

Post Fire Report

Shepherd's Court Fire

Shepherd's Bush Green

W12

Borough of Hammersmith and Fulham

Date of Incident 19th August 2016

LFB Incident Numbers: 110281

Fire Safety Regulation

169 Union Street

London SE1 0LL

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1. Introduction

- 1.1 On the 19th August 2016 at 3:52PM, London Fire Brigade were called to a fire in a flat on the 7th floor of Shepherds Court, a purpose-built block of residential flats of 20 floors, in Shepherd's Bush Green, W12.
The fire started in the kitchen and rapidly developed, spreading externally via the open windows affecting several floors above. The fire required twenty fire engines to bring it under control.
- 1.2 The fire, spread from the kitchen to the remainder of the flat, as well as vertically via windows to involve four additional flats located directly above the flat of fire origin.
- 1.3 Following the incident, we (the London Fire Brigade) are conducting initial enquiries into the nature of the external fire spread observed on the scene of the incident. To this effect the London Fire Brigade has recently witnessed informative testing carried out on an unaffected facade panel removed from the building. The aim of the tests was to provide further information with regards to the behaviour of the facade panels in a fire.
- 1.4 This report aims at providing further details with regards to the test carried out and explain the fire safety implications of the findings.

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2. Facade Panel Examination

2.1 Objective of the examination

2.2 On the 29th of August 2016, members of the London Fire Brigade Fire Engineering team witnessed a series of tests carried out on facade panels involved in the 20 pump fire located at Shepherd's Court Residential tower on the 19th of August 2016.

2.3 The aim of the testing carried out was to provide further information with regards to the facade panels and determine the fire behaviour of its components. This would also provide valuable information with regards to the with the ultimate aim of providing information in determining whether the material used in the facade panels complied with the Building Regulation at the time the panels were installed.

2.4 The full report provided by Bureau Veritas following the testing can be found in Appendix A of this report.

2.5 Test Selection

2.5.1 It must be noted that the tests carried are note strictly speaking a standard test but informative tests based on the principles of a standard. This is due to the fact that they were only intended to provide further information with regards to the fire behaviour of the panels.

2.5.2 However it should be noted that, although the test did not correspond to a standard test, the assessment carried out has been done in line with the high level principles described in BS 476 part 12.

2.6 Examination of construction materials.

2.6.1 Two sample panels (approximately 0.8m by 1.5m) were available:

- One unaffected panel from the 7th floor kitchen which was unaffected; and
- One panel sampled from the 12th floor which was affected by the fire and from which the metal facia had peeled off and the some of the blue insulation had started to char in places.

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2.6.2 Upon examination the panels were constructed (from the exterior of the flat to the interior) of:

- Thin metal sheet (presumably steel),
- 17 to 23 mm of blue foam insulation,
- 10 mm of plywood, and
- Thin metal sheet (presumably steel).

2.6.3 An initial sample of the blue insulation was taken from one of the panels and initial inspection determined that the blue foam was made of polystyrene without halogenated product (these are often used as fire retardant).

2.7 Tests Carried out and Results

2.7.1 The full results of this first series of tests are further explained in the report supplied by Bureau Veritas report provided in Appendix A.

2.7.2 In summary a series of three tests were carried out on the full facade panel:

- Test 1 application of a candle lighter at the bottom of the sample for 40 s;
- Test 2 application of a butane blow torch for 40s; and
- Test 3 wood crib of 18 wooden sticks burning for approximately 7 minutes

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2.7.3 The tests were conducted on the full panel including all parts. Following the test no significant sustained burning was noticed following the removal of the ignition source.

However it was noticed that the front metal facia was delaminating from the rest of the panel and the insulation located directly behind the ignition source was affected by the heat as it was shrunken and charred. This was also noticed on the second panel sampled at the 12th floor.

2.7.4 In addition to the tests described in the report by Bureau Veritas additional series of tests (as described) with direct flame impingement on the blue foam were carried out. These revealed that following the removal of the ignition source the foam was sustaining flaming and that it was significantly increasing substantially the fire. Note that 1 of the tests had to be stopped as it was overcoming the testing facilities.

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3. Fire Safety implication.

3.1 Introduction

3.1.1 The following section of the report intends to provide background information with regards to the results of the test carried out as well as express some views based on the tests and observations at the scene.

3.2 Applicable Building Regulation

3.2.1 Following initial discussions with Hammersmith and Fulham Council we understand that the windows including the facade insulation panels provided in Shepherd's Court have been refurbished in 2006.

3.2.2 Assuming the above, the applicable Building Regulation at the time of the window refurbishment would most likely be the Building Regulation 2000.

3.2.3 External fire spread via the facade is dealt with in section in Schedule 1 part B4 of the Building Regulation 2000.

External fire spread

B4.—(1) The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.

(2) The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

Figure 1 Extract from the Schedule 1 Part B of the Building Regulation 2000

3.2.4 Considering the above, the applicable design guidance with regards to the window panel refurbishment was Approved Document B - Fire Safety (2000 Edition – incorporating the 2002 European amendments). This design state the following in the section relating to external wall construction.

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External wall construction

13.7 The external envelope of a building should not provide a medium for fire spread if it is likely to be a risk to health or safety. The use of combustible materials for cladding framework, or of combustible thermal insulation as an overcladding or in ventilated cavities, may present such a risk in tall buildings, even though the provisions for external surfaces in Diagram 40 may have been satisfied.

In a building with a storey 18m or more above ground level, insulation material used in ventilated cavities in the external wall construction should be of limited combustibility (see Appendix A). This restriction does not apply to masonry cavity wall construction which complies with Diagram 32 in Section 10.

Advice on the use of thermal insulation material is given in the BRE Report *Fire performance of external thermal insulation for walls of multi-storey buildings* (BR 135, 1988).

Figure 2: Extract from Approved Document B - Fire Safety (2000 Edition – incorporating the 2002 European amendments)

- 3.2.5 In accordance with the guidance highlighted above it is therefore not sufficient for the materials provided in the facade build up of a building of more than 18m (i.e. which Shepherd's Court is) to only achieve the surface spread of flame requirement (Diagram 40). The external facade of a building should not provide a medium for fire spread to the point where it forms life safety issues.
- 3.3 Please also note that the current legislation (Building Regulation 2010 as amended) as well as the current associated guidance (Approved Document B 2006 as amended in 2010 and 2013) are very similar to the ones highlighted above.

3.4 Fire Safety Opinion

- 3.4.1 We note that Bureau Veritas report states that in the event of a fully involved fire the panels are likely to delaminate and expose the materials under the outward facing metal sheet (plywood and polystyrene insulation foam).
- 3.4.2 We note that this behaviour was noted on the second sample taken from the 12th floor of Shepherd's Court as well as observed during the incident on the floors directly above the room of fire origin.

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3.4.3 In accordance with the applicable guidance at the time of the refurbishment and based on the evidence currently provided to us, the material included in the facade panels may have provided a medium for the fire to spread along the external envelope of the building. It therefore may not meet the recommendation of the applicable guidance and consequently the applicable legislation as defined in section 3.2.

3.4.4 We also note that these panels have been used in the other similar building.

3.4.5 Considering the above, it is therefore our opinion that as the Responsible Person for this building, need to ascertain if the insulation panels provided in Shepherd's Court comply with the applicable regulation and guidance. The following documents would provide additional information to clarify if the facade insulation panels comply with the applicable legislation and guidance.

- A copy of the contract for the refurbishment of the block,
- Any additional paperwork regarding the window composite prior to the refurbishment,
- The regulation 16B / 38 Building Regulations pack or the Health and Safety file if different,
- Copies of any certification provided in relation to the windows,
- Copies of any meeting minutes or similar of the project board (or team) concerning the windows,
- Copies of any site inspection reports relating to the refurbishment (including any associated photographs),
- Copy of the fire risk assessments for all 4 blocks on the site.
- Any documentation demonstrating that the fire performance of the facade panels are appropriate in the configuration used in Shepherd's Court with regards to the applicable guidance at the time of the refurbishment.

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4. Conclusion

4.1 In conclusion, the test revealed that the insulation provided in these sandwich panel was made out of polystyrene.

The tests demonstrated, that once the metal facia was removed the insulation as well as the wooden backing was contributing to the combustion process increasing significantly the size of the flames as well as the size of the burnt area.

4.2 This report establish that the applicable guidance at the time of the refurbishment of the facade panels was likely to be the Building Regulation 2000 and its associated guidance document.

4.3 Considering the tests carried out as well as the behaviour observed during the incident at Shepherd's Court, it is highly likely that the facade panels do not meet applicable legislation at the time of the refurbishment.

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Appendix A: Bureau Veritas Report

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