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Green by Design

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Understanding the Sustainability & Design Versatility of Timber Veneer



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Today's consumers care more than ever about how their purchases and the way they live affect the environment. In a 2020 consumer sentiment survey conducted by McKinsey, over 60% of respondents said they would pay more for a product with sustainable packaging.¹ A recent NielsenIQ study reported that 78% of consumers interviewed said that a sustainable lifestyle is important to them.²

When it comes to their living spaces, consumers are turning to ecofriendly building products to minimise their environmental footprint. Timber, in particular, is considered to be one of the most sustainable materials for both internal and external applications as it is not only renewable, but it also stores carbon from the atmosphere. Among designers, owners and occupants, timber is valued for its performance, timeless look and biophilic benefits.

However, there is a concern that timber will become a dwindling resource if it is not protected and managed responsibly. Government reports indicate that average annual hardwood log availability is forecast to be 9% lower over 2020-24 than 2015-19, and softwood sawlog availability is projected to be 10% lower in the 2020-24 period than was projected in 2015.³

Making optimum use of this precious resource is the responsibility of all design and construction professionals. As the most efficient use of timber, veneering presents a compelling design solution. Thin slices of wood adhered to solid substrates produces a material that combines the benefits of solid wood—strength, durability and aesthetics—with low raw material consumption and endless design possibilities.⁴

In this whitepaper, we examine the sustainability benefits of timber veneer and its versatility in a wide range of architectural applications.





What is timber veneer?

Timber veneer is a very thin layer of wood, cut in a variety of ways from the timber log to produce diverse types of grain, some revealing knots and others showing growth rings. This layer of timber is typically of uniform thickness, normally between 0.5 and 1mm thick in Australia and New Zealand, and adhered to a substrate such as MDF (medium density fibreboard), particleboard or plywood.

The natural look achieved by a timber veneer is the same as a traditional solid timber product as they both come from the same source—solid timber logs. The way a log is peeled or sliced has a major impact on the aesthetic of the veneer. No two logs are the same, resulting in unique patterns that emerge during the production process. The natural texture and appearance of wood helps create healthy living spaces, making it a popular biophilic design element. For example, a study by the University of British Columbia found evidence that wood provides stress-reducing effects within an office environment.⁵ Another study found that exposed wood improved human perception of thermal comfort.⁶

A significant part of veneer's appeal is its authenticity. Timber veneers are cut from real timber and provide an appearance that is identical to any other genuine timber product. This quality enables designers to deliver a natural timber look as well as the associated biophilic benefits, all while using less raw material and at a lower cost.

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Design options for timber veneer

Each species has its own distinctive features, patterns and grains that are elevated by the way veneer is cut and sliced from the log. Figure refers to the pattern seen on the surface of the veneer, which is determined by the log's natural features, the grain, and the cutting or slicing method. Birdseye, Butt, Fiddleback, Quilt, Pommele, and Flame are examples of common figure types. Timber veneers range from high-featured veneers to veneers with clean figured grain.

The most common cutting methods are Crown cut or Quarter cut. Crown cut refers to a method of slicing the timber log parallel to the growth rings resulting in patterns characterised by straight grain intermixed with cathedrals. Quarter cut involves cutting the log into quarters then slicing each quarter at right angles to the growth rings. This method results in a straight grain or ribbon-striped appearance. Other cutting methods include Rotary, Birdseye, Quilted, Pommele or Burl/Burr.⁷

The way you arrange or "join" the timber veneer leaves on a substrate can provide a number of effects that can improve the visual impact of your projects. All kinds of colour shades and patterns can be created using veneers that are similar for control or wildly different for extravagance. Book matching is a popular joining technique in which each veneer leaf is folded out with its mirror image. Slip matching is when the veneer leaves are laid face up and side by side, resulting in a repeating grain pattern. Random match, as the name suggests, features veneer leaves placed next to each other in a random order, producing a rustic appearance. Other matching techniques include Quarter matching, Herringbone, "V" matching and Sunburst.



Why are veneers so sustainable?

Timber is inherently a more sustainable material than man-made alternatives like plastic and metal since it has less of an impact on energy resources, air and water pollution, and produces fewer waste byproducts. That said, preserving our natural environment is vital, especially our treescape, which plays a crucial role in reducing atmospheric carbon. It is of the utmost importance that we ensure no timber goes to waste.

Of the timber products available, veneers are the most environmentally friendly as they maximise the use of the whole timber log. The Timber Veneer Association of Australia (TVAA) notes that timber veneer has a surface coverage that is approximately forty times more than 25mm timber and consequently is the most economical way of utilising precious wood.⁸ One cubic metre of log can cover approximately 1,000 square metres of panel surface.⁹ Advancements in slicing techniques allow even thinner slices of timber to be cut, making it possible to increase the yield significantly.

In terms of durability, veneers are arguably superior to solid timber as they can be bonded to strong and stable

substrates that are better at resisting sudden and extreme temperature or humidity changes without swelling or warping. Veneered surfaces will remain strong and stable year after year, avoiding the use of energy and resources for replacement or repair. The industry is also committed to sustainable forest efforts and reducing the use of and dependence on rare and exotic species, which ensures future generations have a plentiful supply for many years to come.

Although they might be attached to non-wood surfaces, veneer is, like the timber it is cut from, non-toxic, safe to handle, completely biodegradable and acts as a carbon sink. About half of a tree's dry weight is made up of carbon. This carbon remains "locked up" for the whole lifespan of the timber veneer, whether it is used to make furniture or other building materials.¹⁰ According to the TVAA, even after spending up to 30 years in landfills, more than 95% of the carbon in wood remains stored.¹¹ Such factors highlight the role timber veneers can play in reducing the carbon footprint of our built environment when used in place of other, often artificial, decorative materials.



Why are veneers so versatile?

Timber veneer is an exceptionally versatile product. Depending on the veneer and substrate mix, among the many applications for it are furniture, floors, wall and ceiling panelling, staircases, doors, and frames. It is a proven method for adding the warmth and beauty of real wood to any interior design. Additionally, using timber veneer enables designers to realise concepts that would be prohibitively expensive for most clients using solid timber.

As noted above, veneers can be adhered to a variety of substrates. The substrate can be selected for its performance and suitability in the desired end use. Moisture-resistant MDF, for example, is commonly used for fitouts, joinery and cabinetry due to its ease of cutting, flatness and resistance to moisture. A less expensive alternative to MDF, particleboard is light and easy to use, but has low resistance to moisture and humidity. For fire-rated applications, a fire-resistant MDF panel may be selected. Plywood can be used for more challenging applications such as walls, ceilings, floors and exterior projects due to its superior strength and durability.

There is a misconception that veneer boards are only suitable for cabinetry whereas solid timber lining boards are better for wall and ceilings. To maintain efficiency, most veneer board manufacturers focus primarily on cabinetry. There are, however, specialty manufacturers that offer veneer boards for both decorative and structural use. Veneer can be pressed onto a plywood substrate to achieve additional strength and stability with exceptional installation speed compared to using solid timber individual lining boards.

Big River Group

Big River Group (BRG) manufactures a range of panel and construction products including timber and steel formwork products, timber flooring, plywood and decorative panel products, as well as distributing a broad range of other building products from well-known local and international suppliers, focusing primarily on commercial and residential, non residential and infrastructure construction.

In 2021, BRG expanded its architectural product offering with the acquisition of Timberwood Panels (TWP), a specialty manufacturer and distributor of a range of panel products including veneers, veneered and coloured boards, plywood, particleboard and MDF.

With their combined manufacturing and fabrication facilities, BRG/TWP can press to the varied substrates mentioned above, but also specialise in pressing to Pine Ply, Hoop Pine, Birch Ply and their own Hardwood ply for exceptional strength and stability. The company's dedicated staff can work closely with architects and designers to discuss project requirements and suggest the best veneer and substrate mix for use in many different applications, while delivering a consistent, high-quality appearance across all panels.

Commitment to sustainability

BRG is very conscious of a range of environmental factors associated with being a participant in the timber industry. A key component of company policy is maximising the value extracted out of every log processed. This flows through to impact the company's strategies for sourcing, manufacturing, marketing and energy usage.

Setting themselves apart in the market, BRG holds long term wood supply agreements with the State Government of NSW for the sourcing of raw material log input. Forest NSW estates are accredited under the Australian Forestry Standard (AFS) which in turn is certified by the international program for endorsement of forest certification (PEFC).

Australian made

With veneering, pressing and sanding capabilities in their Campbellfield (Victoria), Grafton (NSW) and Auckland (NZ) factories, BRG have the ability to select, press and manufacture decorative veneer panels in a range of species and cuts on varying substrates for most joinery, furniture and interior lining applications. A range of decorative panel products capture the beauty of Australian hardwood through the highly efficient use of this precious resource.

BRG provides customers with the security of a full support network, and technical expertise at every stage of the product lifecycle. Their manufacturing capability is complemented by an extensive distribution and warehousing network that includes 10 specialist Panels businesses and a further 16 BRG sites throughout Australia and New Zealand.

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