



ASSESSMENT REPORT

The Group Number and Average Specific Extinction Area of OSB Timber nominated by the test sponsor as "Timberwood Panels OSB Light", an uncoated oriented strand board wall and ceiling lining when assessed in accordance with AS5637.1-2015.

EWFA Report No:

51797000b 3

Report Sponsor:

Timberwood Panels Pty Ltd
76-106 National Blvd
Campbellfield VIC 3061

DOCUMENT REVISION STATUS

Date Issued	Issue No	Description
2/11/2017	51797000b	Initial Issue
14/11/2017	51797000b 2	Change of company address
24/11/2017	51797000b 3	Change of product name at the sponsor's request

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1 INTRODUCTION

For the verification of fire hazard properties the National Construction Code of Australia (NCC) Specification C1.10 requires that a group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1.

In accordance with AS 5637.1, the group number of a material shall be determined by either;

- (a) Physical testing in accordance with AS ISO 9705-2003; or
- (b) If the material has a confirmed correlation, prediction in accordance with Clause 4.4 using data obtained by testing the material at 50kW/m² irradiance in the horizontal orientation with edge frame in accordance with ISO 5660-1 or AS/NZS 3837, as appropriate to the test conducted.

The materials group number is an indication of its 'time to flashover' in the AS ISO 9705 room fire test. Flashover refers to the phenomenon of the sudden ignition of almost all of the exposed combustible surfaces within an enclosed room. During an enclosed room fire, a hot layer of smoke can form at the ceiling level which will radiate heat onto exposed surfaces below. When certain materials are heated, they undergo thermal decomposition and can release flammable gases. Flashover occurs when the flammable gases and the majority of the exposed surfaces reach a sufficient temperature for ignition to occur. Ignition is usually sudden and can appear to be almost simultaneous across all exposed surfaces.

This report presents an assessment of the Group Number and Average Specific Extinction Area of "Timberwood Panels OSB Light", an uncoated oriented strand board wall and ceiling lining when assessed in accordance with AS5637.1: 2015.

The tested prototypes described in Section 2 of this report, when subject to the proposed variations described in Section 3, are to perform satisfactorily if tested in accordance with the referenced test method described in Section 4. The conclusions of the report are summarised in Section 5.

The validity of this assessment is conditional on compliance with Sections 6, 7, 8 and 9 of this report.

A summary of the test data on which this assessment is based is provided in Appendix A together with a summary of the critical issues leading to the assessment conclusions including the main points of argument.

2 TESTED PROTOTYPES

This assessment is based on the referenced test report EWFA 51797000a.3 performed in accordance with AS/NZS 3837-1998 by AWTA Product Testing and sponsored by Timberwood Panels Pty Ltd.

EWFA 51797000a.3 describes a test on three specimens of 99.5 mm by 99.9 mm by 11.6 mm thick samples of an uncoated oriented strand board, nominated by the test sponsor as "Timberwood Panels OSB Light".

Refer to Appendix A for a full summary of the test data.

3 VARIATION TO TESTED PROTOTYPES

The proposed wall and ceiling lining material is to be as tested in EWFA 517970-00a.3 and no variations to the product are allowed.

4 REFERENCED TEST PROCEDURES

This report is prepared with reference to the requirements of AS/NZS 3837-1998 and AS 5637.1-2015.

5 FORMAL ASSESSMENT SUMMARY

On the basis of the discussion presented in this report, it is the opinion of this testing authority that the tested prototype described in Section 2 achieves the results below when tested in accordance with the standards referenced in Section 4 and subject to the requirements of Section 7.

Group Number: 3
Average Specific Extinction Area: 37.2 m²/kg

6 DIRECT FIELD OF APPLICATION

The results of this assessment are applicable to wall and ceiling linings as defined in the NCC 2017.

7 REQUIREMENTS

This report details the test conditions and expected results that specific elements of construction described herein would achieve when tested in accordance with AS/NZS 3837-1998.

It is a condition of this assessment that joints between panels shall not form gaps exceeding 8mm in width or 10mm in depth.

Any further variations with respect to size, surface characteristics, symmetry, thickness, composition or joints other than those identified in this report, may invalidate the conclusions drawn in this report.

8 VALIDITY

This assessment report does not provide an endorsement by Exova Warringtonfire Aus Pty Ltd of the actual products supplied.

The conclusions of this 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.

Because of 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 assessment can therefore only relate only to the actual prototype test specimens, testing conditions, and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

This 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 the subject of constant review and improvement and it is recommended that this report be reviewed on or, before, the stated expiry date.

The information contained in this report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

9 AUTHORITY

9.1 APPLICANT UNDERTAKINGS AND CONDITIONS OF USE

By using this report as evidence of compliance or performance, the applicant(s) confirms that:

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

9.2 GENERAL CONDITIONS OF USE

This report may only be reproduced in full without modifications by the report sponsor. Copies, extracts or abridgments of this report in any form shall not be published by other organisations or individuals without the permission of Exova Warringtonfire Aus Pty Ltd.

9.3 AUTHORISATION ON BEHALF OF EXOVA WARRINGTONFIRE AUS PTY LTD

Prepared by:



J. Richardson

Reviewed by:



C. McLean

9.4 DATE OF ISSUE

24/11/2017

9.5 EXPIRY DATE

31/11/2022

APPENDIX A - SUMMARY OF SUPPORTING DATA

A.1 TEST REPORT- EWFA 517970-00A.3

A.1.1 Report Sponsor

A.1.1.1 Timberwood Panels Pty Ltd, 76-106 National Blvd, Campbellfield VIC 3061

A.1.2 Test Laboratory

A.1.2.1 The tests were performed at AWTA laboratories under the technical control of Exova Warringtonfire Pty Ltd, Unit 2, 409-411 Hammond Road, Dandenong South, Victoria, 3175.

A.1.3 Test Date

A.1.3.1 The fire resistance test was conducted in October 2017.

A.1.4 Test standards prescribed

A.1.4.1 The test was performed in accordance with the requirements of AS/NZS 3837-1998.

A.1.5 Variations to Test Standard

A.1.5.1 None.

A.1.6 General description of tested specimens

A.1.6.1 A cone calorimeter test on three specimens of 99.5 mm by 99.0 mm by 11.6 mm thick "Timberwood Panels OSB Light", an uncoated oriented strand board wall and ceiling lining.

A.1.7 Instrumentation

A.1.7.1 The instrumentation was provided and applied in accordance with AS/NZS 3837-1998.

A.1.8 Test Results

A summary of the results obtained from three tests of specimens selected from specimens numbered EWAA-CC-696 to EWAA-CC-705 is given below.

Criteria	Specimen			Mean	Units
	One	Two	Three		
Irradiance	50	50	50	50	kW/m ²
Exhaust Flow Rate	24	24	24	24	l/sec
Time to Sustained Flaming	30	30	34	31	secs
Test Duration	2730	2915	2875	2840	secs
Peak Heat Release Rate after Ignition	286.0	279.5	313.5	293.0	kW/m ²
Average Heat Release Rate @ 60s	122.3	122.1	131.2	125.2	kW/m ²
Average Heat Release Rate @180s	146.0	145.9	147.9	146.6	kW/m ²
Average Heat Release Rate @ 300s	141.9	141.2	141.8	141.6	kW/m ²
Total Heat Released	155.6	166.4	170.7	164.2	MJ/m ²
Average Effective Heat of Combustion	16.9	17.0	17.6	17.2	MJ/kg
Initial Thickness	12.0	12.0	12.0	12.0	mm
Initial Mass	78.5	83.8	85	82.4	grams
Mass Remaining	3.8	4.5	5.6	4.6	grams
Mass Percentage Pyrolysed	95.1	94.7	93.4	94.4	%
Average Rate of Mass Loss	3.4	3.4	3.4	3.4	g/m ² /s
Average Specific Extinction Area	38.5	32.6	40.5	37.2	m ² /kg

APPENDIX B - ASSESSMENT OF SPECIFIC VARIATIONS

B.1 SELECTION OF TEST METHOD

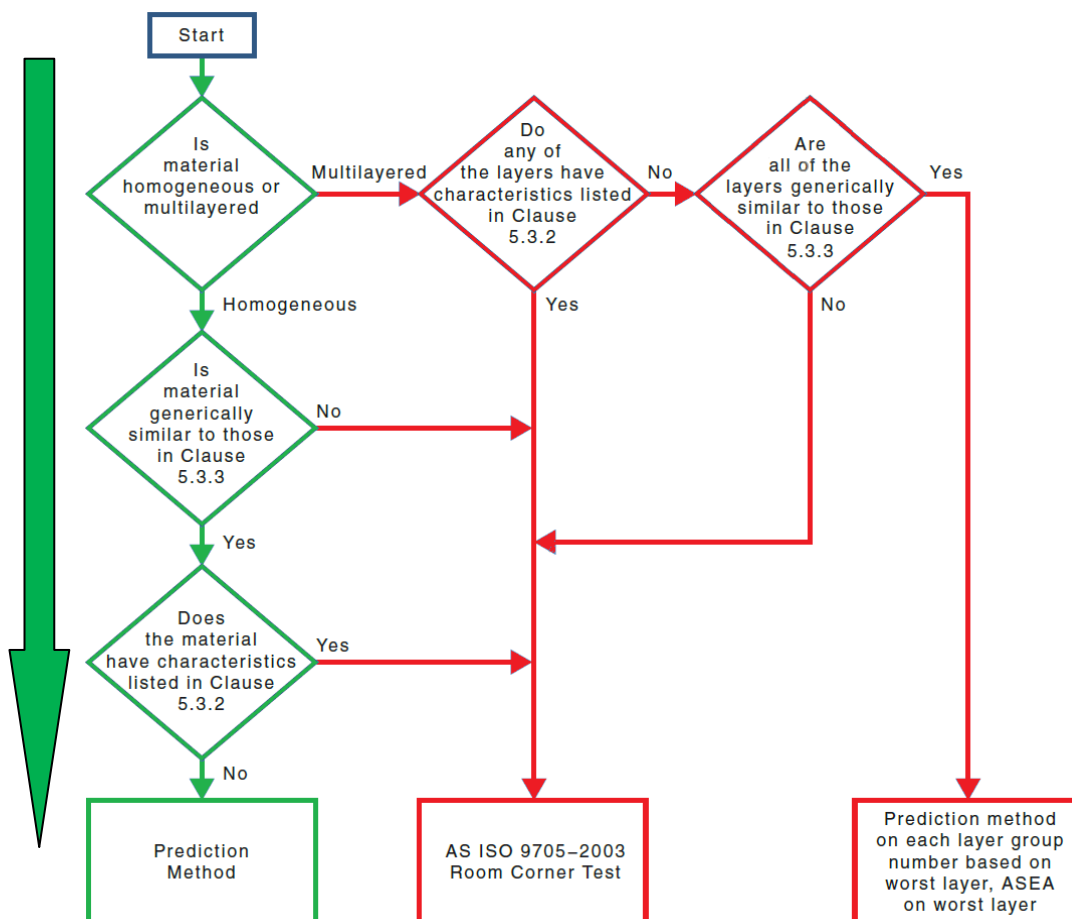
B.1.1.1 AS 5637.1-2015 states that only materials for which there are correlations between cone calorimeter results and room test results shall be tested in the cone calorimeter for the purpose of determining a group number. If the material has confirmed correlation, the group number shall be determined by prediction in accordance with clause 4.4 using data obtained by testing the material in accordance with AS/NZS 3837.

B.1.1.2 AS 5637.1-2015 clause 5.3.3 gives examples of materials for which the correlation is permitted which include the following:

- A) painted or unpainted paper-faced gypsum plasterboard;
- B) solid timber and wood products such as particleboard and plywood; and
- C) rigid non-thermoplastic foams such as polyurethane

B.1.1.3 It is confirmed that the material under consideration and tested in EWFA 517970-00a.1 is oriented strand board (OSB) , therefore prediction in accordance with clause 4.4 is considered appropriate.

B.1.1.4 Clause 4.4 provides guidance on the selection of appropriate test methods. The path taken in this assessment is highlighted in green in the following diagram:



B.1.2 Is the material homogeneous or multi-layered? *Homogeneous*

B.1.2.1 While oriented strand board is constructed from multiple pieces, or randomised layers, of timber, for the purpose of this assessment OSB is considered to be a homogeneous material. The reasoning behind this is that the identification of multi-layered material is intended to trigger the requirement to test each individual layer in isolation. Since OSB is composed of

layers of the same material, testing of each layer will not produce dissimilar results and is therefore redundant.

B.1.3 Is the material generically similar to those in clause 5.3.3? Yes

B.1.3.1 As discussed, it is confirmed that the wall and ceiling lining under consideration is OSB, a material which is similar to plywood which is specifically listed in clause 5.3.3.

B.1.4 Does the material have characteristics listed in clause 5.3.2? No

B.1.4.1 Clause 5.3.2 lists unsuitable materials for which empirical correlations shall not be used which include the following:

- A) Materials with profiled facings not allowed by AS/NZS 3837;
- B) Materials that melt or shrink away from a flame;
- C) Materials with joints or openings; and
- D) Materials with a reflective surface

Profiled facings not allowed by AS/NZS 3837

B.1.4.2 AS/NZS 3837 clause 2.2.1.1 states that a product having one of the following surface characteristics is suitable for testing:

- A) An essentially flat exposed surface; or
- B) A surface irregularity which is evenly distributed over the exposed surface provided that –
 - i) At least 50% of the surface of a representative 100mm square area lies within a depth of 10mm from a plane taken across the highest points on the exposed surface; or
 - ii) For surfaces containing crack, fissures or holes not exceeding 8mm in width or 10mm in depth, the total area of such cracks, fissures or holes at the surface does not exceed 30% of a representative 100mm square area of the exposed surface

B.1.4.3 It is confirmed that the material under consideration is an essentially flat exposed surface and is therefore not considered a material with profiled facings which is not allowed by AS/NZS 3837.

Materials that melt or shrink away from a flame

B.1.4.4 As discussed, the wall and ceiling lining under consideration is OSB and will not melt or shrink away from a flame.

Materials with joints or openings

B.1.4.5 The intended application for the material under consideration is for wall and ceiling linings. The material comes in the form of plywood panels which inevitably will require joints between panels when lining a large area such as a wall or ceiling.

B.1.4.6 AS 5637.1-2015 provides guidance in Appendix B3 in which it states; Wall systems in which fixings and joints play a critical part in the fire performance of the product are not suitable for testing in the cone calorimeter for the purpose of determining group numbers.

B.1.4.7 AS 5637.1-2015 does not specify limits on the joints or openings allowed therefore for the purpose of this assessment the requirement of AS/NZS 3837 concerning profiled facings will be applied to joints. It is a condition of this assessment that joints between panels shall not form gaps exceeding 8mm in width and 10mm in depth.

B.1.4.8 In light of this, joints between panels are not expected to play a critical part in the fire performance of the product and therefore the cone calorimeter test is considered appropriate for the purpose of determining group numbers.

Materials with a reflective surface

B.1.4.9 As discussed, the wall and ceiling lining under consideration is plywood and is not a material with a reflective surface.

B.1.5 Conclusion

B.1.5.1 Based on the discussion above, it is confirmed that the wall and ceiling lining under consideration and tested in EWFA 517970-00a.1 is essentially homogeneous, is generically similar to those in clause 5.3.3 and does not have characteristics listed in clause 5.3.2. It is

therefore considered that the prediction method in AS 5637.1-2015 using data obtained by testing the material in accordance with AS/NZS 3837 is appropriate for determination of a Group Number.

B.2 AS/NZS 3837-1998 TEST SPECIMEN REQUIREMENTS

B.2.1.1 The AS/NZS 3837-1998 test standard imposes several requirements for what is deemed a suitable specimen. These requirements are summarised below:

B.2.2 Surface Characteristics

B.2.2.1 A product having one of the following surface characteristics is suitable for testing:

- A) An essentially flat exposed surface; or
- B) A surface irregularity which is evenly distributed over the exposed surface provided that –
 - i) At least 50% of the surface of a representative 100mm square area lies within a depth of 10mm from a plane taken across the highest points on the exposed surface; or
 - ii) For surfaces containing crack, fissures or holes not exceeding 8mm in width or 10mm in depth, the total area of such cracks, fissures or holes at the surface does not exceed 30% of a representative 100mm square area of the exposed surface

B.2.3 Asymmetrical Products and Composites

B.2.3.1 A product may have faces which differ or contain laminations of different materials arranged in a different order in relation to the two faces. If this is the case and either of the faces can be exposed in use, then the product is suitable for this test provided both faces are tested.

B.2.3.2 Composite specimens must be exposed in a manner typical of the end-use condition and prepared so that the sides are covered with the outer layer(s) or otherwise protected.

B.2.4 Specimen Size

B.2.4.1 Test specimens shall be 100mm by 100mm in area, up to 50mm thick, and cut to be representative of the construction of the end-use product. For products of normal thickness greater than 50mm, the requisite specimens shall be obtained by cutting away the unexposed face to reduce the thickness to 50 mm. For testing, the specimens shall be wrapped in a single layer of aluminium foil, shiny side toward the specimen, covering the sides and bottom.

B.2.4.2 Excessively thin materials may not prove suitable for the test method since insufficient data will be collected for the calculation of heat release rates. Products that are thinner than 6 mm shall be tested with a substrate representative of end-use conditions, such that the total specimen thickness is 6 mm or more. In the case of specimens of less than 6 mm in thickness and which are used with an air space adjacent to the unexposed face, the specimens shall be mounted so that there is an air space of at least 12 mm between its unexposed face and the refractory fibre blanket. This is achieved by the use of a metal spacer frame.

B.2.5 Dimensionally Unstable Materials

B.2.5.1 Materials that change their dimensions substantially when exposed to the cone radiation, e.g. materials that intumesce or shrink away from the cone radiator are not suitable because the irradiance on the surface of the specimen at the time of ignition may differ significantly from that set initially.

B.3 DETERMINATION OF GROUP NUMBER OF TESTED SPECIMENS

B.3.1.1 Tests of the material in EWFA 517970-00a.1 were conducted in accordance with AS/NZS 3837. EWFA 517970-00a.1 describes a test on 11.6 mm thick samples of OSB timber.

B.3.1.2 Following the procedures of the prediction method in AS 5637.1-2015 it was calculated that the samples achieved Group 3 performance.

B.4 DETERMINATION OF AVERAGE SPECIFIC EXTINCTION AREA

B.4.1.1 The tested samples in EWFA 517970-00a.1 achieved Average Specific Extinction Area of 37.2 m²/kg.