

## Module 2 - Cladding Products Factsheet

Phase 1 of the Inquiry covered what happened to Grenfell Tower on the night of 14 June 2017, and the immediate causes and effects of the fire on the night.

Phase 2 is the examination of the reasons why the fire happened, and it is divided into [8 modules](#).

**Module 2** considers the principal materials that were used in the cladding system installed at Grenfell Tower as part of the refurbishment in the years 2012 to 2016. It will investigate the way in which these products were manufactured, tested and sold, and in particular the way in which the materials were presented to the market.

The materials considered are:

- the Reynobond PE 55 rainscreen panels manufactured and sold by Arconic;
- the RS5000 insulation boards manufactured and sold by Celotex;
- the Kingspan Kooltherm K15 insulation boards manufactured and sold by Kingspan;
- the window infill panels made by Aluglaze; and
- the Lamatherm cavity barriers manufactured and sold by Siderise.

The Inquiry will undertake a broader examination of the testing and certification regime applicable to construction products generally in Module 6.

### Issues to be covered in Module 2 and key witnesses

Module 2 will be divided into two main parts.

First, the Inquiry will hear from witnesses for or from each of the **manufacturers** of the principal materials listed above. The Inquiry will investigate:

- what they did in order to subject those products to fire safety tests;
- how those tests were set up and pursuant to what requirements or guidance;

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- how the results of those tests were recorded and archived and who had access to them;
- what information was provided by manufacturers to certifying bodies and how the wording of certificates came to be chosen;
- how the marketing and technical literature published to the UK construction industry by the manufacturer of each product came to be composed, and whether that literature presented the product's fire classification and fire performance in a fair and transparent manner;
- what each manufacturer knew about the specific application of its product for use in the cladding system proposed for installation at Grenfell Tower, and its role in selling and providing such products to Studio E, Rydon and Harley for use in the refurbishment.

Secondly, the Inquiry will hear from witnesses from the following **testing and certification bodies**:

- the Building Research Establishment (BRE), in respect of the testing to British Standard 8414 of systems incorporating Celotex and Kingspan insulation products and the classification of those systems;
- the British Board of Agrément (BBA) in respect of the certificate it issued in respect of Arconic's Reynobond PE 55 panels on 14 January 2008 and the five certificates it issued between 2 October 2008 and November 2015 in respect of Kingspan's Kooltherm K15 insulation product;
- Herefordshire building control, which, under the auspices of Local Authority Building Control (LABC), an association of local authority building control departments, provided system approval and registered detail certificates in respect of Kingspan Kooltherm K15 from May 2009 onwards.

The Inquiry will examine the role each of those bodies played in the tests, how they interpreted the test results, the extent to which they audited and monitored the manufacturers, and how the wording of each of the key certificates came to be chosen.

## Expert witnesses in Module 2

The Inquiry will hear from Dr Barbara Lane, who has provided a [presentation](#) to introduce the various **reaction to fire tests** that were relevant to products used in the refurbishment.

## Key concepts for Module 2

**Approved Document B** (referred to as ADB) - this is statutory guidance approved by the Secretary of State for Housing, Communities and Local Government. ADB provides guidance on how to comply with the requirements of the Building Regulations in relation to fire safety. A person designing a building is not obliged to follow ADB and may choose to adopt other methods or materials, provided that the building when completed complies with the functional requirements of the Building Regulations.

**BS 8414** - this is a test method for assessing the fire performance of **cladding systems** (as distinct from individual components). There are two types of test: BS 8414-1 for systems applied to the masonry face of a building and BS 8414-2 for systems fixed to a structural steel frame. The test that was relevant to the refurbishment at Grenfell Tower was BS 8414-1. The results of BS 8414 tests are classified in accordance with the criteria set out in a document called **BR 135**.

**BR 135 “Fire performance of external thermal insulation for walls of multi-storey buildings”** - this document was produced by the Building Research Establishment and contains classification criteria for determining whether cladding systems tested in accordance with **BS 8414** are suitable for use on buildings with a storey above 18 metres in height.

A cladding system tested in accordance with BS 8414 which satisfied the criteria set out in BR 135 would comply with the provisions of Approved Document B and could be expected to comply with the requirements of the Building Regulations.

**British Standard reaction to fire tests** (shortened to BS) - these are the relevant national reaction to fire tests relevant to this phase of the Inquiry:

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- **BS 476-4** is a test of **combustibility**. Materials which satisfy certain criteria when tested in accordance with the prescribed method are regarded as **non-combustible**;
- **BS 476-6** is a test for **fire propagation**. This is a measure of the contribution a material makes to the growth of fire. Together with BS 476-7 this test forms the basis of [Class 0 classification](#);
- **BS 476-7** is a **surface spread of flame test** for products. Together with BS 476-6 this test forms the basis of [Class 0 classification](#);
- **BS 476-11** measures the **heat emission** from materials. It is one of the two national tests that can provide a **limited combustibility** classification (alongside BS 476-4).

**Class 0** (sometimes referred to as Class O) - this is a national product performance classification for lining materials defined in Approved Document B. It can be achieved either by a product being comprised throughout of material of limited combustibility, or by meeting certain requirements when tested in accordance with **both** BS 476-6 and BS 476-7. There is no European equivalent to Class 0.

**European Reaction to Fire Tests** (shortened to EN) - European reaction to fire tests have a unique numbering and separate classification standard. They are issued by the Comité Européen de Normalisation (CEN), the European Committee for Standardisation. The EN tests most relevant to this phase of the Inquiry are:

- BS EN ISO 1182 - a **combustibility test** conducted in a furnace;
- BS EN ISO 1716 - a test conducted in a bomb calorimeter to determine the **gross heat of combustion of a material**;
- BS EN 13823 – the Single Burning Item test which determines the reaction to fire of a material when exposed to **thermal attack by a single burning item**;
- BS EN ISO 11925-2 - Single Flame Source Test, which tests ignitability of a material by direct small flame impingement, the extent of **vertical fire spread** and the creation of burning droplets.

EN tests classify materials on a scale from 'A1' (the highest performance) to 'F' (an 'unclassified' standard). Materials classed A1 are regarded as **non-combustible** for the purposes of ADB. Materials classed A2 are regarded as materials of **limited combustibility**.

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**Limited combustibility** - this is a classification defined in Table A7 in Approved Document B. It includes materials that are either **non-combustible** or that satisfy the criteria specified in BS 476-11. Materials classed A2 or better under the European testing system are also regarded as materials of **limited combustibility**.

**The Linear Route** - this is a shorthand expression for the guidance given in paragraphs 12.6 – 12.9 of Approved Document B. It includes a requirement (paragraph 12.7) that in a building with a storey 18 metres or more above ground level any insulation product used in the external wall construction should be of **limited combustibility**.

**Non-combustible** - this is a classification defined in Table A6 in Approved Document B. Materials which satisfy certain criteria when tested in accordance with the prescribed method under BS 476-4 or BS 476-11 tests would be deemed to be non-combustible. Under European (EN) testing, materials classed A1 are also regarded as non-combustible for the purposes of ADB.

**Reaction to fire test** - these tests are used to determine the extent to which construction products and/or materials contribute to the early stages of a fire (i.e. before it reaches flashover).

**Statutory guidance** - this is guidance issued under statutory powers. Approved Document B is approved by the Secretary of State under Section 6 of the Building Act 1984 for the purpose of providing practical guidance with respect to the requirements of the building regulations.