Timbeck CEDAR PRODUCTS

design guide
and product information sheet

35 a
August 2011

data providing related information to assist with correct product selection, application and specification

Coating Options

why vacuum coating, UV curing and lacquers shine best for interior timbers

with the extensive & growing range of coating options available today, this Design Guide sets out to resolve confusion and provide informative comparisons

A look today through any housing display, commercial or retail development will likely indicate that design trends are showing a return to much greater use of timbers internally. At the same time, there is a growing awareness of factory pre-coated finishing products. This Design Guide addresses a lot of the confusion surrounding coating options, particularly polyurethanes and lacquers.

Selecting the right finish to compliment any timber specie which is specified for interior use is basically a three stage process – choose the coating, the method of application and the best drying option.

COATING OPTIONS FOR INTERIOR APPLICATIONS

Paint – oil or water based liquid and colour pigments. Dries to an opaque solid surface film.

Varnish - a paint without pigment. Provides a clear film protective coating.

Stain - very thin paint - pigment penetrates the surface - adds color without a surface film.

Polyurethane – single or 2 pack - similar to varnish – the hardest of surface films. Ideal for flooring. Hardness levels not necessary for ceilings, panelling, screening & low contact surfaces.

Oil – a penetrating liquid, non film forming – provides the most natural finish – clear or tinted.

Lacquer – similar to varnish & polyurethane – a moderately hard & durable finish – ideal for ceilings, panelling, screening & low contact surfaces. When formulated to react with ultra violet light (UV Lacquer) it is instant drying.

In general, UV lacquers cost more on a quantity basis than water-based or solvent-based equivalents. This is due to the fact that they are 100% solid and there is no evaporation of any solvent or water diluter during the curing process. A smaller volume of coating is therefore required to coat the same surface area, an aspect which provides a more cost effective result.

(information above gives a quick overview of possible choices - full detail are on our web site)

the extensive range of coating products available today can create confusion regarding which product is most suited to specific applications

APPLICATION OPTIONS FOR FACTORY PRE-COATING

Having accepted the premiss that pre-coating timber in a factory environment is an infinitely superior process to any form of application on-site, there is a range of factory based application alternatives which could be considered.

curtain coating

The process of passing the timber through a thin 'curtain' of the coating liquid. Largely superceded now by other processes but suitable for small runs of special shapes, odd sized squares or specific colours.

spray coating

An application which combines the coating liquid with compressed air. This mix is then applied through a single hand held applicator (spray gun) or through multiple applicators as part of an automatic spray line. This process is mostly used for applying penetrating oils, stains & polyurethanes.
The process is able to coat 3 surfaces – coating all round requires a second pass through the machine. Spray line coating has about a 50% transfer efficiency and requires a higher degree of operating skills than some other methods.

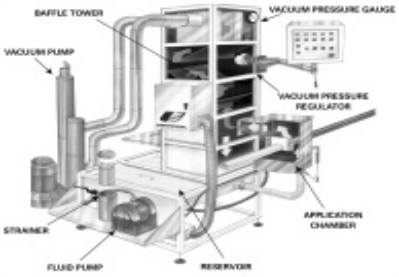
transfer table at end of spray line

roller coating

Application is simply by roller which is fed with the coating material. The process can usually handle only one face and one edge - this requires most sections to be processed twice. Film overlap can develop and coating application rates are more difficult to control.
Suitable for flat profiles with square or slightly curves edges e.g. venetian blind slats, square screening – not suitable for arrissed, rebated or detailed profiles like tongue & groove.

vacuum coating

The coating material is applied through a combination of vacuum and pressure to ALL faces, surfaces, edges & grooves. Vacuum coating is ideally suited to tongue & groove shapes and profiles with other complex detailing. Application rates are rigidly controlled and can be infinitely adjusted through monitoring vacuum, pressure and processing speed.



the vacuum coating system

download PDF with full details of vacuum coating from www.timbeck.com.au

how vacuum coating works

The coating is pumped from the coating reservoir through a fluid strainer into the application chamber. The substrate is fed through an entry template into the application chamber and leaves through an exit template.
A vacuum pump pressurizes the system. This negative pressure pulls air into the application chamber through the entry and exit templates. This air causes the coating material to be brought into contact with the substrate.
The excess coating is removed and is pulled back into the baffle tower. In the baffle tower, air and coating are separated.
Air is pulled through the system toward the vacuum pump. The coating returns to the reservoir for recycling. Regulating the vacuum pressure can alter the coating thickness. The greater the negative pressure inside the system, the less coating is applied.
Unlike automated spraying, vacuum coating is a completely enclosed process, which reduces the operator's exposure to the coating. Furthermore, coatings used are generally solvent-free, which improves the working environment as well as avoiding the emission of VOCs.
The vacuum coating system is highly efficient due to a 100% transfer efficiency and negligible cleaning loss. This makes the system ideal for applying UV curable lacquers.

vacuum coating has two significant advantages - it can apply coatings on all four sides in one pass and there is no coating lost in the process.

considered the most efficient & economical for film coatings

CURING or DRYING OPTIONS FOR FACTORY PRE-COATING

Fundamentally, there are three methods by which coatings can be cured or dried.

air drying – a relatively slow process – requires boards to be separated while they are drying and subsequent destacking – labour intensive and costly

oven drying – faster than air drying – requires board separation and de-stacking – labour intensive and costly – requires much more space than UV curing systems

ultra violet (UV) curing – a process utilising coatings specifically formulated to react with UV light which results in instant drying – boards can be handled immediately off the machine. – *extremely cost efficient when all processing costs are taken into account*

Coatings, specially formulated to react with Ultra Violet light are applied to the product. UV lamps in the bottom of the UV-curing oven enable perfect curing to the underside of the coated product prior to contact with a support roller or belt.
Not only is it possible to achieve curing very quickly in a compact space, but it is also possible to guarantee a perfectly coated product all around. The process is attractive in terms of the quality that can be attained and is also appealing on the grounds of health, safety and the environment.

THE PERFECT COMBINATION FOR COATING, APPLICATION AND DRYING

Through its coated products division, TIMBECK specialises in both Vacuum Coated UV Lacquers and also the Spray Line application of penetrating oils and other coating systems.
The optimum selections for finishing interior timbers are :

For a clear or rich colour semi-gloss surface - Vacuum Coated and UV Cured Lacquer.

The Lacquer that TIMBECK uses is low viscosity and water based (no solvents). It is formulated for instant drying when exposed to UV light.

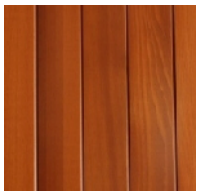
The coating process is high speed and designed for applying clear, semi-transparent and solid colour lacquers to all sides of timber mouldings of almost any shape.

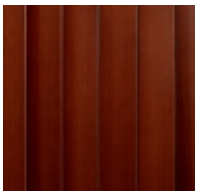
A very efficient process for products such as panelling profiles, finishing mouldings, screening sections, venetian blind slats and shutter components. Vacuum coating reaches all surfaces which is critical for detailed profiles like tongue & groove sections, heavily moulded shapes and small sections – many other processes can only achieve a coating on flat faces & edges.

A normal two coat application of TIMBECK UV Cured Vacuum Coated Lacquer comprises the first pass (application and instant drying), a de-nibbing sanding and then second pass (application and instant drying). Boards are able to be stacked and packed immediately on leaving the machine.


cedar tone


jarrah


walnut


ebony

the colours depicted are considered some of the most suitable for Western Red Cedar

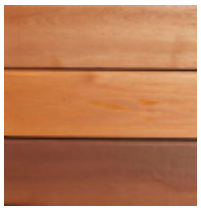
all other standard colour options are available as well including the very popular whites

For natural appearance with or without colour tint – Penetrating Oil

The penetrating oil TIMBECK uses for this finish is Cutek CD50 which is applied through the multi head automatic spray line – factory controls ensure even application rates to the Cutek CD50 Penetrating Oil or any other particular coating.


clear


grey mist


cedar tone


burnt red


walnut


black ash