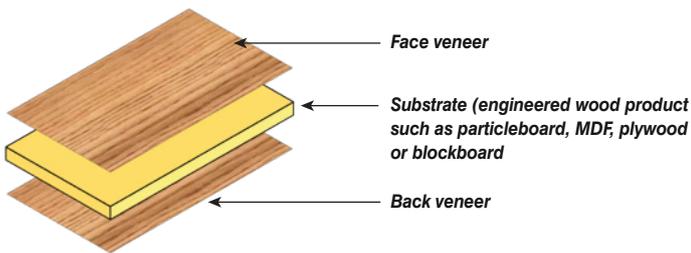


# Formaldehyde Statement & Green Star

## Decorative solid timber veneers

### Introduction

Solid timber veneer is comprised of thin slices of natural wood. Decorative timber veneers are always laid on a substrate of engineered wood product such as particleboard, medium density fibreboard (MDF), plywood or blockboard.



This statement clarifies that decorative timber veneers do not have to comply with the formaldehyde emissions requirements within the Green Star ratings tools as developed by the Green Building Council of Australia (GBCA) whereas the substrates do have to comply. It also summarises the current peer reviewed research on formaldehyde emissions from natural wood and provides a brief overview of formaldehyde emissions from engineered wood product substrates.

### Decorative timber veneers and formaldehyde in Green Star

The GBCA rewards projects that minimise negative impacts associated with formaldehyde (and other volatile organic compounds or VOC) emissions.

This statement is confirmation that solid timber veneers are not regarded as engineered wood products and are therefore not covered by the low-formaldehyde requirements of the GBCA's Green Star tools (e.g. credit IEQ-12 Formaldehyde Minimisation under Green Star Interiors V1.1, credit 13.2 Indoor Pollutants – Engineered Wood Products under Green Star Design & As Built v1.1, credit 12.2 Indoor Pollutants – Engineered Wood Products under Green Star Interiors v1, etc.).

The following is an excerpt from the Submission Guidelines for those seeking a rating using either a Green Star Design & As Built v1.1 or Interiors v1 ratings tool. The relevant words are highlighted. WoodSolutions understands that the same guidance also applies for all Green Star legacy rating tools.

#### **ENGINEERED WOOD PRODUCTS**

*Engineered wood products include particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels. **Timber veneers are excluded.** Where only part of a product is composed of an engineered wood product, the limits apply only to that portion of the product, not the entire item.*

Figure 1: Excerpt from Submissions Guidelines for Green Star rating tools Design & As Built v1.1 and Interiors v1

### Formaldehyde emissions from decorative solid timber veneers

Wood is an organic material and contains extremely small amounts of naturally occurring formaldehyde. The formaldehyde emissions from solid wood increases at elevated temperatures and with prolonged heating. Very little formaldehyde is emitted into the air at normal temperatures.

It is generally accepted that emissions of formaldehyde from the wood itself is an insignificant contributor to total measurable level of emissions from composite or engineered wood products.

Actual formaldehyde emissions measured in the laboratory show a range of detectable formaldehyde emissions however all results for wood at normal temperature are well below emissions class Super E0<sup>1</sup> which is 0.03 ppm (lower than E0 which is 0.04 ppm or E1) according to Australian Standards.

### Formaldehyde emissions from engineered wood products

Formaldehyde-based resins, in various forms, are commonly used as adhesives in engineered wood products. During manufacture these are applied in liquid form before the products are cured. Because elevated levels of formaldehyde may lead to health concerns, regulations exist in many countries, including Australia, to limit exposure. It is also why engineered wood products are a focus of Australian and International green building rating tools.

Off-gassing rates (or emissions levels) differ between the different resins and can be tested in labs. Some resins in their initial liquid state emit low levels of formaldehyde but once cured are inert and do not emit further significant measurable quantities of formaldehyde. These resins are more commonly used to manufacture structural plywood (e.g. formwork) and laminated veneer lumber (LVL). Other adhesives are not as stable once cured and do emit very low levels of formaldehyde. These resins are more commonly used to manufacture particleboard and MDF which are the most common substrates for decorative timber veneers.

More information on formaldehyde emissions classes and levels for Australian manufactured particleboard, MDF and plywood can be found on the WoodSolutions Environmental Product Declarations for those products. These are available at <https://www.woodsolutions.com.au/Articles/Resources/Environmental-Product-Declarations>

### References

APA (2015) *Formaldehyde and Engineered Wood Products*.

American Engineered Wood Association. Available at [www.apawood.org/SearchResults.aspx?q=J330&tid=1](http://www.apawood.org/SearchResults.aspx?q=J330&tid=1)

EWPA (2012) *Formaldehyde Emissions from Plywood and Laminated Veneer Lumber*. Engineered Wood Products Association of Australasia.

Available at [http://www.ewp.asn.au/library/downloads/ewpaa\\_formaldehyde\\_emissions.pdf](http://www.ewp.asn.au/library/downloads/ewpaa_formaldehyde_emissions.pdf)

Salem, M. and Böhm, M. (2013) *Understanding of Formaldehyde Emissions from Solid Wood: An Overview*. BioResources. Vol 8, No 3. 2013. Available at [https://www.ncsu.edu/bioresources/BioRes\\_08/BioRes\\_08\\_3\\_4775\\_Salem\\_Bohm\\_Understanding\\_Formaldehyde\\_Emission\\_Wood\\_4170.pdf](https://www.ncsu.edu/bioresources/BioRes_08/BioRes_08_3_4775_Salem_Bohm_Understanding_Formaldehyde_Emission_Wood_4170.pdf)

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<sup>1</sup> Also known as F4star emissions.