Veneer

www.timberveneer.asn.au

Timber Veneer
Association of Australia

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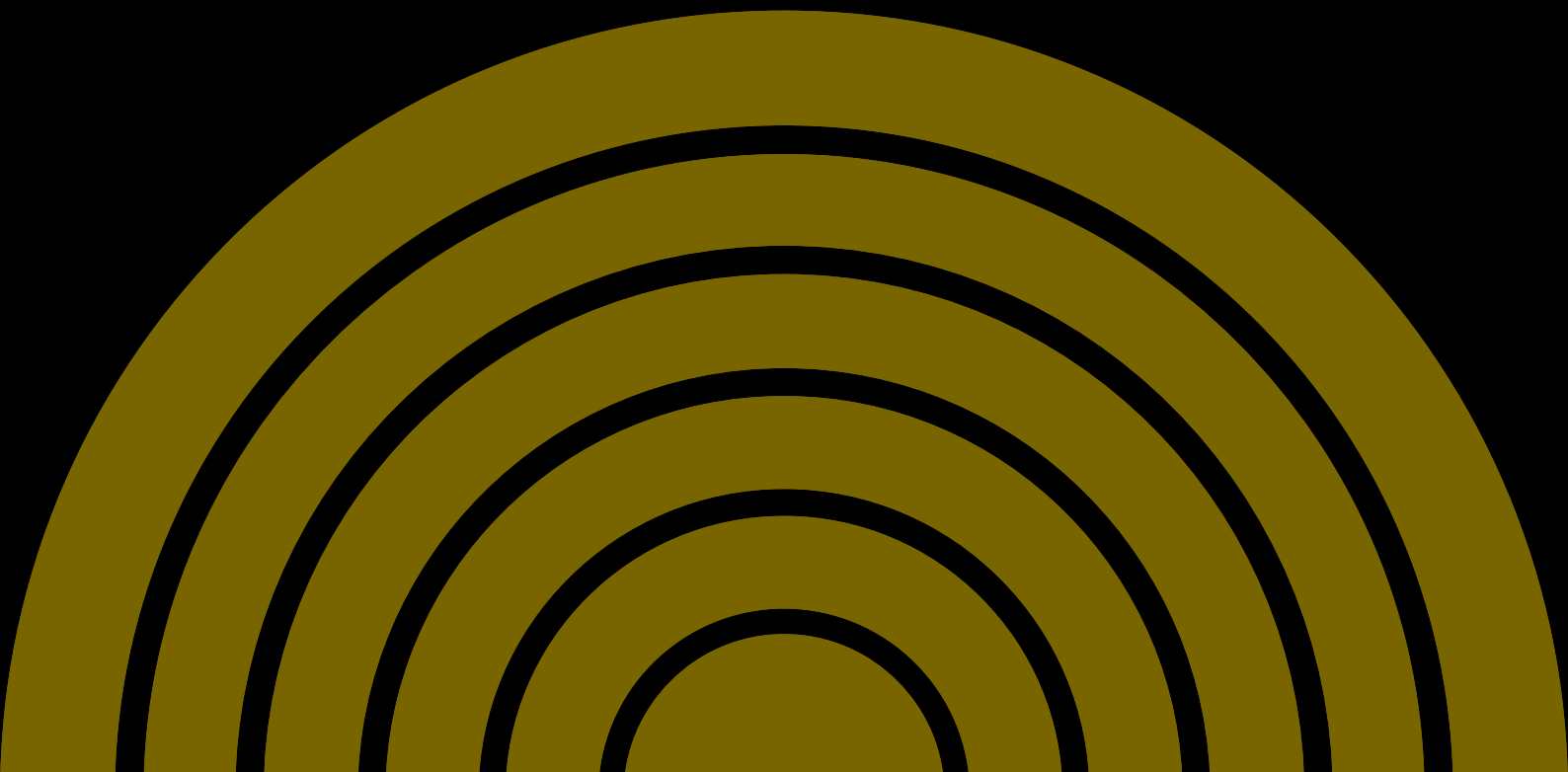
Green by Design: Renewable, Durable, Sustainable Timber Veneer

Never before have consumers cared so deeply about the environmental impacts of the products they use. In these environmentally conscious times, concerned consumers are coming to realise wood products offer a breath of fresh air by giving them the peace of mind of knowing that they are using an environmentally friendly building material.

Timber veneer is renewable, reusable, recyclable, and completely biodegradable. The well-managed forests from which our wood is derived are natural air filters, absorbing carbon dioxide and releasing oxygen. Forests also provide us with clean water and scenic beauty and provide habitat for wildlife and plants.

In addition, veneering is a highly efficient use of wood. Adhering thin slices of timber to stable substrates yields a material with all the positive features of solid timber while maximising our best resources.

Unlike other decorative surfaces wood veneer stores carbon.



TIMBER VENEER IS NATURAL

Timber veneer is **the finest use of fine timbers,** because it is real timber. One cubic metre of log produces around 1000 square metres of veneer!

No other form of woodworking material results in such a yield.

The benefits of using real timber veneer are:

- **A design collaboration with nature**

The natural variation of timber means each project is individual. No two veneers are exactly alike. The 'fingerprints' of nature lift your designs above that achievable with other similiar man-made alternatives. Choose from a vast array of species, colours and timber grains. The final finish is virtually identical to solid timber.

- **All the warmth and depth of timber**

Timber veneers add natural warmth and ambience to your project. Timber veneer is warm and gentle to the touch.

- **Prestige and versatility**

Timber veneer is a sought-after, premium decorative finish that adds prestige and style to furniture and joinery. Timber veneers can be moulded to fit many shapes, and when adhered to a stable commodity substrate, gives all the versatility of solid timber, our oldest, yet most modern material.

- **Maximises nature's resources**

Each metre of timber typically provides around 1000 slices, demonstrating that veneer is a highly efficient and sustainable use of timber.

- **Ecologically sensible solution**

A natural product - not made from petro-chemicals. The industry is committed to sustainable forest resources.

WHAT IS VENEER?

Veneer sliced and assembled in the shape of the log from which it came.

Timber veneer is a thin layer of timber of uniform thickness (normally between 0.5mm and 0.85mm thick in Australia and New Zealand). Timber veneer is from a natural and renewable resource competing with non-renewable commodities like steel, aluminium and plastics. Its surface coverage is approximately forty times more than 25mm timber and consequently is the most economical way of utilising precious wood.

Veneer is:

- Produced by slicing or peeling selected logs.
- Sliced at approximately 0.6mm (this is normal thickness for the Australian market) or peeled at various thicknesses.
- Several methods are used to create various wood grain patterns. The most commonly produced grains are:
  - **Crown**
  - **Quarter**
  - **Rotary**

- However, other categories exist to highlight specific features such as:
  - **Birdseye**
  - **Quilted**
  - **Pommele**
  - **Burl/Burr**

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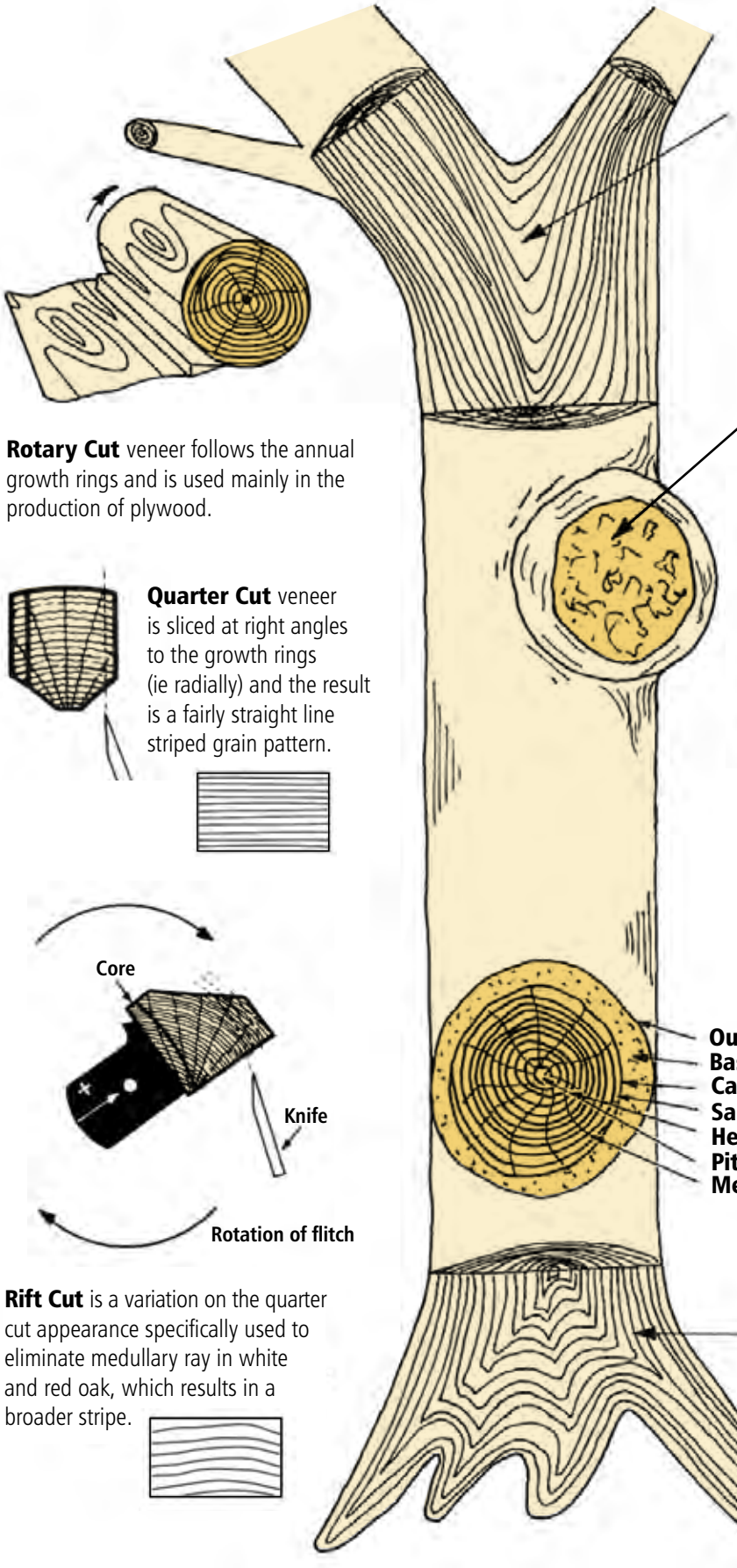


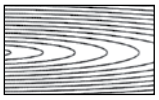
Crotch or Curl veneer is cut from the junction of the trunk and branches.

Burr (Burl) veneers are end grain type growths which occur on some trees. Highly valued.

Rotary Cut veneer follows the annual growth rings and is used mainly in the production of plywood.

Quarter Cut veneer is sliced at right angles to the growth rings (ie radially) and the result is a fairly straight line striped grain pattern.

Crown/Flat Cut sliced veneer is cut tangentially to the grain. It displays an attractive figure of bold sweeping 'cathedral' curves and oval along the centre of the leaf, with striped grain nearer the edges.



Outer bark
Bast
Cambium
Sapwood
Heartwood
Pith
Medullary ray

Rift Cut is a variation on the quarter cut appearance specifically used to eliminate medullary ray in white and red oak, which results in a broader stripe.

Butt veneers are highly valued for their fancy figure.

Diagram based on a drawing in *The Magic of Marquetry* by R.Turner, courtesy of the Marquetry Society of Victoria. Published 1980.

SPECIFYING TIMBER VENEER

Specifying timber veneer can be a challenging and rewarding experience. There are many different types of veneer species, cutting methods and splicing techniques to confront the potential specifier with many design possibilities. Each species has unique features and characteristics. The manner in which the timber is sliced will produce completely different grain characteristics. The way the veneer leaves are joined and how they are stained or dyed, will produce many variations and provide thousands of design possibilities.

With a little planning and preparation, specifiers will have no problems in finding the perfect veneer for your projects. The key to the process is communication. To obtain the right veneer we suggest you talk with your supplier to help determine your specific wants and needs.

Some points to consider:

- **What species do you require?**

Start with supplier's catalogues or brochures but request samples of existing stocks. Visit the supplier to fully appreciate all the many natural features and characteristics of the species and use these features and characteristics to enhance your project.

- **Are you familiar with the natural characteristics of the veneer?**

Timber veneer is a natural product that will vary from log to log. We suggest you discuss your requirements with a veneer supplier to become fully aware of variations in colour, natural figure and the natural characteristics that will occur.

- **What cut should you select?**

Timber veneer can be produced by slicing or peeling selected logs. Logs can be flitched to produce quarter cut, (generally straight grain), or crown cut veneer.

Rotary peeled logs will produce a non-descript swirl pattern. Ask your veneer supplier to show you some samples.

- **Do you require a species with unique characteristics?**

Birdseye, burls, burrs, pommele, quilted, figured and flame are some of the unique characteristics that can occur in timber veneer. Take the time to appreciate these beautiful features before you incorporate them into your project.

HOW TO SPECIFY WOOD VENEER

To ensure your veneer project meets your expectations it is important to specify the following items:

1. Name of veneer species.
2. Type of cut e.g. crown cut, quarter cut, rotary cut (see page 3).
3. Veneer supplier and contact details.

- **How much veneer do you need?**

Consider the lengths required and available and the amount of veneer needed to complete the job. How should the veneer be prepared to show your desired effect? Do the sheets need to be sequence matched?

- **What substrate do you want the veneer to be pressed on?**

Particleboard, Medium Density Fibreboard (MDF) and Plywood are a few common substrates to consider.

Your veneer supplier can show you various species of veneer to meet your needs at an affordable price. It is important to understand the natural features of timber veneer before embarking on your project.

4. Log or batch number (if natural veneer selected).
5. Matching type e.g. book match, slip match, random match (see page 10).
6. Sequence matched (not required for reconstructed veneer).
7. Direction of grain – long band or cross-band. (see page 17 if applicable) – as shown on drawings.
8. Substrate e.g. MDF, particleboard, plywood.
9. Edging type and thickness.
10. Polish type and gloss level – open or filled grain.
11. Contractor to supply indicative finished samples of selected veneer prior to manufacturing.

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The pattern seen on the surface of a veneer is known as the 'figure'. It results from two main factors:

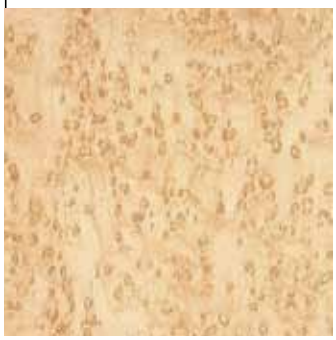
- Interaction of several natural features e.g. the frequency of growth rings, the colour tone variations between earlywood and latewood, deviations from natural grain, (wavy, curly or interlocked grain), medullary rays, markings and pigments in the wood structure, burls or curls.
- The way the flitch is cut to achieve the desired figure.

To the right are the generally available types of figure.

UNIQUE APPEARANCE CHARACTERISTICS

Birdseye

Birdseye figure can be seen on back-cut surfaces of certain species (commonly Maple) as numerous rounded areas resembling small eyes - it is caused by small conical depressions of the growth rings accompanied by considerable fibre distortions.



Butt

Where the roots form into the solid stump there can be considerable distortion into wavy ripple marks - there is always the distorted grain figure, along with greater or lesser amounts of the wavy cross figure.

Curly

Found mostly in North American Maple or Birch, curly figure occurs when the fibres are distorted producing a small but strong irregular undulations in the veneer.

Burl/Burr

Large abnormal wart like growths on trees produce some of the most prized veneers. Burl veneers display an attractive pattern of tightly packed bud formations that appear as rings and dots and result in an attractive and unusual figure whichever way it is cut. Leaf sizes are generally small and burl veneer is difficult to work.

Swirl

A figure caused by irregular grain in the region of a knot - the grain tends to swirl around in a random pattern.

Fiddleback

This figure is somewhat similar to curly except the strong but fine undulations are regular. When quarter cut the wavy patterns appear as lustrous bars across the veneer leaf. The wood gets its name from its historical use for violin backs.

Mottle

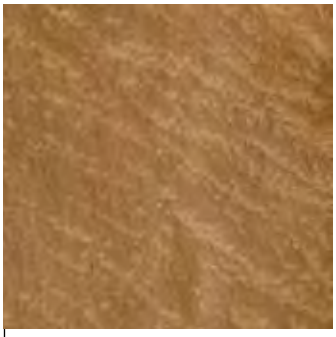
A variegated pattern which consists principally of irregular, wavy fibres extending for short distances across the face, with some irregular cross figure in twisted interwoven grain resulting in a broken, stripe figure.

Stripe

Produced by quarter slicing timber that has interlocked grain i.e. the angle of the fibres periodically changes or reverses in successive layers, resulting in a straight, uniform, stripy effect - common in almost all timber with a wide variety of character.

Quilted

Resembles a larger, more exaggerated version of pommele figure - the cellular figure is elongated and closely crowded giving it a shimmering pillowy 3D effect. Commonly found in Maple, Mahogany, Moabi and Sapele.



Cluster

Cluster figure are veneers that are mostly figured but with clusters or patches of burl.

Block Mottle

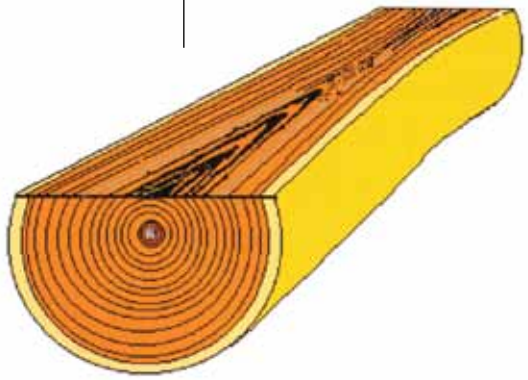
An irregular variegation in the wood structure having broad cross markings, broken by variations in strip which shows as blocky patches across the grain of the veneer. Commonly found in Makore and Anegre.

Pommele

Resembles a puddle surface during a light rain, a dense pattern of small rings enveloping one another, perhaps even a 'suede' or 'furry' look - usually found in extremely large trees of African species like Sapele, Bubinga and Makore. Some domestic species with a sparser, larger figure are referred to as 'blistered'.

Flame/Curl/Crotch

Revealed when a trunk or heavy branch with two forking branches is cut through its collective centre, this highly prized veneer cut is from just below the fork of a tree.



Retoned Veneer

Light coloured woods such as Tasmanian Oak, Sycamore, Anegre, Birdseye Maple, Tulip, and Koto, are dyed to produce artificially coloured veneers. The veneer is pressure-treated for maximum penetration of the colour into each veneer.

The advantages of retoned veneers are:

- One or a dozen manufacturers can fabricate different portions of a project while maintaining colour consistency throughout the project.
- As the veneers are coloured right through their thickness, they can be sanded or touched up during manufacture or in the field.
- As the colour is predetermined and consistent it means that the need for labour intensive staining and colour matching has been eliminated.

Reconstructed Veneer

Reconstructed veneers are manufactured from readily available timbers such as Poplar, Obeche or Bamboo, normally plantation grown.

- The logs are rotary peeled into veneers, which are then dyed all the way through, and dried.
- Layers of variously coloured veneers are then laminated together in moulds in a controlled pattern to form 'grain' patterns which are then re-sliced into veneers.
- The way the layers of the veneers are arranged and then are sliced depend on the desired pattern - the process is fully automated and often involves the use of computer software to produce different veneer figures and pattern.

The advantages of reconstructed veneer are:

- The veneers have excellent consistency in colour and repeated grain pattern.
- The result is a wide range of colours and patterns.
- Can be easier to match or replace the same patterns.

Reconstructed Natural Veneers

Reconstructed natural veneers are made of undyed and sustainable natural veneers from a range of species. This method of production produces premium veneers from low grade and waste raw material.

Reconstructed natural veneers are made by laminating the component raw veneers together into a block, then slicing this block across its laminated face to produce decorative grade veneers. Careful mixing of these component veneers during the laminating process ensures that the reconstructed natural veneer is usually consistent in grain and colour for hundreds of sheets. However, there will be some colour and grain variation between blocks, but less than the variations in natural veneers.

Pre-Finished Veneers

Pre-finished veneers are veneers supplied in a laminate type form ready for use and are pre-finished. The veneer may be plain natural veneer, stained or limed natural veneer, reconstructed or dyed veneer. The veneer face may be sanded smooth or have an enhanced grain texture created, such as by sand-blasting or wire-brushing. The face is finished with a clear coating, such as melamine film, UV cured coatings, cross-linked acrylics or a 2-pack polyurethane. The type of finish used will determine the degree of scratch resistance, resistance to yellowing and fading (which is also influenced by the veneer type) and moisture-resistance.

The finishing processes are high quality controlled in the factory in a way that is difficult for normal cabinet makers to achieve, giving consistency across projects. Therefore there is no need to worry about polishing at the fabrication stage – a major cost saving. Specifiers are able to understand the texture and nuances of the timber finish they wish to specify, plus see the final finish beforehand. The result is savings in time, risk and money, plus confidence about how the final product is going to appear.

Other advantages of pre-finished veneers include:

- Ready to be applied to the normal range of substrates.
- Able to be bent around curves (subject to radius required).
- Is more scratch resistant than ordinary polished veneer panels.

METHODS OF ASSEMBLING VENEERS

Varied visual effects can be achieved by different methods of joining – the most common production joining methods are:

Book Matching

The most commonly used method. Achieved when consecutive veneer leaves in a flitch are turned over like the pages in a book, as the reverse side of one leaf is a mirror image of the succeeding leaf, the result is a series of pairs.

Slip Matching

Successive veneer leaves in a flitch are 'slipped' one alongside the other – then the result is a series of grain repeats.

Mismatched/Random Match

Veneer leaves are random matched for effect – simulates a planked effect. Useful for dispersing clusters of characteristics such as knots.

Reverse Slip Matching

Veneer leaves are slip matched, then every second leaf is turned end for end – effectively balancing crowns in the leaves so that all the crowns do not appear at one end.

SPECIAL MATCHING TECHNIQUES

Diamond

Box Match

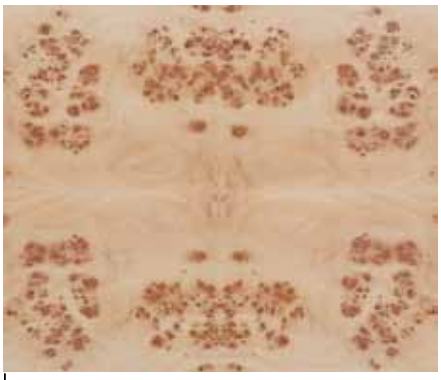
'V' Match

Reverse Diamond

Reverse Box match

Herringbone

All the special matching techniques are very labour intensive, usually hand made with much higher veneer wastage – thus are priced accordingly.



Quarter/Four Way Matching

This is the most common method of joining burls. The pattern can be continued in all directions until the panel size is obtained. These panels can be continued in a sequence matched manner.

End Match/Butt Joining

Where the length of the veneer does not permit its fabrication into the desired height of panel, it may be matched with vertical butts, as well as with horizontal book match joins.

Sunburst

Selected veneer prepared and matched, converging to a centre point.

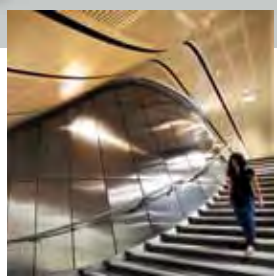
VENEER SUBSTRATES

Particleboard, being strong, stable and inexpensive, is an excellent substrate for veneered products.

Medium Density Fibreboard (MDF) is used as a substrate for timber veneers, particularly for applications where it is desirable for the edges to be moulded and exposed. Fire retardent MDF is also available.

Plywood is constructed from three or more layers of veneer bonded together and is often used as a substrate to apply face veneers for special applications.

Blockboard is a composite panel comprising a core of wood strips bonded together as a slab, faced on each side with two layers of wood veneer. Blockboard is mainly used in the manufacture of solid core doors.



PRESSING

Pressing is the process of bonding veneer layons to substrate using specialised pressing equipment which generally applies heat and pressure. Most products are supplied, trimmed and sanded, however this is optional.

OTHER VENEERED PRODUCTS

Veneer Edging is available in strips or continuous rolls to apply to the edges to match the veneered product.

Laminated Veneer Edging (LVE) is produced by laminating veneer together, and is used as a substitute for solid timber.

Curved Plywood is layers of timber veneer bonded together and moulded by pressure into a variety of shapes.

Profile Wrapping: A range of timber veneered profiles can be produced through the profile wrapping process of a timber or MDF shaped substrate. This enables manufacturers to complement panel products with matching veneer wrapped profiles.

Inlays: Plain or patterns.

Marquetry: Detailed pictures or patterns created using small pieces of different veneers – see above.

TERMINOLOGY

Timber veneers are used in a variety of products. The grade depends on the intended use and the decorative effect desired. Timber veneers are further processed to make decorative panels which can change the nature of the veneer; therefore, grade requirements can be subjective.

In line with AS/NZS 1859:Reconstituted Wood-based Panels Part 3: Decorative Overlaid Wood Panels, the industry has adopted the following broad common terminology.

G2S - Good Two Sides

Where both sides of the panel are highly visible and face quality of the same veneer is required on both sides. Also widely accepted: F2S (Face Two Sides).

G1S/DGB – Good One Side/ Downgraded Back

Where both sides of the panel are visible and the same species is required on both sides of the panel, but the quality of the back does not need to be as high as on the face. Terms also widely accepted: SSB (Same Species Back).

BAMO – Back at Manufacturers Option

Where the veneer species and quality of the back are nominated by the manufacturer, primarily to ensure a balanced panel.

CNB - Customer Nominated Back

Where the veneer species and quality of the back are nominated by the customer.

While each panel producer may currently use different terms, or combinations thereof, each producer will recognise any of the above terms so that you can specify veneered board with confidence.

Veneers for special applications such as partitioning and desk tops are generally higher than standard panel grades.

These need to be clarified between veneer supplier and customer and are generally charged at a premium. Not all face grade applications require the same quality of veneer as veneers are often selected by consultation between supplier and customer.

QUALITY ASSURANCE

The Association has a Quality Assurance Recommendation Program to check the quality of the glue bond (AFRDI 145).

The testing regime was developed by the Australasian Furnishing Research and Development Institute (Furntech) for use at the production site.

Participating TVAA members have received training in the testing techniques from Furntech.

The name of participating TVAA members are listed on the TVAA website under Quality Assurance.

www.timberveneer.asn.au

PRODUCT STANDARDS

Veneered board is to be manufactured in accordance with the following standards:

Substrate:

- AS/NZS 1859 Reconstituted wood based panels, Part I – Particleboard, and Part 2 - Medium Density Fibreboard.

- AS2270 Plywood and blockboard for interior use and AS2271: Plywood and blockboard for exterior use.

Veneer Bond:

- AS/NZS 1859.3 provides performance requirements and specifications in the manufacture and application of decorative overlaid wood panels.

- Procedures have been developed for measuring the strength of the bond between the wood veneer and the substrate, and minimum standards set which should be met by wood veneered panels. These are covered by the Standard AS/NZS 1859.3 and AS/NZS 4266.32 (Veneer Bond Strength) and AS/NZS 4266.33 (Veneer Bond Durability).

The Need for Finishing

Veneers, like most timbers used in furniture, joinery and fit-out, require a protective coating to protect them from the rigours of day to day usage. It is important that the selection of finish is suitable for the end use application of the finished piece of furniture. For example: A highly decorative jewellery box doesn't need the same durable coating as a kitchen cabinet. The choice of the correct coating system is critical to ensure the longevity of your quality furniture.

Inspection and Preparation

The most critical aspect of preparation is the control of moisture content of veneered boards. High moisture content is difficult to detect visually so prevention is the key. Do not leave boards exposed to wet or humid conditions. Particleboard and MDF both pick up moisture from the air so store in a cool, dry place.

Veneered boards should be sanded smooth. Care should be taken to round sharp edges since finishes (especially viscous liquids) tend to draw away from sharp edges and minimise the seal. A well lit workplace is essential to ensure that the piece to be finished is free from marks, indentations, etc., that will detract from its appearance.

After sanding, ensure that the board is clean. Dust and grit will adversely affect the finishing and the final appearance of the coated article. Care should be taken to ensure that the surface of the veneer is clean and free of stains. Oil, wax and other contaminants need to be removed before any coating is applied. A wax and grease remover followed by sanding can be used to help prepare the veneer surface.

Important Precautions

All coatings should be applied strictly in accordance with the manufacturer's instructions. It is important to remember that all coatings are not the same and have different application recommendations. Short cuts can cause problems which may take weeks or months to show up. It should be remembered that temperature and humidity can affect the finish quality. Finishes should be applied in controlled environmental conditions, out of draughts, away from dust, moisture and other contaminants.

The back or reverse side of all panels should be sealed to slow and equalise the ingress of moisture. Panels not sealed in this manner may bow or cup.

Avoid inhalation of vapour or sanding dust by maintaining adequate ventilation & extraction. This is normally achieved by applying in a well-exhausted spray or sanding booth complying with AS 4114. If inhalation risk exists (e.g. spraying) the operator must wear face masks complying with AS1716 and used in accordance with AS1715.

Selection of Coating

The following table provides some guidelines for coating selection. Remember, high quality lacquer will help achieve a high quality result. Cheaper finishes usually have lower solids content and take more coats to achieve the same finish. You also need to consider the grain of the veneer - open grained veneers may require filling (especially if a gloss finish is desired) or a more flexible lacquer. The use of 'thin wet' coats and the addition of solvent can be helpful.

Some species of timbers (and veneers) have phenols, tannins and other chemicals present in their cell structure. These species are best sealed with a specially formulated 'isolator' coating that provides a barrier to stop the chemicals in the wood reacting with the chemicals in the top-coat.

Lacquer manufacturers can provide advice as to the most suitable coating system for particular species. If contact adhesive has been used solvent based coatings can affect the veneer bond.

The correct choice of sealer and topcoat is critical to provide the correct colour definition of the timber and adhesion of the coating system to the wood.

Important

These notes are general guidelines only. Before commencing your job please contact your coatings supplier for their recommendation of the appropriate coating system.

Instructions and warnings can be found on product labels, data sheets and material safety data sheets available from the coating supplier.

TIMBER FINISHES GUIDE

(These are guidelines only)

Generic Type	General Properties	Typical Application	Hardness/ wear & tear	Heat resistance, hot coffee	Water & yellowing resistance
Acrylic polyurethane, solvent base	The best product for re-con veneer & natural veneer	• Kitchen, bathroom vanity, doors & panels • High quality commercial & domestic projects / fit out • Window furnishing (venetian blinds & shutters) • High quality furniture • Table & bar tops • Hotel and office fittings	Excellent	Excellent	Excellent to both
Polyurethane	Very good product for re-con & natural veneer	• Kitchen, bathroom vanity, doors & panels • High quality commercial & domestic projects / fit out • High quality furniture • Table & bar tops • Laboratory, hotel and office fittings • Stairs & handrails	Excellent	Excellent	Water resistance excellent. Do yellow, degree of yellowing varies between brands
Water base two pack	Excellent product for re-con & natural veneer. Perform similar to acrylic polyurethane, but more environmentally friendly	• Kitchen, bathroom vanity, doors & panels • High quality commercial & domestic projects / fit out • Window furnishing (venetian blinds & shutters) • High quality furniture • Table & bar tops • Hotel and office fittings • Stairs & handrails • Children's toys & furniture	Very good	Excellent	Excellent to both
Low VOC polyurethane	Very good product for re-con & natural veneer	• Kitchen, bathroom vanity, doors & panels • High quality commercial & domestic projects / fit out • Window furnishing (venetian blinds & shutters) • High quality furniture • Table & bar tops • Hotel and office fittings • Stairs & handrails • Children's toys & furniture	Excellent	Excellent	As per polyurethane

TIMBER FINISHES GUIDE continued...

(These are guidelines only)

Generic Type	General Properties	Typical Application	Hardness/ wear & tear	Heat resistance, hot coffee	Water & yellowing resistance
UV Curable coating	Good product for re-con & natural veneer	• Timber flooring & blinds • Flat pack furniture • Vanity, kitchen doors & panels	Excellent	Excellent	Excellent to both
Water base single pack	Not as good as the two pack water base	• Window furnishing (venetian blinds & shutters) • Quality furniture • Children's toys & furniture	Good	Very good	Very good to both
Acid catalysed	Older technology. Contain formaldehyde	• Dining and office furniture • Casket manufacture	Good	Good	Good water resistance. Can change the colour of timber substrate
Pre catalysed	Older technology.	• Dining room tables • Wall panelling • Office furniture	Fair	Poor	Water resistance is fair. Yellow quite badly
Nitrocellulose	Very old technology	• General lounge & bedroom furniture • Furniture restoration • Wall panelling • Casket manufacture	Poor	Poor	Poor to both

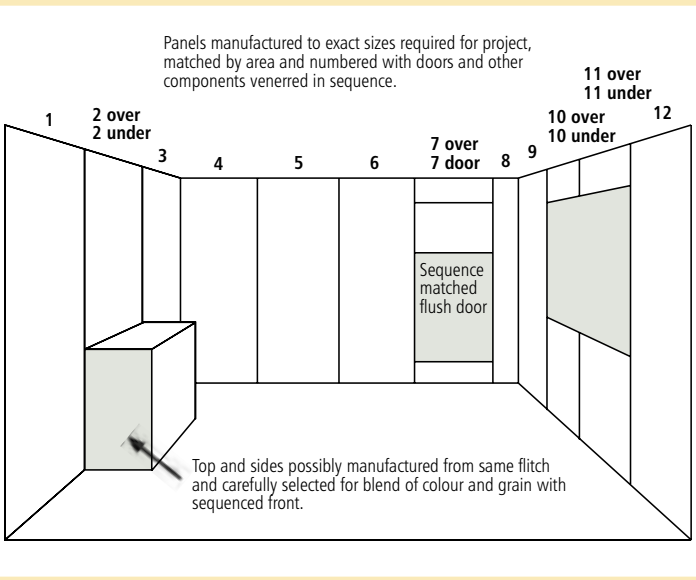
To minimize risk of colour change/ aging of veneer, especially reconstructed veneer, it is advisable to use a UV stabilised finish. Refer to research conducted by the CSIRO and the University of Melbourne – see Publications page on the TVAA website **www.timberveneer.asn.au** for further details.

METHODS OF SEQUENCE MATCHING PANELS

Veneered panels used in furniture or panelling in the same area may be matched to each other. The natural growth patterns of the tree will cause the figure on the sequential panels to ascend, descend, or show a "grain progression" as the eye moves from panel to panel. The two common methods are:

1. Panels Originating from Same or Similar Log

These sets are manufactured for a specific installation to a uniform panel width and height. If more than one log is required to produce the required number of panels, similar logs will be used. This type of panel match is best used when panel layout is uninterrupted, and when the design permits the use of equal width panels. Some sequence will be lost if trimming is required to meet field conditions. Doors and components within the wall cannot usually be matched to panels. Moderate in cost, sequenced uniform panels offer a good compromise between price and aesthetics.



Example - Plan Matched Panels and Components

2. Plan Matched Panels and Components

This method of panel matching achieves maximum grain continuity since all panels, doors and other veneered components are made to the exact sizes required and in exact veneer sequence. If possible, flitches should be selected that will yield sufficient veneer to complete a prescribed area or room. If more than one flitch is needed, flitch transition should be accomplished at the least noticeable, predetermined location. This method requires careful site coordination and relatively long lead times. Panels cannot be manufactured until site conditions can be accurately measured and detailed. This panel matching method is more expensive and expresses veneering in its most impressive manner.

Note:
Unless otherwise specified the grain direction is along the length (or height) of a panel, called long band.

Fire Hazard Performance of Timber Veneers

The following table is the 'formal assessment summary' from the Exova Warringtonfire Aus Pty Ltd regulatory information report (No. RIR 45982.9). The purpose was to demonstrate compliance of veneered panels as wall and ceiling linings with the BCA Specification C1.10a. For more detailed information please refer to the above report, your supplier or please refer to 'Fire Hazard Requirements for Veneers' on the *Publications* page of the TVAA website **www.timberveneer.asn.au.**

Lining Constrution		Performance		
		Group Number	Average Specific Extinction Area (m^2/kg)	SMOGRA (m^2/s)
Performance				
Material	**Particleboard** 6mm minimum thickness and Dry Density nominally 700kg/m^3	**3**	**<250**	-
	MDF 6mm minimum thickness and Dry Density 560kg/m^3 to 740kg/m^3	**3**	**<250**	-
	Pyrotech flame retardant MDF 12mm minimum thickness and Dry Density 560kg/m^3	**2**	**-**	**<100**
	FLAMEBLOCK™ FRMDF 12mm minimum thickness and Dry Density 710kg/m^3	**2**	**<250**	-
Veneers for all Substrates				
Thickness	0.6mm to 0.85mm (Nominal)			
Dry Density	Veneer density > 500kg/m^3 for Particleboard and MDF substrates and > 350kg/m^3 for Pyrotech flame retardant MDF substrates and > 350kg/m^3 for FLAMEBLOCK™ FRMDF substrates			
Adhesive Material	PVA			
Position of Veneers	A timber veneer shall be applied to each face, though does not have to be of the same species on each side.			

Chain of Custody Certification

The Timber Veneer Association of Australia is committed to sourcing both indigenous and exotic timber veneer species from sustainable, harvested logs. The TVAA fully supports industry moves to certification. **Chain of Custody Certification** in Australia is available in these schemes:

- The Australian Forestry Standard (**AFS**),
- The Program for Endorsement of Forest Certification (**PEFC**)
- The Forest Stewardship Council (**FSC**) certification program.

AFS, PEFC and FSC have developed their own 'standards' – documents that set down requirements that each enterprise in the supply chain needs to meet to protect the integrity of the claim that 'products are from certified forests'. Using these standards individual companies are able to implement a Chain of Custody system within their own operations. Certified veneer products are available from our members. AFS is covered by PEFC, which is international.

Formaldehyde

Formaldehyde is common in the everyday environment. Additional gas is released from such sources as fires, decay, carpets, clothing, car exhausts and even lawn mowing. All panels used comply with the Low Formaldehyde Emission (LFE) recommendations of the Australian Government's National Industrial Chemicals Notification and Assessment Scheme (NICNAS).

All veneered product from TVAA members meet E1 emission class or better.

Timber Veneer – The Environmentally Conscious Choice

Increasing the use of wood in buildings is a way of significantly reducing carbon emissions. The following table from Australia's 'State of the Forests Report 2008' by the Australian Government illustrates this benefit. For more current information resulting from ongoing research please continue to check the TVAA website **www.timberveneer.asn.au.**

EMISSION AND STORAGE OF CARBON IN THE MANUFACTURE OF BUILDING MATERIALS (kg/m³)

Building material	Carbon released in manufacture	Carbon stored in products	Net carbon released
Treated timber	22	250	-228[a]
Glue-laminated timber	82	250	-168[a]
Structural steel	8,132	15	8,117
Reinforced concrete	182	0[b]	182
Aluminium	6,325	0	6,325

a) A negative value means carbon is stored for the life of the building.

b) There is a tiny amount of carbon in the steel reinforcement. The long term uptake of atmospheric carbon dioxide by concrete (carbonisation) is normally not considered: coatings and other means are usually applied to prevent carbonisation, as it can lead to the corrosion of the reinforcing steel.

Source: *Buchanan and Honey (1994).*

GLOSSARY OF TERMS

back: the category of cheaper veneers that are glued to the back of a panel in order to balance better-quality veneers glued to the front face.

balanced construction: a balancing back of equal or similar density to face veneer to prevent warpage by moisture and/or pulling.

bleed through: glue or components of glue that have seeped or penetrated through the veneer sheet and that show as a blemish or discolouration on the surface.

blue stain: 1. occurs where there is contact of green timber with iron.
2. effects of fungal attack.

blockboard: composite board consisting of a core made up of narrow timber strips edge glued to form a slab (corestock) which is then veneered.

birdseye: figure in veneer exhibiting numerous rounded areas resembling small eyes.

book-matched: veneer leaves are alternately folded out as if opening the centre spread of a book, so that one veneer is a mirror image of the next (the most widely used method).

box match: see page 11 for picture.

bundle: comprises consecutive leaves of veneer, usually bound in groups of 24 or 32 leaves.

burl/burr: abnormal growth producing tightly packed buds and knots producing highly decorative veneer that mostly appears as rings and dots.

crazing: fine cracks which occur on or under the surface of a lacquer coating.

cross-band: where the grain direction runs along the width of the panel. Standard practice is for veneers to be laid with the grain direction along the length of the panel (long band).

crotch: see flame.

crown (cut): the appearance produced generally by the flat cut method (see page 3 for diagram).

curl: see flame.

cure: the irreversible process of changing the physical properties of an adhesive (hardening) by chemical reaction to attain bond.

curly: is a strong irregular figure found in North American Maple and Birch.

delamination: separation of veneers from substrate through failure of the bond.

diamond matched: see page 11 for picture.

edge strip: a protective strip of solid wood or laminated veneer edging applied to the edge of a panel.

end match: see page 11 for picture.

face: a term used to describe better quality veneers that are used to cover the visible surfaces of a panel.

figured: the markings, often forming wavy shimmering patterns. These may be regular or irregular, ranging from fiddleback to block figure.

flame: otherwise known as curl or crotches. This veneer is from the fork in a tree and the pattern resembles a flame.

flat cut: generally produces veneer with crown cut appearance.

flitch: pieces of wood sawn from a log for slicing into veneers OR sequential bundles of sliced veneers.

four way match: see quarter matched.

glassworm: straight diagonal tracks of distorted grain which usually intersect.

grain: the direction and arrangement of the fibres in timber and veneer.

gum vein: a ribbon of resin between growth rings, common in Eucalypts.

herringbone match: see page 11 for picture.

hob-nail: series of brown spots caused by infestation.

inlays: pieces of veneer or other material which are inserted into the face of veneered board to produce borders or other special patterns.

knot: a portion of a branch which is enclosed by the natural growth of the tree (refer picture under mismatched/random matched).

layon: veneers joined to create a usable size sheet.

log: the full complement of veneer produced from a log of a tree.

long band: where grain direction runs along the length of the panel.

LVE (Laminated Veneer Edging): is produced by laminating veneer together, and is used as a substitute for solid timber.

marquetry: the process of laying relatively small pieces of veneer to make decorative pictures or patterns.

MDF (Medium Density Fibreboard): (also known as Customwood and Craftwood). Building boards made from fibres of wood bonded together with resin under pressure.

medullary rays: also called pith rays or wood rays, extend radially from the pith outwards as ducts to convey moisture and nutrition more easily and rapidly through the tree. In quarter cut treated White Oak the rays maintain their original colour and appear as flecks or 'silver grain'.

mill run: veneer delivered from the production line unsorted and without grading.

GLOSSARY OF TERMS
CONTINUED...

Usually has a combination of backing and face grade material in varying percentages.

mineral stain: naturally occurring discolouration of the wood caused by elements in the soil.

mismatched: see random matched.

moulded (curved) plywood: is layers of veneer bonded together and moulded by pressure into a variety of shapes.

particleboard: (chipboard) building boards made from small chips of wood bonded together with glue under pressure.

picket fence: book matching veneer strips appearing alternately light and dark.

pips: small circular distortions in the grain.

plywood: an assembled product made up of 3 or more plies bonded together with the direction of the grain in alternate plies usually at right angles.

pommele: a scalloped figure, most usually found in Mahogany.

profile wrapping: a range of wood veneered profiles can be produced through the profile wrapping process enabling manufacturers to complement their products with matching veneer wrapped profiles.

quarter (cut): the appearance produced generally by the quarter cut method but also includes false quarter that is produced by the flat cut method (see page 3 for diagram).

quarter matched: this is the most common method of joining burls. The pattern can be continued in all directions until the required panel size is obtained. These panels can be continued in a sequence-matched manner.

quilted: blistered appearance, shimmering scalloped pattern.

random matched: individual leaves are random matched for effect. Knotty Radiata Pine is often laid this way. This is done to disperse characteristics such as clusters of knots evenly across the sheet.

reverse box match: see page 11 for picture.

reverse diamond match: see page 11 for picture.

reverse slip matched: veneer leaves are slip matched, and then every second leaf is turned end for end. The method is used to 'balance' crowns in the leaves so that all the crowns do not appear at one end.

rift cut: a variation on the quarter cut appearance specifically used to eliminate medullary ray in White and Red Oak, which results in a broader stripe.

rotary cut: veneer is peeled (as opposed to sliced) from a log by turning it against a stationary knife.

sapwood: the outer wood of the tree immediately under the bark. Generally it is lighter in colour than the heartwood which is the part of the tree that is used for veneer.

sequence-matched: a method of arranging veneer faces such that each face is in order relative to its original position in the tree and, therefore, contains features of grain and figures similar to adjacent faces.

sheet length: dimension in the direction of the grain of the face of the sheet.

sheet width: dimension perpendicular to the direction of the grain of the face.

slip-matched: veneer leaves are kept face up and laid side by side. This style results in the same grain pattern being repeated at the width of each layon across the layon.

soft forming: laminating veneer on to bullnosed edges.

stitched: veneer leaves are pulled together and held in place by fibreglass glue thread applied in a zig-zag pattern to the underside of the veneer.

sunburst: see page 11 for picture.

substrate: base panel on to which veneer layons are applied.

sugar: darker markings which resemble clusters of sugar crystals.

trimming: process of squaring and sizing panels to final face dimensions.

veneer:

- rotary cut: is a continuous ribbon peeled from a rotating log when a knife is advanced into it, and subsequently clipped to required width.
- semi rotary cut: veneer produced when log or flitch is clamped off centre in the lathe, and advancing knife peels individual sheets/leaves.
- sliced: a knife stroked across a flitch repeatedly in a flat plane, produces individual leaves.
- spliced: a veneer sheet made by edge gluing together jointed veneers.
- stitching: an alternative method (to splicing) used to produce a veneer sheet by gluing together (with a thread of glue) flitch veneer.

v match: see page 11 for picture.

TIMBER VENEER - THE FINE POINTS, IN A NUTSHELL

Timber veneer is the finest use of fine timbers, because it is real timber, cut fine.

• **A design collaboration with nature**
The natural variation of timber means each project is individual. No two veneers are exactly alike. The 'fingerprints' of nature lift your designs above that achievable with man-made alternatives. Choose from a vast array of species, colours and textures. Virtually identical to solid timber.

• **All the warmth and depth of genuine timber**
Timber finishes add natural warmth and ambience to your project. Timber is pleasant and friendly to the touch.

• **Prestige and versatility**
Timber is a sought-after, premium decorative finish that adds prestige and style to furniture and joinery. Timber veneer can be moulded to fit any shape, and adhered to a stable commodity substrate to give all the versatility of solid timber. Our oldest, yet most modern material.

• **Maximises nature's resources**
With each metre of timber typically providing 1000 slices, veneer is a highly efficient use of timber.

• **Ecologically sensible solution**
A natural product - not made from petro-chemicals. Our industry is committed to sustainable forest resources.

Veneer enquiries: Contact a veneer supplier or panel producer by contacting members shown on the website **www.timberveneer.asn.au.** You will also find a wealth of useful and interesting information on this site.

Technical enquiries can be made on **1300 303 982** and **info@timberveneer.asn.au**

The TVAA would like to thank the following suppliers, architects, designers and photographers for the use of their material in this document: Vos Construction and Joinery, Sharp Plywood, Briggs Veneers, Siren Design Group, Micaela Campagna Photography, PMDL Architecture + Design & Randall Lindstrom, Leon Bird Photography, Studio 101 Architects, MeinPhoto, Cox Architecture, David Boyle Architect, Brett Boardman Photography, Paola Pianezze Architect, John Gollings Photography, Geyer, Tyrone Banigan, Sonia Mangiapane Photography, mac-interactive, Murray Fredericks Photography, Mark Pearse Architect, Richard Glover Photography, Hassell Ltd, Francis-Jones Morehen Thorp, Rintoul, Schreiber Hamilton Architecture, Morrison & Breytenbach Architects, Philip Lighton Architects, Richard Eastwood Photography, Andrew Chung Photography, DWVA, HBO+EMTB, Terroir Pty Ltd, Andrew Lloyd, Olaf Reuffurth, Sebastien Segers, Rice and Skinner, Richard Cole Architecture, Tandem Design Studio, H2o Architects, Tobias Partners, Woodhead Pty Ltd, Fethers, DesignInc Tasmania and Consolidated Veneers.

For a range of creative designs from the Australian Timber Design Awards and other projects, be inspired by **www.uniquelyveneer.com.au**

Uniquely veneer.
Uniquely you.

www.timberveneer.asn.au

USING TIMBER & VENEER PRODUCTS FIGHTS CLIMATE CHANGE

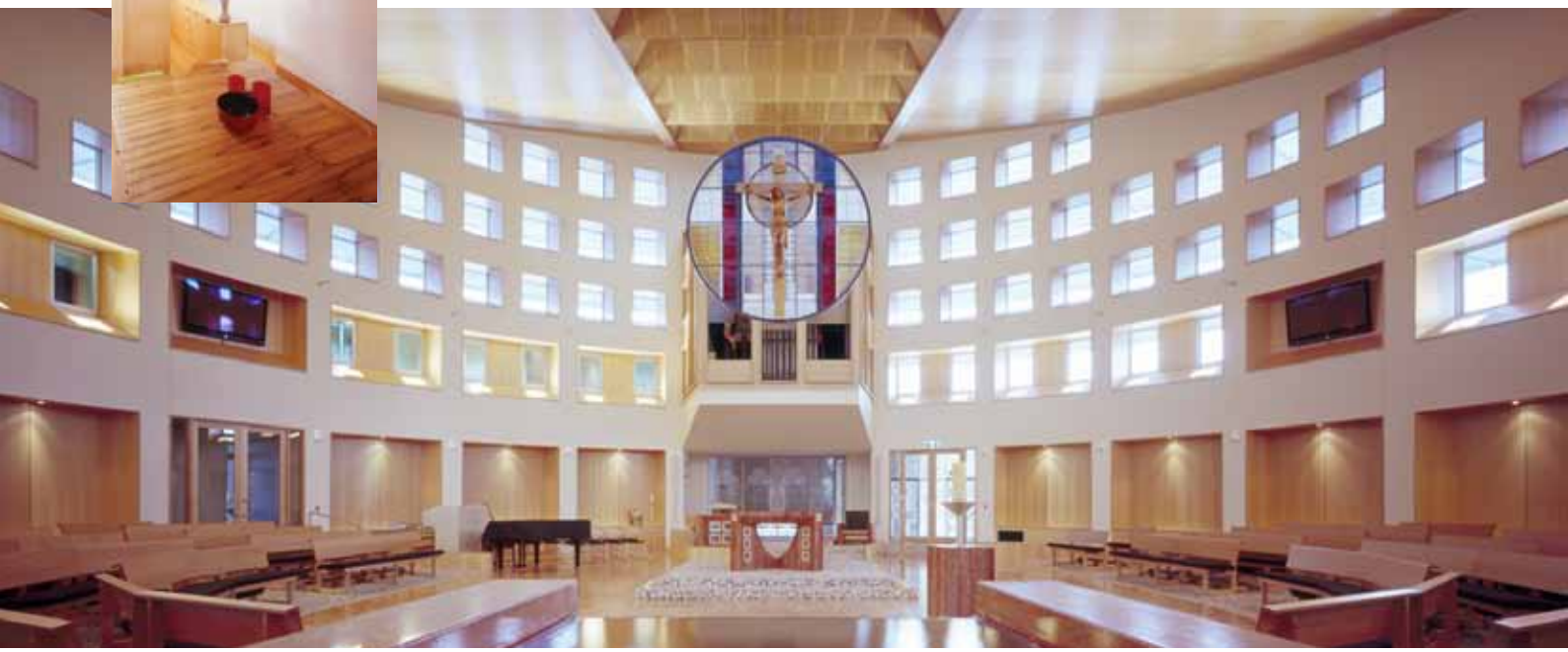
Surveys have shown that half of Australians don't know that using wood (as opposed to other materials) is good for the environment! Using timber veneer and wood products is naturally better for our environment because they help with climate change in two very important ways.

Firstly, growing trees absorb carbon dioxide from the atmosphere and store the carbon so efficiently that about half the dry weight of a tree is carbon. This carbon remains 'locked up' for the whole life of the timber veneer and wood even when we use it for building products or furniture. It is released into the atmosphere again only when the wood decays or is burnt. Recent research shows that more than 95 per cent of the carbon in wood remains stored even after up to 30 years in a landfill.

Secondly, the forest and wood products industry is one of the most greenhouse-friendly sectors of the Australian economy. In fact, it is the only industry sector in Australia that stores more carbon dioxide than it releases into the atmosphere. Thus, increased use of timber veneer and wood products assist Australia in offsetting its overall greenhouse gas emissions.

For these reasons timber veneer and wood are one of the most sustainable and environmentally sound materials on the planet. An easy way to combat climate change – use more timber veneer and wood.

Learn more about the environmental advantages of wood at **www.naturallybetter.com.au.**



The information, opinions, advice and recommendations contained in the Timber Veneer Product Information Manual have been prepared with due care. They are offered only for the purpose of providing useful and helpful assistance to specifiers and their clients.

Whilst every effort has been made to ensure that this brochure is in accordance with current technology, it is not intended as an exhaustive statement of all relevant knowledge. The Timber Veneer Association of Australia accepts no responsibility for error in, or omissions from, this brochure, or for specifications or work done or omitted to be done in reliance on this brochure.

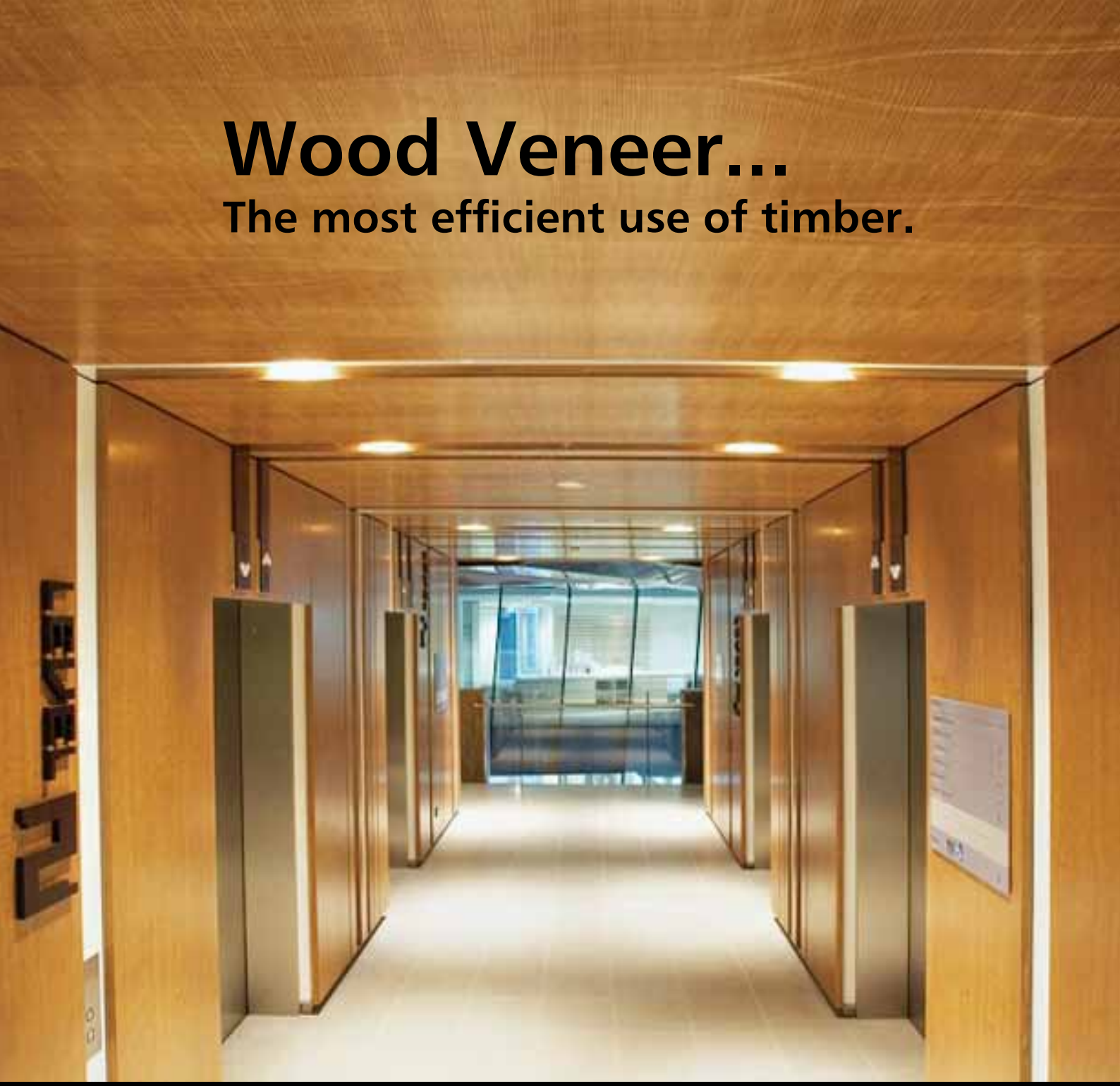
The contents of this Information Manual is available on our website and will be regularly updated with any changes or developments within the Timber Veneer industry.

Timber Veneer
Association of Australia

Design: **Hugonnet Design Associates** 2012

Wood Veneer...

The most efficient use of timber.



This magnificent lift lobby has been replicated on each floor of this 30 storey building and the wood veneer came from just one tree.

For more information about warm, beautiful timber veneer check out our website:

www.timberveneer.asn.au

Timber Veneer Association of Australia