



Development Control Services

'Working towards a Safer Community' – Useful summaries to guide you in your practice.

Fire Retardant Timber Practice Notes 2/06

Revised December 2007 (Release 3)

ISSUE

NSW Rural Fire Service (RFS) staff regularly provides advice to councils and bush fire consultants regarding the use of timber on the exterior of dwellings in bush fire prone areas.

AIM

To provide guidance and to support the RFS position regarding fire-retardant-treated timber and naturally resistant timbers, Development Control Services provided *Development Control Note 001 – Fire-retardant-treated Timber*.

BACKGROUND

Under AS3959 tests were conducted by Warrington Research which was recorded as Report No.: 20551 on timber samples to a maximum of 25 kW/m². *Planning for Bush Fire Protection 2006* identifies level 3 construction radiant heat flux requirements being 19 kW/m² to 29 kW/m². Australian Standard AS3959-1999 *Construction of buildings in bush fire-prone area* (AS3959) is silent on radiant heat flux contours for each of the levels of construction. Hence, there is concern of a miss-match between demonstrated performance levels (25kW) of the Standard and PBP (29 kW/m²).

However, recent tests conducted by Warrington Research have demonstrated that the time needed for piloted ignition of timber under 29 kW/m² will be greater than 120 seconds if the density of the timber is higher than 550 kg/m³. Considering flame residence time for forest being less than 120 seconds in the majority of the cases and the densities of the seven timber species tested to conforming to the definitions of fire-retardant-treated timber as per AS 3959 -1999 is higher than 550 kg/m³, these timbers will have very low chance of ignition for a radiation level of 29 kW/m² within the 120 seconds limit.

The list of fire-retardant-treated timbers relevant to level 3 construction from DC Note 01 for deemed to satisfy applications can be approved. Performance solution applications must prove that the timber can meet the radiant heat threshold for level 3 construction (29 kW/m²).

RFS POSITION

In addition, RFS has done further investigation based on the empirical formula and has determined that the maximum radiation levels for the seven timber species classified as fire-retardant-treated timbers for a duration of 120 seconds. The calculated maximum radiation levels are tabled below for your information.

Timber Species	Density (kg/m ³)	Maximum Radiant Heat Flux (kW/m ²)
Blackbutt	770	31.6
Spotted gum	920	33.1
Kwila (Merbau)	800	31.9
Turpentine	995	33.8
Red Ironbark	1090	34.6
Red River Gum	915	33.0
Silver Top Ash	865	32.5

In view of this, it is reasonable for these timbers to be used for Level 3 construction as currently prescribed in the Standard unless they fail the new test standard in the future.



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Fire-retardant-treated timbers or timber systems with applied finished (i.e. intumescent paint) cannot be used in the flame zone (Fast Fact 01/06).

The list of fire-retardant-treated timbers in *Development Control Note 001 – Fire-retardant-treated Timber* for deem to satisfy applications can be approved for all levels of construction up to and including level 3. The RFS does not support the use of any timber within the flame zone due to potential flame contact. Timber not listed in the Warrington Report must provide test results that demonstrate the particular timber meets the radiant heat level applicable to the level of construction.

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REFERENCES

1. *The piloted ignition of timbers exposed to radiant heat*. Warrington Fire Research. 26 April 2005
2. *The Literature review of Bushfire Construction Materials and Proposed Test Protocols for Performance Assessment*. Warrington Fire Research. 11 February 2002.
3. *The suitability of the use of various untreated timbers for building constructions in bushfire-prone areas*. 26 November 2001.