorsets should be installed into suitable supporting constructions following good practice and using fixings compatible with the supporting construction.
- Gaps between door and frame should be representative of the gaps used in the test being considered, and in any event should not exceed 5.0mm.
- The doorsets should be made entirely from non-combustible material. If insulation is fitted around the frame or within the leaf it should be non-flammable (e.g. Fibrefrax). The use of fire rated sealant to affix insulation or to seal small gaps is not permitted.
- All joints should be continuously welded.

Conclusion

It is our opinion that if doorsets of either specification (as tested in the primary test evidence) were to be subjected to test in accordance with BS 476: Part 22: 1987 a minimum of 120 minutes Integrity would be achieved if the restrictions outlined above were followed (i.e. no combustible materials present in the leaves or framing).

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Limitations

- This assessment covers only the elements and subjects discussed. All details not specifically referred to should remain as tested.
- This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, CFR reserves the right to withdraw it unconditionally, but not retrospectively.
- This assessment relates only fire resistance considerations and does not purport to ensure fitness for purpose and long-term serviceability. This is the responsibility of the client.

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Client declaration

- We, the undersigned, confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been the subject of a fire test to the Standard against which it has been assessed.
- We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which it has been assessed.
- We are not aware of any information that could adversely affect the conclusions of this assessment and, should we become aware of any such information, we agree to ask CFR to withdraw it.

Signed:

Print name: Date:

For and on behalf of Panel Technologies Ltd

Validity

- This assessment is valid for a period of 5 years, after which it must be submitted to CFR for re-consideration.
- This assessment is not valid unless it includes the signed client declaration.

E Southern
Deputy Head of Testing

E Wilson
Head of Testing