



# Regulatory information report

Critical radiant flux (CRF) of solid timber  
(minimum thickness 12 mm) and plywood  
(minimum thickness 15 mm) when tested in  
accordance with AS ISO 9239.1:2003(R2016)

Sponsor: Forest and Wood Products Australia Limited

Report number: 21419 Revision: RIR6.0

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## Quality management

| Version      | Date              | Information about the report |                                                                     |                                                                                      |                                                                                       |
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|              |                   |                              | Prepared by                                                         | Reviewed by                                                                          | Authorised by                                                                         |
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|              |                   | Name                         | Mahmoud Akl                                                         | Omar Saad                                                                            | N/A                                                                                   |
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|              | Expiry 30/04/2026 |                              | Prepared by                                                         | Reviewed by                                                                          | Authorised by                                                                         |
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|              |                   | Signature                    | Sashini Heparacheli                                                 |  |  |

## Executive summary

This report contains the minimum information required for regulatory compliance and refers to the assessment report 21419 R6.0.

The analysis conducted in the referenced assessment report documents the findings of the assessment undertaken to determine the expected fire hazard properties of solid timber and plywood specimens of various thicknesses and species to be used as floorings if tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).

The analysis in section 5 of the referenced report found that the proposed systems together with the described variations are expected to achieve a Critical Radiant Flux (CRF) and Smoke Development Rate as shown in Table 1 to Table 6, if tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).

The variations and outcome of the referenced assessment report are subject to the limitations and requirements described in sections 2, 3 and 6 of this report.

**Table 1 Timber flooring 12 mm or thicker (No substrate)**

| Flooring species                                    | Thickness        | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%-Mins) |
|-----------------------------------------------------|------------------|------------------------------------------------|---------------------------------|
| Ash, Alpine - <i>Eucalyptus delegatensis</i>        | 12 mm or greater | Greater than or equal to 1.2 and less than 4.5 | <750                            |
| Ash, Mountain – <i>Eucalyptus regnans</i>           |                  |                                                |                                 |
| Gum, Blue, Sydney - <i>Eucalyptus saligna</i>       |                  |                                                |                                 |
| Gum, Rose – <i>Eucalyptus grandis</i>               |                  |                                                |                                 |
| Stringy Bark, Yellow - <i>Eucalyptus muellerana</i> |                  |                                                |                                 |
| Pine, Celerytop - <i>Phyllocladus asplenifolius</i> |                  |                                                |                                 |

**Table 2 Plywood flooring options (No substrate) – CRF 1.2 and less than 2.2 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Radiata – <i>Pinus radiata</i>       | 15 mm or greater | Greater than or equal to 1.2 and less than 2.2 | <750                             |
| Pine, Slash – <i>Pinus elliotii</i>        |                  |                                                |                                  |
| Pine, Hoop - <i>Araucaria cunninghamii</i> |                  |                                                |                                  |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliotii</i>        |                  |                                                |                                  |

**Table 3 Plywood flooring options (No substrate) – CRF 2.2 and less than 4.5 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Hoop - <i>Araucaria cunninghamii</i> | 15 mm or greater | Greater than or equal to 2.2 and less than 4.5 | <750                             |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliotii</i>        |                  |                                                |                                  |

**Table 4 Timber flooring options with proposed substrate**

| Flooring species                                       | Thickness        | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%-Mins) |
|--------------------------------------------------------|------------------|------------------------------------------------|---------------------------------|
| Ash, Alpine - <i>Eucalyptus delegatensis</i>           | 12 mm or greater | Greater than or equal to 1.2 and less than 4.5 | <750                            |
| Ash, Mountain – <i>Eucalyptus regnans</i>              |                  |                                                |                                 |
| Ash, Silvertop - <i>Eucalyptus sieberi</i>             |                  |                                                |                                 |
| Beech Myrtle - <i>Northofagus cunninghamii</i>         |                  |                                                |                                 |
| Blackbutt - <i>Eucalyptus pilularis</i>                |                  |                                                |                                 |
| Blackbutt, New England - <i>Eucalyptus andrewsii</i>   |                  |                                                |                                 |
| Bloodwood Red - <i>Eucalyptus gummifera</i>            |                  |                                                |                                 |
| Box, Brush - <i>Lophostman confertus</i>               |                  |                                                |                                 |
| Box, Grey – <i>Eucalyptus microcarpa</i>               |                  |                                                |                                 |
| Brownbarrel - <i>Eucalyptus fastigata</i>              |                  |                                                |                                 |
| Gum, Blue, Southern (TAS) - <i>Eucalyptus globulus</i> |                  |                                                |                                 |
| Gum, Blue, Southern (VIC) - <i>Eucalyptus globulus</i> |                  |                                                |                                 |
| Gum, Blue, Sydney - <i>Eucalyptus saligna</i>          |                  |                                                |                                 |
| Gum, Manna - <i>Eucalyptus viminalis</i>               |                  |                                                |                                 |
| Gum, Red, River - <i>Eucalyptus camaldulensis</i>      |                  |                                                |                                 |
| Gum, Rose – <i>Eucalyptus grandis</i>                  |                  |                                                |                                 |
| Gum, Shining – <i>Eucalyptus nitens</i>                |                  |                                                |                                 |
| Gum, Spotted - <i>Corymbia maculata</i>                |                  |                                                |                                 |
| Gum, Sugar - <i>Eucalyptus cladocalyx</i>              |                  |                                                |                                 |
| Gum, Yellow - <i>Eucalyptus leucoxylon</i>             |                  |                                                |                                 |
| Ironbark, Grey – <i>Eucalyptus drepanophylla</i>       |                  |                                                |                                 |
| Ironbark, Red - <i>Eucalyptus sideroxylon</i>          |                  |                                                |                                 |
| Jarraah - <i>Eucalyptus marginata</i>                  |                  |                                                |                                 |
| Karri - <i>Eucalyptus diversicolor</i>                 |                  |                                                |                                 |
| Mahogany, Red - <i>Eucalyptus resinifera</i>           |                  |                                                |                                 |
| Merbau - <i>Instia bijuga</i>                          |                  |                                                |                                 |
| Messmate - <i>Eucalyptus obliqua</i>                   |                  |                                                |                                 |
| Pine, White Cypress - <i>Callitris glaucophylla</i>    |                  |                                                |                                 |
| Stringy Bark, Yellow - <i>Eucalyptus muellerana</i>    |                  |                                                |                                 |
| Tallowwood - <i>Eucalyptus microcorys</i>              |                  |                                                |                                 |
| Turpentine – <i>Syncarpa glomulifera</i>               |                  |                                                |                                 |

**Table 5 Plywood flooring options (With proposed substrate) – CRF 1.2 and less than 2.2 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Radiata – <i>Pinus radiata</i>       | 15 mm or greater | Greater than or equal to 1.2 and less than 2.2 | <750                             |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |
| Pine, Hoop - <i>Araucaria cunninghamii</i> |                  |                                                |                                  |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |

**Table 6 Plywood flooring options (With proposed substrate) – CRF 2.2 and less than 4.5 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Hoop - <i>Araucaria cunninghamii</i> | 15 mm or greater | Greater than or equal to 2.2 and less than 4.5 | <750                             |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |

## Contents

|     |                                                |    |
|-----|------------------------------------------------|----|
| 1.  | Introduction                                   | 7  |
| 2.  | Framework for the assessment                   | 7  |
| 2.1 | Assessment approach                            | 7  |
| 2.2 | Compliance with the National Construction Code | 8  |
| 2.3 | Declaration                                    | 8  |
| 3.  | Limitations of the referenced assessment       | 8  |
| 4.  | Description of the specimen and variations     | 9  |
| 4.1 | System description                             | 9  |
| 4.2 | Referenced test data                           | 9  |
| 4.3 | Variations to the tested systems               | 9  |
| 4.4 | Purpose of the test                            | 10 |
| 5.  | Conclusion                                     | 11 |
| 6.  | Validity                                       | 14 |

## 1. Introduction

This report contains the minimum information sufficient for regulatory compliance and refers to the assessment report 21419 R6.0.

The analysis conducted in the referenced assessment report documents the findings of the assessment undertaken to determine the expected fire hazard properties of solid timber and plywood specimens of various thicknesses and species to be used as floorings if tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).

The referenced assessment was carried out at the request of Forest and Wood Products Australia Limited.

The sponsor details are included in Table 7.

**Table 7 Sponsor details**

| Sponsor                                    | Address                                                           |
|--------------------------------------------|-------------------------------------------------------------------|
| Forest and Wood Products Australia Limited | Level 11 10-16 Queen Street<br>Melbourne<br>VIC 3000<br>Australia |

## 2. Framework for the assessment

### 2.1 Assessment approach

An assessment is an opinion about the likely performance of a component or element of structure if it was subject to a fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for doing these assessments. We have therefore followed the 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the Passive Fire Protection Forum (PFPF) in the UK in 2019<sup>1</sup>.

This guide provides a framework for undertaking assessments in the absence of specific fire test results. Some areas where assessments may be offered are:

- Where a modification is made to a construction which has already been tested
- The interpolation or extrapolation of results of a series of fire resistance tests, or utilisation of a series of fire test results to evaluate a range of variables in a construction design or a product
- Where, for various reasons – eg size or configuration – it is not possible to subject a construction or a product to a fire test.

Assessments will vary from relatively simple judgements on small changes to a product or construction through to detailed and often complex engineering assessments of large or sophisticated constructions.

The referenced assessment uses established empirical methods and our experience of fire testing similar products to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire hazard properties if the elements were to be tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).

<sup>1</sup> Passive Fire Protection Forum (PFPF), 2019, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.

The referenced assessment has been written using appropriate test evidence generated at accredited laboratories to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's stated design.

## 2.2 Compliance with the National Construction Code

The referenced assessment report has been prepared to meet the evidence of suitability requirements of the National Construction Code Volumes One and Two – Building Code of Australia (NCC) 2019 including Amendments<sup>2</sup> under A5.2 (1) (d).

The referenced assessment has been written in accordance with the general principles outlined in EN 15725:2010<sup>3</sup> for extended application reports on the fire performance of construction products and building elements. It also references test evidence for meeting a performance requirement or deemed to satisfy (DTS) provisions of the NCC under, A5.5 for reaction to fire as applicable to the assessed systems.

The referenced assessment report may also be used to demonstrate compliance with the requirements for evidence of suitability under NCC 2016 including Amendments<sup>4</sup>.

## 2.3 Declaration

The 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal on **18 March 2021**, Forest and Wood Products Australia Limited confirmed that:

- To their knowledge the component or element of structure, which is the subject of the referenced assessment, has not been subjected to a fire test to the standard against which the referenced assessment is being made.
- They agree to withdraw the referenced assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which the referenced assessment is being made and the results are not in agreement with the referenced assessment.
- They are not aware of any information that could adversely affect the conclusions of the referenced assessment and – if they subsequently become aware of any such information – they agree to ask the assessing authority to withdraw the assessment.

## 3. Limitations of the referenced assessment

- The scope of the referenced assessment report is limited to an assessment of the variations to the tested systems described in section 4.3.
- The referenced assessment report details the methods of construction, test conditions and assessed results that are expected if the systems were tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).
- The referenced assessment report is only valid for the assessed systems and must not be used for any other purpose. Any changes with respect to size, construction details, loads, stresses, edge or end conditions – other than those identified in the referenced assessment report – may invalidate the findings of the referenced assessment. If there are changes to the system, a reassessment will need to be done by an Accredited Testing Laboratory (ATL).
- The referenced assessment report has been prepared based on information provided by others. Warringtonfire has not verified the accuracy and/or completeness of that information

<sup>2</sup> National Construction Code Volumes One and Two - Building Code of Australia 2019 including Amendments, Australian Building Codes Board, Australia

<sup>3</sup> European Committee for Standardization, 2010, Extended application reports on the fire performance of construction products and building elements, EN 15725:2010, European Committee for Standardization, Brussels, Belgium.

<sup>4</sup> National Construction Code Volumes One and Two - Building Code of Australia 2016 including Amendments, Australian Building Codes Board, Australia

and will not be responsible for any errors or omissions that may be incorporated into the referenced assessment report as a result.

- The referenced assessment is based on the proposed systems being constructed under comprehensive quality control practices and following appropriate industry regulations and Australian Standards on quality of materials, design of structures, guidance on workmanship and the expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of the referenced assessment report.

## 4. Description of the specimen and variations

### 4.1 System description

The proposed systems include timber and plywood specimens of various thicknesses and species for use as flooring applications. Additionally, it is proposed to assess timber and plywood specimens adhered to various substrates with PVA or other water-based adhesives. The tested timber and plywood specimens consisted of a single section nominally 1050 mm × 230 mm of various thicknesses and species.

### 4.2 Referenced test data

The referenced assessment of the variation to the tested system and the determination of the expected performance is based on the results of the fire tests documented in the reports summarised in Table 8. Further details of the tested system are included in Appendix A in the referenced report.

**Table 8 Referenced test data**

| Report number    | Test sponsor                               | Testing authority                                                                        |
|------------------|--------------------------------------------|------------------------------------------------------------------------------------------|
| WFRA 41117.1     | Forest and Wood Products Australia Limited | AWTA laboratories under the technical control of Warrington Fire Research (Aust) Pty Ltd |
| WFRA 499241A-L   | Forest and Wood Products Australia Limited | AWTA laboratories under the technical control of Warrington Fire Research (Aust) Pty Ltd |
| WFRA 2141900 A-D | Forest and Wood Products Australia Limited | AWTA laboratories under the technical control of Warrington Fire Research (Aust) Pty Ltd |
| WFRA 2200000 A-B | Forest and Wood Products Australia Limited | AWTA laboratories under the technical control of Warrington Fire Research (Aust) Pty Ltd |

### 4.3 Variations to the tested systems

An identical system has not been subject to a standard fire test. We have therefore assessed the systems using baseline test information for similar systems. The variations to the tested systems – together with the referenced standard fire tests – are described in Table 9.

**Table 9 Variations to tested systems**

| Item number | Reference test                                              | Description                                                                                                                                                          | Variations                                                                                                                                                                                                                      |
|-------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1           | WFRA 41117.1<br>WFRA 499241<br>WFRA 2141900<br>WFRA 2200000 | The referenced tests included, <ul style="list-style-type: none"> <li>12 mm and 19 mm thick timber species</li> <li>15 mm and 17 mm thick plywood species</li> </ul> | The proposed variations are to assess the CRF and smoke development rate of <ul style="list-style-type: none"> <li>Timber species as tested in the referenced test reports, to be minimum 12 mm thick or thicker and</li> </ul> |

| Item number | Reference test | Description                                                                                                                  | Variations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|----------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                | <ul style="list-style-type: none"> <li>12 mm thick timber adhered to 19 mm thick particleboard with PVA adhesive.</li> </ul> | <p>fixed to structural framing (e.g. floor joists).</p> <ul style="list-style-type: none"> <li>Timber plywood species as tested in the referenced test reports, to be 15 mm thick or thicker fixed to structural framing (e.g. floor joists).</li> <li>Timber species as tested in the referenced test reports, to be 12 mm thick or thicker fixed to any substrate shown in Table 10 with PVA, or other water-based adhesives and no air gap between flooring and substrate.</li> <li>Timber plywood species as tested in the referenced test reports, to be 15 mm thick or thicker fixed to any substrate shown in Table 10 with PVA, or other water-based adhesives and no air gap between flooring.</li> </ul> |

**Table 10 Proposed flooring substrates**

| Substrate                           | Thickness (mm)   |
|-------------------------------------|------------------|
| Particleboard 716 kg/m <sup>3</sup> | 19 mm or greater |
| Fibre cement                        | 15 mm or greater |
| Normal Weight Concrete floor        | 75 mm or greater |
| Light weight concrete floor         | 75 mm or greater |

## 4.4 Purpose of the test

Specification C1.10 of the National Construction Code 2019 Volume One, Building Code of Australia, requires testing of flooring to AS ISO 9239.1– “Reaction to Fire Tests for Floorings Part 1: Determination of the burning behaviour using a radiant heat source”. The main outcome from these tests is a material’s Critical Radiant Heat Flux (CRF). The test measures the radiant energy required to just sustain burning. The test involves the specimen being held horizontally under the influence of a radiant heat source at one end. When ignited the flame spreads along the specimen away from the radiant source until it ceases. The radiant heat flux at the point at which burning ceases is the Critical Radiant Heat Flux (CRF). The amount of smoke evolved is also determined using a light extinction smoke meter mounted in the flue, not that dissimilar to the existing unit on the AS/NZS 1530.3 apparatus.

## 5. Conclusion

Details of the assessment and discussion are only available in the referenced main assessment report. The proposed variations described in section 4.3 are expected to achieve performances as shown in Table 11 to Table 16, if they were tested in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016).

**Table 11 Timber flooring 12 mm or thicker (No substrate)**

| Flooring species                                    | Thickness        | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%- Mins) |
|-----------------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Ash, Alpine - <i>Eucalyptus delegatensis</i>        | 12 mm or greater | Greater than or equal to 1.2 and less than 4.5 | <750                             |
| Ash, Mountain – <i>Eucalyptus regnans</i>           |                  |                                                |                                  |
| Gum, Blue, Sydney - <i>Eucalyptus saligna</i>       |                  |                                                |                                  |
| Gum, Rose – <i>Eucalyptus grandis</i>               |                  |                                                |                                  |
| Stringy Bark, Yellow - <i>Eucalyptus muellerana</i> |                  |                                                |                                  |
| Pine, Celerytop - <i>Phyllocladus asplenifolius</i> |                  |                                                |                                  |

**Table 12 Plywood flooring options (No substrate) – CRF 1.2 and less than 2.2 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Radiata – <i>Pinus radiata</i>       | 15 mm or greater | Greater than or equal to 1.2 and less than 2.2 | <750                             |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |
| Pine, Hoop - <i>Araucaria cunninghamii</i> |                  |                                                |                                  |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |

**Table 13 Plywood flooring options (No substrate) – CRF 2.2 and less than 4.5 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Hoop - <i>Araucaria cunninghamii</i> | 15 mm or greater | Greater than or equal to 2.2 and less than 4.5 | <750                             |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |

**Table 14 Timber flooring options with proposed substrate**

| Flooring species                                     | Thickness        | CRF (kW/m <sup>2</sup> )                       | Smoke Development Rate (%- Mins) |
|------------------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Ash, Alpine - <i>Eucalyptus delegatensis</i>         | 12 mm or greater | Greater than or equal to 1.2 and less than 4.5 | <750                             |
| Ash, Mountain – <i>Eucalyptus regnans</i>            |                  |                                                |                                  |
| Ash, Silvertop - <i>Eucalyptus sieberi</i>           |                  |                                                |                                  |
| Beech Myrtle - <i>Northofagus cunninghamii</i>       |                  |                                                |                                  |
| Blackbutt - <i>Eucalyptus pilularis</i>              |                  |                                                |                                  |
| Blackbutt, New England - <i>Eucalyptus andrewsii</i> |                  |                                                |                                  |
| Bloodwood Red - <i>Eucalyptus gummifera</i>          |                  |                                                |                                  |

| Flooring species                                       | Thickness | CRF (kW/m <sup>2</sup> ) | Smoke Development Rate (%- Mins) |
|--------------------------------------------------------|-----------|--------------------------|----------------------------------|
| Box, Brush - <i>Lopehostman confertus</i>              |           |                          |                                  |
| Box, Grey – <i>Eucalyptus microcarpa</i>               |           |                          |                                  |
| Brownbarrel - <i>Eucalyptus fastigata</i>              |           |                          |                                  |
| Gum, Blue, Southern (TAS) - <i>Eucalyptus globulus</i> |           |                          |                                  |
| Gum, Blue, Southern (VIC) - <i>Eucalyptus globulus</i> |           |                          |                                  |
| Gum, Blue, Sydney - <i>Eucalyptus saligna</i>          |           |                          |                                  |
| Gum, Manna - <i>Eucalyptus viminalis</i>               |           |                          |                                  |
| Gum, Red, River - <i>Eucalyptus camaldulensis</i>      |           |                          |                                  |
| Gum, Rose – <i>Eucalyptus grandis</i>                  |           |                          |                                  |
| Gum, Shining – <i>Eucalyptus nitens</i>                |           |                          |                                  |
| Gum, Spotted - <i>Corymbia maculata</i>                |           |                          |                                  |
| Gum, Sugar - <i>Eucalyptus cladocalyx</i>              |           |                          |                                  |
| Gum, Yellow - <i>Eucalyptus leucoxylon</i>             |           |                          |                                  |
| Ironbark, Grey – <i>Eucalyptus drepanophylla</i>       |           |                          |                                  |
| Ironbark, Red - <i>Eucalyptus sideroxylon</i>          |           |                          |                                  |
| Jarraah - <i>Eucalyptus marginata</i>                  |           |                          |                                  |
| Karri - <i>Eucalyptus diversicolor</i>                 |           |                          |                                  |
| Mahogany, Red - <i>Eucalyptus resinifera</i>           |           |                          |                                  |
| Merbau - <i>Instia bijuga</i>                          |           |                          |                                  |
| Messmate - <i>Eucalyptus obliqua</i>                   |           |                          |                                  |
| Pine, White Cypress - <i>Callitris glaucophylla</i>    |           |                          |                                  |
| Stringy Bark, Yellow - <i>Eucalyptus muellerana</i>    |           |                          |                                  |
| Tallowwood - <i>Eucalyptus microcorys</i>              |           |                          |                                  |
| Turpentine – <i>Syncarpa glomulifera</i>               |           |                          |                                  |

**Table 15 Plywood flooring options (With proposed substrate) – CRF 1.2 and less than 2.2 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Radiata – <i>Pinus radiata</i>       | 15 mm or greater | Greater than or equal to 1.2 and less than 2.2 | <750                             |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |
| Pine, Hoop - <i>Araucaria cunninghamii</i> |                  |                                                |                                  |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliottii</i>       |                  |                                                |                                  |

**Table 16 Plywood flooring options (With proposed substrate) – CRF 2.2 and less than 4.5 kW/m<sup>2</sup>**

| Species of plywood flooring                | Thickness (mm)   | CRF (kW/m²)                                    | Smoke Development Rate (%- Mins) |
|--------------------------------------------|------------------|------------------------------------------------|----------------------------------|
| Pine, Hoop - <i>Araucaria cunninghamii</i> | 15 mm or greater | Greater than or equal to 2.2 and less than 4.5 | <750                             |
| Pine, Radiata – <i>Pinus radiata</i>       | 17 mm or greater |                                                |                                  |
| Pine, Slash – <i>Pinus elliotii</i>        |                  |                                                |                                  |

## 6. Validity

Warringtonfire Australia does not endorse the tested or assessed product in any way. The conclusions of the referenced assessment may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Due to the nature of fire testing and the consequent difficulty in quantifying the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

The referenced assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement. It is therefore recommended that the referenced assessment report be reviewed on, or before, the stated expiry date.

The referenced assessment represents our opinion about the performance expected to be demonstrated in a test in accordance with AS ISO 9239.1:2003 (Reconfirmed 2016), based on the evidence referred to in the referenced assessment report.

The referenced assessment is provided to Forest and Wood Products Australia Limited for their own specific purposes. Building certifiers and other third parties are responsible for deciding if systems listed within the referenced assessment are accepted for a particular installation.

# warringtonfire

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