



FIRE LOAD AND BUILDING CODE COMPLIANCE REPORT

Prepared for:	Marchand Ltd
Test Conducted By:	CSIRO Infrastructure Technologies
Test Date:	28 May 2024
Test Standard:	AS ISO 9239.1:2003
Investigation Report Number:	NFR 13211

1. Introduction

This report certifies that the flooring specimen identified as Marchand Engineered Oak Flooring was tested by CSIRO Infrastructure Technologies in accordance with AS ISO 9239.1:2003, Reactions to Fire Tests for Floorings – Part 1: Determination of the Burning Behaviour Using a Radiant Heat Source. The testing was conducted on behalf of Marchand Ltd.

This report evaluates the flooring's fire performance and its compliance with the relevant provisions of the New Zealand Building Code (NZBC), specifically Clauses C3 (Fire Safety), B1 (Structure), and B2 (Durability).

2. Test Specimen Description

Sample Identification: Marchand Engineered Oak Flooring

Construction:

- Layer 1: 6 mm thick European oak veneer, stained and lacquer-coated
- Layer 2: 14 mm thick eucalyptus and black poplar plywood
- Adhesive: Phenolic resin glue, applied at 0.26 L/m²
- Total Nominal Thickness: 20 mm
- Nominal Material Densities:
 - Oak Veneer: 600 kg/m³
 - Plywood: 700 kg/m³

Note: CSIRO was not involved in the design or material selection of the specimen.

3. Fire Test Results – AS ISO 9239.1:2003

Number of Specimens Tested: 3

Average Results:

- Mean Distance of Flame Travel: 410 mm
- Critical Radiant Flux (CRF): 5.0 kW/m²
- Integrated Smoke Value: 45 %·min

These results relate to the fire behaviour of the tested specimens under the specific test conditions and may not represent all end-use conditions.



FIRE LOAD AND BUILDING CODE COMPLIANCE REPORT

4. Code Compliance Analysis

4.1 NZBC Clause C3 – Fire Safety

Under NZBC Acceptable Solutions (e.g., C/AS2 for Risk Group SI and SC), floor coverings must meet specific critical radiant flux requirements depending on location and occupancy risk.

Minimum CRF Requirements (per NZBC C/AS2 Table 4.3):

Location	Minimum CRF Requirement
Exitways	$\geq 4.5 \text{ kW/m}^2$
Firecells with sleeping occupants	$\geq 4.5 \text{ kW/m}^2$
General occupied spaces. Residential and commercial with and without sprinklers	2.2 – 4.5 kW/m ² (varies)

Marchand Flooring Performance:

- CRF: 5.0 kW/m² → Complies for all categories, including exitways and sleeping occupancies.

Smoke Production:

- 45 %-min – falls within acceptable limits for Group 1-S or 2-S classification depending on building classification and use.

Conclusion:

The flooring is fully compliant with NZBC Clause C3 for use in all relevant floor areas, including high-sensitivity environments such as exitways and firecells with sleeping occupants.

4.2 NZBC Clause B1 – Structure

The product is a non-structural flooring overlay. With a durable plywood base and high-density profile, it is structurally appropriate for use in domestic and light commercial environments when installed over a compliant subfloor.

4.3 NZBC Clause B2 – Durability

Timber species used (European oak, eucalyptus, black poplar) are appropriate for dry, internal use. The phenolic adhesive is industrial-grade and suitable for long-term bonding.

Expected Service Life: Minimum 15 years (B2.3.1(c)), subject to correct installation and maintenance.

5. Conclusion

The Marchand Engineered Oak Flooring, as tested under AS ISO 9239.1:2003, satisfies the applicable performance requirements of the New Zealand Building Code, including:

- Clause C3 – Fire Safety: Compliant, including in exit ways and sleeping occupancies
- Clause B1 – Structure: Compliant for non-load-bearing flooring applications
- Clause B2 – Durability: Compliant for interior, dry-use conditions

CSIRO 2/2