

## Technical Guidance Note – 009a

### Fire Doors – Correct Specification

#### 1. BACKGROUND:

Fire Doors form important fire protection systems designed and installed to ensure adequate performance in containing the spread of fire. There appears to be a some misunderstanding with regard to specifying fire doors, or more to the point some building design specifications nominating types of doors that are not tested and certified (therefore non-compliant) for fire resistance. The terms “Solid Core” along with “Tight Fitting” are frequently used in specifying installations that requires a certified fire door to be installed resulting in non-conforming system.

While the Building Code of Australia (BCA) does make reference to solid core and tight fitting doors, unfortunately such terms appear to provide some misunderstanding in specifying doors in situations that require fire resistant doors to be installed.

#### 2. TYPES OF DOORS:

**Fire Door** – It must firstly be noted that Fire Door is the common abbreviation for a Fire-Resistant-Doorset. A Fire Resistant Doorset consists of; a door leaf, doorframe, packing & fixing to wall, fire resistant wall, associated hardware such as closers, handles, locks, vision panels, air grills and must also be self closing and latching. The fire test information and the correct installation are also key elements of a compliant fire resistant doorset installation. A fire resistant doorset is defined under Australian Standard AS1905.1. The application of Fire Resistance Levels (FRL) in regards to specifying the performance of the door is explained later in this document. Fire doorsets are also categorised as hinged, pivoted (double action) and sliding.

**Solid Core Doors** – More recent developments within performance based building design has seen the specifying of ‘solid core doors’ (with or without smoke seals) in buildings that would otherwise require a certified fire and/or smoke resistant door (Doorset) installation. But what is a ‘solid core door’? Apart from the lack of an Australian Standard to describe what constitutes a ‘solid core door’, these doors are not tested under any Standard (ASS1530.4 or AS1530.7) for either fire resistance or smoke leakage. Solid core doors therefore they are not certified to provide any resistance to fire or smoke even with seals. Test evidence (as per AS1530.4 criteria) demonstrates ‘solid core doors’ can achieve less than 5-minutes of fire protection and bend away from smoke seals even when exposed to modest temperature differentials such as medium temperature defined in AS1530.7 at 200 deg C, providing little or no smoke containment or control function. So even with seals ‘solid core doors’ do not stop smoke leakage and fail to meet performance criteria.

**Exit Door** – The main purpose of an exit door is to provide a safe and effective escape and is required to be fitted with a single operation minimum effort “panic and emergency exit device” or lever operated lockset, and may, or may not be fire rated. Where an exit door is part of the fire compartmentation of the building it must be specified as per the fire resistance level (FRL) of a fire-rated-doorset.

**3. FIRE RESISTANT LEVELS (FRL’S):**

The two words, “fire rating”, together are probably the most misused term when specifying Passive Fire Protection. In considering the requirements of the Building Code of Australia (BCA) the correct term is the Fire Resistance Level, commonly abbreviated to FRL.

Understanding the FRL requirements is key to correctly specifying adequacy of a fire-resistant-doorset, more detailed information is provided in the PFFA document “*Technical Guidance Note – 003 Understanding Fire Ratings*” which can be downloaded from the Technical Papers section on [www.pfpa.com.au](http://www.pfpa.com.au). The FRL for a specific fire resistant wall or partition in which a fire resistant doorset would be installed is determined in accordance with Section C of the BCA. In more specific terms under Section C of the BCA the FRL means the grading in minutes without any failures determined in accordance with Specification A2.3. FRL’s are expressed as:

**Structural Adequacy / Integrity / Insulation**

**Examples:**

FRL	Structural Adequacy	Integrity	Insulation
60/60/60	60 Minutes	60 Minutes	60 Minutes
-/120/30	0 Minutes	120 Minutes	30 Minutes

Specifying the FRL for a “one hour” doorset would be expressed as **-/60/30** (60-minutes integrity & 30-minutes insulation) with the “dash” (-) meaning there is no requirement for that criteria, i.e. no structural adequacy required. For installation in a load-bearing wall in a fire rated stairwell that say requires a 2-hour fire resistant doorset, would be expressed as **-/120/120**.

**N.B.** The BCA allows fire doors to have a reduction in the insulation component of FRL to at least 30 minutes only.

**Radiation** – is also to be considered for fully glazed fire doors or fire doors with vision panels. Such doors are shall be deemed to have failed when the radiant heat flux through any glazed parts reaches 10 kW/m<sup>2</sup>.

**4. SPECIFYING FIRE RESISTANT DOORSETS:**

Firstly, it is important to remember that fire door leaves are only one component of a fire rated doorset and will only meet the requirements set out in AS1905.1 when they are installed correctly, incorporate fire tested (approved) hardware and are self closing (as applicable) and self latching and fitted into a tested and approved door frame & wall system. The doorset must have a FRL expressed for example as; **-/90/30** (no structural adequacy, 90 minutes integrity and 30 minutes insulation).

If an exit door is part of the fire & smoke compartmentation of a building it must have an FRL.

Any installation of 'solid core doors' or 'tight fitting doors' where a tested and certified fire door (fire resistant doorset) **is required** would be non compliant with the BCA and relevant Australian design and installation Standards.

#### **5. FOR MORE INFORMATION ON FIRE & SMOKE DOORS:**

This Technical Guidance Note is one of several documents providing practical information on the requirements in regards to the design, installation and maintenance of fire & smoke doors. The other related documents can be downloaded via the link on the 'Technical Papers' section at [www.pfpa.com.au](http://www.pfpa.com.au). There is also a more detailed Technical Guide (TG-005) providing a comprehensive overview of Fire Doors that can be downloaded at [http://www.pfpa.com.au/tech/fire&smoke\\_doors.htm](http://www.pfpa.com.au/tech/fire&smoke_doors.htm).

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#### **PASSIVE FIRE PROTECTION ALLIANCE (PFPA)**

The Passive Fire Protection Alliance (PFPA) through its website [www.pfpa.com.au](http://www.pfpa.com.au) also provides the contact details of the key companies in Australia that manufacture and supply passive fire protection systems & products as well as companies that specialize in installation, maintenance and the design of passive fire protection.

#### **FIRE DOOR TRAINING:**

Through its relationship with Accredifire ([www.accredifire.com.au](http://www.accredifire.com.au)) PFPA arranges comprehensive one-day training courses in Fire Doors. For more information **fire door training courses** please email [info@pfpa.com.au](mailto:info@pfpa.com.au).



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***Fire and Smoke, Containment & Control***

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