Fire performance of Exterior cladding systems

The vertical spread of fire up the exterior of a multi-storey building is managed by limiting ignitability of cladding systems and components. The cladding or façade system needs to resist vertical fire spread.

The New Zealand Building Code (NZBC) Acceptable Solution C/AS2 was amended in November 2020 to include large scale test method BS 8414.
The purpose of the test method is to evaluate the performance of an *external cladding system* to ensure:

- People have time to escape a multi-storey building fire
- Fire does not spread.

Build types

Building greater than 10 metres in height

Individual cladding materials for buildings with a height of 10 metres or more can be included as part of a system tested to BS 8414 to demonstrate compliance.

Building greater than 25 metres in height

The requirement for testing to BS 8414 applies to external wall cladding systems for multi-level buildings other than Risk Group SH with a building height ≥ 25 metres.

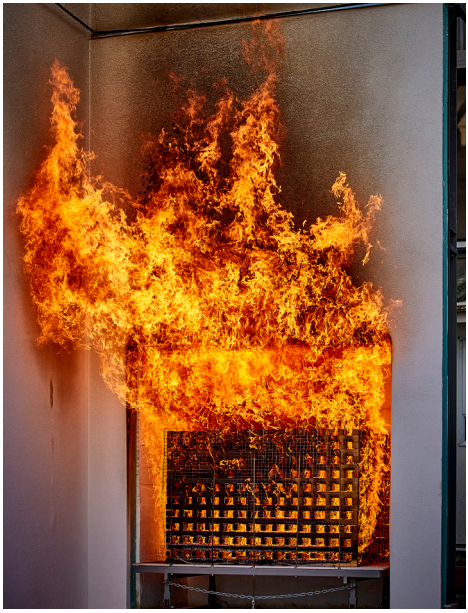

Figure 1. BS 8414 – combustion chamber

The test - BS 8414

The test exposes a representative external cladding system to an external fire source venting through an opening, such as a window. The extent of damage caused is evaluated, particularly the ability of the system to resist fire spread upwards and/or fire penetration through the external cladding system.

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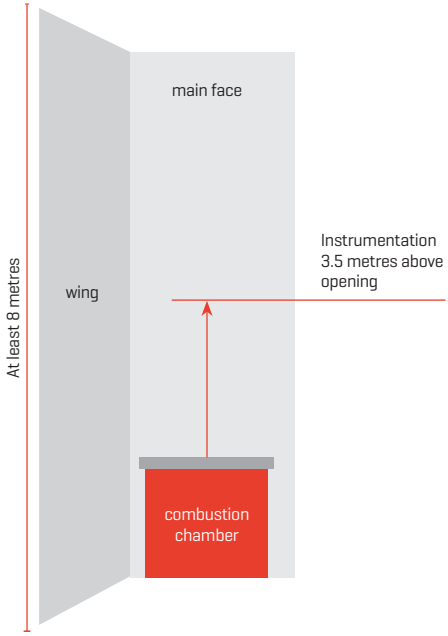


Figure 2. Schematic of BS 8414 test specimen

Dimensions

A test specimen with the following minimum dimensions is required to be applied to a structural steel test frame:

Main wall – 2.4 x 8.0 metres

Wing wall – 1.2 x 8.0 metres

Combustion chamber opening – 2.0 x 2.0 metres

System components

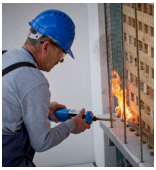
The external cladding system includes all relevant components assembled in accordance with the manufacturer's instructions - from external weathered face to internal finished face.

The classifications - BR 135 & AS 5113

External cladding systems for multi-level buildings with a height ≥ 25 metres that are tested to BS 8414 are required to meet the acceptance criteria of BR 135 or AS 5113. Generally, this requires the system to be designed so that fire does not spread more than 3.5 metres above an opening (as shown in Figure 2).

About BRANZ

BRANZ offers a comprehensive suite of fire testing and assessment services to help demonstrate compliance with the Building Codes of New Zealand and Australia. BRANZ is accredited by International Accreditation New Zealand (IANZ) and recognised by NATA through the ILAC Mutual Recognition Arrangement (ILAC MRA).



Related services

- Cone calorimeter testing to determine classification of individual materials in accordance with ISO 5660 (and/or AS/NZS 3837).
- Assessment of variations to tested external cladding system.
- Reduced scale research and development tests.

Definitions

BS 8414 – the fire test method

BR 135 – the classification document

AS 5113 – the Australian classification standard

External cladding system – complete cladding assembly from external weathering face to internal finished face including all components.

C/AS2 – New Zealand Building Code Acceptable Solution for Protection from Fire.