

Fire Resistance Levels (FRLs)

This Fast Fact provides clarification on the interpretation of fire resistance levels (FRL) as specified in the Australian Standard *AS3959 – ‘Construction of buildings in bushfire-prone areas’* and the *Building Code of Australia (BCA)*.

FRL's are extensively used as a performance indicator throughout the BCA and the AS3959. The NSW Rural Fire Service now recognises FRL's as a performance indicator for elements of construction.

AS3959 defines the FRL as the nominal grading period, in minutes, that is determined by subjecting a representative specimen to the standard time temperature curve regime as set out by Australian Standard *AS1530.4 ‘Methods for fire tests on building materials, components and structures - Fire-resistance test of elements of construction’* (AS1530.4) to specify:

Structural Adequacy – The ability of a load bearing element of construction to support a load when tested in accordance with AS1530.4.

Failure for structural adequacy is deemed to have occurred when the element collapses or the rate of deflection for the element is in excess of prescribed limits.

Integrity – The ability of an element of construction to resist the passage of flames

and hot gases from one space to another when tested in accordance with AS1530.4. Failure for integrity criteria is deemed to occur when continuous flaming occurs on the non-exposed side of the test specimen, or when cracks, fissures and other openings through which hot flames and gases can pass through are present.

Insulation - The ability of an element of construction to maintain a temperature on the surface that is not exposed to the furnace, below the limits specified, when tested in accordance with AS1530.4. Failure for insulation criteria is deemed to have occurred when the temperature rise of the non exposed side exceeds predetermined thresholds.

The FRL is expressed in the above order (i.e. structural adequacy/integrity/insulation). For example, a wall that is required to meet an FRL of 120/60/30 means that the wall must maintain structural adequacy for 120 minutes, integrity for 60 minutes and insulation for 30 minutes, as tested to AS1530.4.

A dash in the FRL means that there is no requirement for that criterion. For more information regarding the determination of fire resistance levels (FRL), refer to AS1530.4.

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