

Fire Testing – insurer standards

Insurer standards are primarily loss prevention standards used by the insurance industry to prioritise property protection. As a result, the tests used focus on the economic impact of fire, weather damage, or other damage-causing events to assist specifiers and building professionals.

There are a number of tests designed for the purpose of testing the fire performance of external panels, but the two most widely recognised in the industry are:

- LPS 1181 from the Loss Prevention Certification Board (LPCB)
- FM 4880 from FM Global.

LPS 1181 part 1: External envelope of buildings

LPCB's¹ LPS 1181 part 1² is a large-scale test which handles cladding systems that have been installed as they would be in a real-life situation. The construction is set up within a 10 m long x 4.5 m wide x 3 m high enclosure with an open front and ventilation window at the side. The flame ignition source is a large wooden crib in the internal corner of the test site close to the wall.



There are a number of pass – fail criteria, however, the key parameter is that there must be no fire spread beyond a 1.5 m zone around the crib. A pass grade for external panels within LPS 1181 part 1 is classified in one of two ways:

- EXT A - The system satisfies the criteria for LPS 1181 part 1 AND proves 'fire resistant' in accordance with LPS 1208 when tested to BS 476 part 21 or part 22. The LPS 1208 Loss Prevention guide (2014) also has a European grading and classification system which details the minimum integrity requirement which is classified in minutes, ranging from 15 to 240 minutes.

OR

- EXT B - The system passes LPS 1181 part 1 only.

This test is designed to assess the performance of specific systems in a fire, including the fixings and joints. Importantly, the data provided is only relevant for the system tested and cannot be used to approve similar build ups with alternative materials so alternatives must also be tested to be deemed compliant with the insurer standards.

FM 4880

FM Global³ developed loss prevention test standards which review the performance, safety, and quality control of products and systems used for construction and is recognised worldwide. Certification can be achieved via

¹ <http://www.redbooklive.com/page.jsp?id=441>

² <https://www.bre.co.uk/news/LPS-1181--The-Facts-487.html>

³ <https://www.fmglobal.com/research-and-resources/standards-and-certification>

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any one of the tests referenced below and, once the product or system is approved, can be referred to as ‘FM Approved’.



There are a number of Approval Standards for building materials, equipment, and systems⁴ but this guide will focus on FM 4880⁵ which is relevant to panels designed for the building envelope or interiors that require a Class I Fire rating. The standards specify that simulations that pass hazard tests will result in certification for maximum height restrictions of either:

- 9.1 metres
- 15.2 metres
- No height restriction (unlimited height)

One such test is the FM Approvals Room Test, to Test Procedure Class Number 4880 (or an ISO 9705 room test), which is similar to the large-scale test detailed above as it comprises a 2.44 m x 2.44 m room with the fire against the internal corner and monitored for 15 minutes. The products or systems tested must not contribute to the spread of fire, or compromise the structure, for the duration of the test.

Other tests that can be used to achieve a Class I Fire rating to FM 4880 standards with no height restriction are:

- ISO 12136 fire-propagation apparatus;
- ASTM D482 ignition-residue tests;
- ASTM E711 oxygen-bomb tests;
- UBC 26-3 room test; and
- FM 16ft parallel-panel test.

As with LPS 1181, the certification is only relevant for specified and tested build ups. Consequently, using an alternative product, changing the formula, or using any materials other than those specified would need to be reported to FM Global and potentially re-tested to retain certification.

PIR insulated panels have performed well in all these tests, with characteristic performance including:

- Formation of stable protective char
- No flame spread or propagation – particularly in the core of the panel
- No panel collapse
- High levels of fire resistance achievable with specific systems

⁴ <http://www.fmapprovals.com/products-we-certify/products-we-certify/walls-ceilings-and-associated-equipment>

⁵ <http://www.fmapprovals.com/products-we-certify/understanding-the-benefits/fm-approved-insulated-panels>