



## DURABILTY STATEMENT

**This statement provides information on the expected durability performance of Innowood Composite Timber products for building regulators, designers and homeowners. This statement shall be read subject to Innowood branded products being correctly specified, installed, used and maintained by suitably qualified persons.**

## 1.0 Product Use Statement

Innowood Composite Timber is manufactured in various product forms to be used as cladding, louvres, decking and screening for Industrial, Residential, commercial buildings. Innowood products do not corrode and are highly resistant to rot, decay, split and termite attack, making it suitable for exterior as well as internal applications where long term durability and low maintenance is a key requirement.

Innowood contains wood fibre as a primary filler, resulting good workability and can be easily fabricated using conventional woodworking tools. The product contains low VOC and non-toxic and has proven for having good fire rating assessed as per Australia and NZ fire requirements. The products can be sanded and refinished to achieve the authentic look years after it was first installed.

Due to low absorption of moisture, there is a less risk of irreversible dimensional changes, making it a durable timber alternative for external applications where moisture related issues such as frost damage and discolouration is an inherent to most natural timber products. Innowood composite products are suitable for salty environments common to most coastal regions as well as humid and frost prone areas. Innowood products have performed extremely well over the last 10 years in an external environment at Sydney Darling Harbour, where Innowood products installed on several projects display little to no structural and aesthetic changes. This gives real world insight in to how Innowood composite timber products may likely perform in a similar challenging environment. Innowood products are highly sought after for most commercial, health and residential applications where long term product durability and low maintenance is a key requirement.

Innowood products are not suitable to be used:

- as structural elements for load bearing applications;
- for applications where longer spans are required without adequately reinforcing the product;
- where surface of the product is expected reach temperatures ranging from -20 - 65 °C or more;
- and for applications which require prolonged immersion.

## 2.0 Project Reference

Following two projects have stood the test of time under varying environmental conditions since they were first installed. The information provided in this document provides an insight into natural ageing of Innowood products over a period of time and its performance when it is fully exposed to elements.

### 2.1 Sydney Wild Life Zoo Project

Project Completed: 2006  
Profile: Special custom profile  
Colour: Weathered Wood  
Environmental conditions: Salt water spray/frost/direct UV  
Builder: Multiplex

### 2.2 Pyrmont Wharf 8 & 9 Project

Project completed: 2007  
Profile: FS05050  
Colour: Weathered wood  
Environmental conditions: Salt water spray/frost/direct UV  
Builder: Lucas Stuart P\L

Innowood Durability Statement – V20160930

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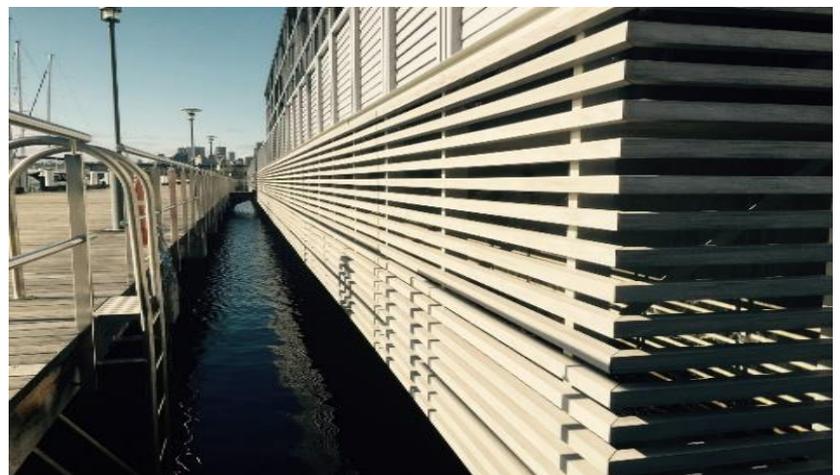
### 3.0 Durability Statement

- 3.1 **Freeze thaw damage** – Moisture absorption and surface water absorption of Innwood is measured to be 1.04g/m<sup>2</sup>/hr and 0.54% at ambient conditions respectively. Due to its low porosity and its lack of capillary pore cell structure, the product is unlikely to reach the degree of saturation required to promote ice expansion within the product, thereby preventing freeze thaw damage or frost damage to the product.
- 3.2 **Termite Attack/microbiological attack** - Innwood products are impregnated with 20% of PVC content. Fibres are encapsulated with PVC, hence the fibres are naturally protected from exposure to termites as well as microbes attracted to cellulose fibres, thereby protecting the product from such attack
- 3.3 **Ability to withstand wind loading** - Innwood external cladding is expected to withstand wind loads, static loads and impact loads. Tests conducted by an independent consultant on Innwood’s flat joint cladding system indicated that Innwood is capable of handling high wind pressures through varying spans.
- 3.4 **Product Strength at failure** - Innwood cladding has been tested by the University of Sydney and found to have a breaking load at failure of around 1.5KN on a three point bent test at 30 mm deflection. This means that the product is capable of absorbing reasonable energy at breaking point.
- 3.5 **Oxidation** – Three of the key elements that promote oxidation (whitening of the product) are Moisture, UV and temperature which react together to form oxidation on a bare composite body. In the absence of durable coating, these three key elements reacts with PVC binder within the product to form oxidation on the surface. Innwood products are prefinished with two coats of Innwood proprietary coating to withstand UV, as well as to prevent moisture coming to contact with composite body, minimising oxidation
- 3.6 **Water resistant and Durable (Sydney Wharf 8 & 9 - 2007)** – This project refers to Wharf 8 & 9 Residential Development on Sydney's Darling Harbour. The architects had originally intended for the project to be built using natural timber. However, they were concerned that natural timber would fail to withstand the harsh saltwater environment resulting from the ebb and flow of the tidal line. So their brief was to supply them with a sustainable, durable and aesthetically appealing timber alternative that could withstand marine inter tidal zones and salt spray.

Innwood’s sustainably sourced and manufactured composite timber product used to construct Wharf 8 & 9 met every requirement of the architectural brief. These materials were tested and proven as being suitable for marine inter tidal zones and salt spray environments.

The architect’s original desire to create the look of natural timber was achieved while the composite timber material used ensured the structure would withstand the test of time, salt water and the weather, including the harsh Australian sun.

After 9 years of surviving in the salt rich environment in Sydney darling harbour where Innwood was installed within 2 meters of water line, Innwood product displayed no degradation of any form including decolouration, warping, twisting, flaking blistering, chalking or splitting.



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**3.7 UV degradation** – Both Sydney Wildlife Zoo in Darling harbour and Sydney Apartments at Pier 8 & 9 were not previously coated with UV resistant coating on completion in 2005. The performance of Innowood’s products over the past 11 years proves that Innowood products are resistant to cracking, splitting, swelling or rotting, flaking, splinters or peeling resulting from UV damage.



Although, the colour has somewhat changed over the last 11 years (see clause 3.8), the product remains aesthetically and structurally sound to date.

**3.8 Light Weight & Sustainable (Sydney Wildlife Zoo – 2006)** - This project was for Wild Life Sydney at Sydney's Darling Harbour. The architects originally specified the use of recycled natural hardwood timber for this project. However the weight of hardwood timber created significant structural challenges for the design and engineering of the façade. In addition, the large quantities of the timber required for the project could not be sourced in Australia at the time.

Innowood had the ability to extrude composite timber into hollow profiles. Their lighter composite wood profile reduced the façade's weight by up to 70% while preserving the natural hardwood timber look. Innowood developed a unique clipping system whereby panels would simply clip into place without the need for visible screws and nails. As a result, the installation process was streamlined, delivering significant costs savings to the client.

Substantial project cost savings and a composite timber façade that matched the texture, finish and colour of the design intent was achieved on this project. The success of the Sydney Wildlife Zoo project propelled Innowood's composite timber alternative into the building industry.

The success with this project allowed Innowood to become a member of the Green Building Council of Australia.

The performance and colour change of the Wild Life Zoo over 10 years shows the louvres and the frames have performed well and showed no evidence of oxidation, cracking, splitting, swelling or rotting, flaking, splinters or peeling, water and moisture and to termite's damage.

As far as colour change, the following images of adjoining the image shows an indication of minimum colour change. However Innowood after 11 years showed loss of gloss due to UV exposure.



**Sample 1** - The Image of the surface after 10 years of exposure facing North/West (image taken 26 September 2016)  
**Sample 2** - Shows an image of the of the surface “as fresh”

Innowood Durability Statement – V20160930

3.9 For a period of 15 years from date of purchase, INNOWOOD warrants that the products are resistant to cracking, splitting, swelling or rotting, flaking, splinters or peeling, water and moisture and to termites.

## 4.0 Performance, Aesthetic and Functional Requirements

- 4.1 Fixing spacing for Innowood decking, ceiling and screen, is nominally set at 450mm centres, also for cladding for urban and non-cyclonic wind load areas. For other wind loading conditions contact Innowood for advice.
- 4.2 When the construction is carried out in full sunlight, Innowood is expected to be approx. 20 - 25 degrees higher than its ambient temperature. Therefore, Installation should not be carried out in extremes of temperature (less than 25 degrees is recommended).
- 4.3 Always fix Innowood boards from one end to the other and not middle to ends.
- 4.4 Minimum gap between two Innowood board ends is to be 2mm, and each of the adjoining board ends to be screwed down on to the sharing joists, with two parallel screws placed 25mm from each edge to restrain lateral movement.
- 4.5 Minimum gap between any other Innowood board ends to be 6mm, and adjoining board ends to be screwed down on to the joists/ noggins, with two parallel screws placed 25mm from board each edge.
- 4.6 Innowood decking, cladding and screen products to be randomise to disperse colour variation across the surface area.
- 4.7 Allow Innowood decking boards to season and stabilize for several days or perhaps a week or two, dependent on the climatic conditions of the site where the InnoDeck is installed.
- 4.8 Timber framing - Use Type 17 Tip self-tapping screw, 6 or 8g 18x50mm for connector and 8g 18x50mm for last board fixing.

5.0 Compliance and Standards			
Physical Property	Attribute	Standard / Report	Notes
<b>5.1 STRENGTH, MOISTURE AND TEMPERATURE RELATED</b>			
Modulus of Rupture (MOR)	30.78 - 32.2 MPa (N/mm <sup>2</sup> )	AS/NZS 4266.5:2004 Report No. T637 Sydney Uni	Ultimate strength at failure
Modulus of Elasticity (MoE)	1.527 - 2.102 GPa (103N/mm <sup>2</sup> )	AS/NZS 4266.5:2004 Report No. T637 Sydney Uni	Proof elastic limit
Internal Bond Strength	1.36 MPa =N/mm <sup>2</sup>	AS/NZS 4266.6:2004 Report No. T637 Sydney Uni	Internal bond strength normal to the face of the sample
Specific Density	0.825 – 0.830 kg/m <sup>3</sup>	AS/NZS 4266.4:2004 Report No. T637 Sydney Uni	At equilibrium moisture content (EMC) - 230C & 50% RH
Moisture Content	1.31%	AS/NZS 4266.3:2004 Report No. T637 Sydney Uni	At equilibrium moisture content (EMC) - 230C & 50% RH
Moisture Absorption At High Humidity	0.54 % Mass Change	CSIRO CMMT Report No: 2880/R2	Moisture absorption mass change is reversible. Mass change of material at 25 0C &

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Surface Water Absorption	1.0435 g/m <sup>2</sup> /hr. Extrapolated Average	AS/NZS 4266.12:2003 Report No. T637 Sydney Uni	Observed capillary moisture absorption similar.
Moisture Movement	$\delta = 4.4 \times 10^{-6}$ mm/mm/% R.H.Extrapolated	CSIRO CMMT Report No: 2880/R2	Moisture movement is reversible. Final length calculated as follows:- $L_f = L_i (1 + \delta \Delta R.H.)$
Thermal Coefficient of Linear Expansion ( $\alpha$ ).	$\alpha = -6.0 \times 10^{-5}$ mm/mm/0C Estimated Average	REF AS 4459.8	Thermal linear movement is reversible

## 5.2 FIRE RELATED

Fire Hazard Property	Group 1 (optional) Group 3	CSIRO AS/NZS 3837	Fire retardant qualities – Suitable around Fire exits where highest rating is required
Fire Hazard Property	50KW/M <sup>2</sup> at 15 minutes	ISO5660 – FNKI 11794	NZ Building Code C/VM2 Appendix A Paragraph A1.3
Fire Property Hazard	Spread of Flame = 0 Heat Evolved=0 Smoke Index = 0 Ignitability Index = 11	AS/NZ1530.3	Undue risk of fire spread via façade minimized.

## 5.3 DURABILITY RELATED

UV Resistant Coating	UV Stable	ASI-A02AW	Continuous cyclic QUV test – 1000 hrs UV stable under normal environmental
High Humidity Environment	No adverse effects	CSIRO-CMMT Report No. 228/R2	Suitable for high humidity environments
Salt Water Emersion	No adverse effects	CSIRO-CMMT Report No. 228/R2	Suitable for marine intertidal zones and salt spray environments
Termite Resistance	Deemed termite resistant	CSIRO-FFP Report No; 996	Suitable for outside above-ground applications

## 5.4 ENVIRONMENT RELATED

Volatile compound emissions	Deemed very low	CETC Report No CV090305	Suitable for use in indoor environments
ISO14025 Eco Labeling  (Global Coalition for Environment Corporation GCEC)	Innowood product Lifecycle has positive impact on the planet. With Low carbon emissions which meets the current environmental performance standards	GCEC-A-082-2016	Innowood products use wood waste as main resource, through an energy conserving production process. Low emissions to air, soil and water. After the service life of the material, the product can be recycled through use of Innowood Proprietary recycling program.

Innowood Durability Statement – V20160930

Global Green Tag Certified	Level C	INN-011-A-2014	GreenStar credits
FSC	Chain of custody	FSC20551	Waste wood materials
<b>5.5 MISCELLANEOUS PROPERTIES</b>			
Wet Slip Resistance	ClassW	AS/NZS 4586	Slip resistant coating
Fastener Pull Out	91.85N	AS1649	Ring-shank nails and screws have an enhanced pull out force
Acoustic Properties	R <sub>w</sub> 20	Rated according to AS/NZS717.1.2004	Single layer of 25mm thick Innowood composite timber cladding fixed to one side of single side of timber or steel stud to be R <sub>w</sub> 20

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Managing Director



10<sup>th</sup> October 2016

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Disclaimer:

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication. The product performance assessment was produced based on specific job site and acceptable workmanship and may not be representative of all Innowood products including aesthetic appearance (including colour), under all environmental conditions, where air pollution, exposure to harmful chemicals, and/or normal weathering as defined in the warranty may vary depending on orientation of the product relative to UV and severity of the prevailing conditions, which may vary from site to site. This material is only for your personal, non-commercial, use. No part of this material may be copied, distributed or adapted in any form or by any means without prior written consent from Innowood.

References

1. **Growing Pains, the truth about timber and alternatives.** <http://www.innowood.com/wp-content/uploads/2016/08/INNOWOOD-Whitepaper-Fire-Requirements-2015.pdf>
2. **Changing face of façade design** <http://www.innowood.com/wp-content/uploads/2016/08/INNOWOOD-Whitepaper-on-Facades-The-Changing-Face-of-Facade-Design.pdf>
3. **Do internal and external architectural timber products meet fire performance requirements?** <http://www.innowood.com/wp-content/uploads/2016/08/INNOWOOD-Whitepaper-Fire-Requirements-2015.pdf>

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