

# THE “GOOD OIL” ON CLEAR COATINGS

## INTRODUCTION

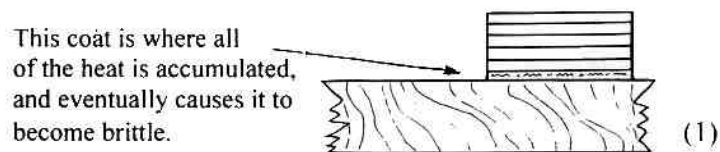
The most complex (and disappointing) area of all surface coatings is trying to sustain a nice clear finish on exterior timbers.....especially in Australia. Because of the geographical isolation and arid, barren land mass, the intensity of ultra violet radiation is greater than most places on earth. On the European continent for example, the particulate matter concentration suspended over the land, and the cloud cover has a substantial filtering affect on U/V. As a consequence clear coatings last considerably longer. A varnished front door in the U.K. may give several years service, whereas the same application in Australia will break down in months. The incidence of skin cancers is a testimony to this intensity. To understand the process of clear coated timber degradation, is also to understand part of the solution.

## DESCRIPTION

Clear coatings have a variety of names such as varnish – clears – lacquers – oils etc and are fundamentally paints without the pigment..... that is, the film is “CLEAR”. As with a pane of glass, the transmission of light is close to 100%. Therefore there is nothing to impede or block the suns rays. Bare skin can still suffer from sunburn through glass....and that is what happens to timber. It gets sunburnt. Increase the heat and you increase the degradation. A white car reflects 97% of all light and absorbs 3%. A black car on the other end of the scale does the reverse, absorbs 97% and reflects 3%. Which paint job can you fry an egg on? No contest! Adding pigmented stains of umber, ochres and sienna’s to clear coatings, or applying stain solutions to timber, does exactly the same as the “car” illustration. The darker the wood the **hotter** it will be, and therefore the faster the breakdown.

## CAUSE and EFFECT

Under heat, the lignin/cellulose cement, that forms the cell walls of timber breaks down, and results in the delamination of the film of varnish – lacquer – clear that was attached to it. Added to this process, the clear film sticking to the timber is also being ”cooked” and eventually becomes brittle, accelerating the break-down. (see illustration 1)



This is why all clears fail at the wood level. It is the coating **closest** to the timber that becomes the most brittle. Hence the delamination of the **entire** coating mass.

The darker the timber the faster this happens. Resinous timbers such as Teak are protected from decay, by the sun drawing up the liquefied natural resin to the surface where it oxidises. When this happens it leaves a grey powdery residue on top of the timber, which in turn screens out the u/v radiation. Remove the layer to expose the attractive yellow grain..... and the same process begins again.

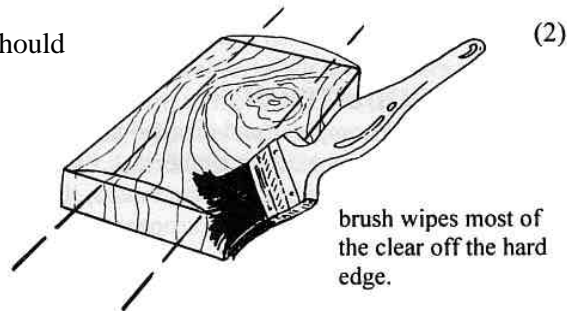
## CLEAR COATING CHOICE

There are 2 basic options (a) Apply as many clear film coats as feasible within the original application plan: (b) Feed the timber with an oil on a continuous basis at regular intervals. If (a) is chosen (and usually is) then, it is essential to be acquainted with the obstacles that lie ahead.

- On doors – windows – floors that have hard 90° angles, it is impossible to get the **same** film build on the edges as the flat surfaces. (see illustration 2)

Therefore extra coats are needed to compensate for this.

- Aggressive sanding between coats should also be avoided.



Applying 3 coats with intercoat sanding, effectively means reducing the film to 2 coats. Encapsulation of dust particles in prefinished layers of clear does **no harm** and – infact **improves** the U/V filtering process. In the final layers, these particles are not visible if embedded **below** the finish coats.

- Avoid conditions of high humidity or dampness, as clears are prone to moisture intake and will “bloom” by producing a milky appearance, which will necessitate removal
- Consider the exposure values. For instance – the top half of a panel door is more in shade by the eaves and therefore lasts longer. The bottom half will need more coats to compensate for the added exposure. Same values apply from North East to South West.
- Outdoor furniture should be covered in a colourful canvas or fabric cover when not in use. This will preserve the clear coating for **years** with little or no effort.
- When gloss finishes start to show a **dulling-off**, it is time to lightly sand and apply further top-up coats. Leaving this action **too long** will result in having to remove all the layers back to the bare wood.
- **Clear coat all timber surfaces wherever possible.** Uncoated timber can lead to wood rot, and excessive distortion. A door that has no treatment on the top and bottom (most) will soak up moisture in damp cold weather and swell making the door closing difficult. This aggravated expansion will cause the timber to split along the bottom edge initiating the breakdown of the clear coatings.

## SCREENING COMPOUNDS

Many clear coatings have limited, or no U/V filtering additives because of cost. In NORGLASS CLEARS, the selection and use of premium U/V inhibitors and stabilisers adds in excess of 20% to the product cost. These additives act as microscopic umbrellas to partially block U/V entering the timber while the u/v stabiliser scavenges the free radicals and converts them into harmless byproducts....as a continuous process.

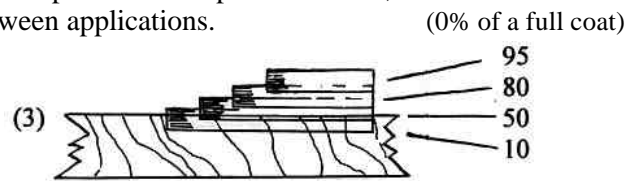
The global problem caused by U/V attack on surface coatings is mind-boggling, and **especially** with clear coatings. In spite of cutting-edge technologies and years of ongoing exposure trials and evaluations, NORGLASS current research shows there is no obvious solution available, in spite of all the research.

## OTHER OPTIONS

Feeding the timber with a Teak or Cedar oil solution, rather than coating it up with multiple layers of clear film is sometimes preferred, in an attempt to maintain a “natural” look. Where this is used internally or on areas screened away from direct sunlight the finish is not only practical but can provide good service. However, on exposed timber it becomes a very temporary solution and will oxidise and fade within a short time. Once the oil has oxidised it then has to be scrubbed off, dried and re-oiled. If the size of the job is large, doing this several times a year can be a deterrent.

## THE COATING PROCESS

Due to the wide range of timber and grain densities it is difficult to generalise but consider what 4 coats on Cedar would look like compared to the same number on a dense hardwood like Jarrah. Obviously the Jarrah will not provide the same penetration because of grain density, therefore **more** of the clear film will be sitting on top of the surface resulting in a higher gloss level than the Cedar. On most timbers a 4 coat application will look like the example (in illustration 3), due to the absorption into the pervious coats, and that is with little or no sanding between applications.



This is the point where most clear jobs are declared finished. In reality, this is the **start** of the finishing process. The first clear coat should be applied undiluted. Although it is possible to thin this down, there is normally no justification for it. However if the decision is made to thin, additional time has to be allowed for the solvent to evaporate before overcoating.

Before applying the second coat a very light surface sanding should be done to remove the furriness. After sanding, the dust in the grain should be removed by wiping down with clean rags soaked in an appropriate fast evaporating solvent – ie Methylated Spirits. Continue the coating process until a uniform gloss layer is achieved (4-5 coats). At this stage, if the surface is not in direct sunlight a Satin finish can be applied. With a uniform gloss value, the satin layers will likewise be **uniformly satin**. If the satin had been used on the previous build-up coats it is likely that variations in the finish will occur because of differing grain densities affecting different rates of absorption.

On areas of maximum exposure a further 4 coats should be considered and applied within 2 months. It is advisable to keep a diary on these applications to ensure the coats **do** happen. With NORGLASS single pot clears it is not necessary to sand between these coats provided no more than 3-4 weeks elapse between coats. What **is** needed is a wash down with detergent and warm water and dried off with a chamois, prior to coating. With NORTHANE clear a light sand is required if more than 48 hours elapses from the previous coat.

## WHAT PRODUCT TO USE?

Selecting the right clear can be confusing so the following guide is presented to assist this choice.

### WEATHERFAST MARINE VARNISH

This product is constructed with an alkyd resin which provides a superb high gloss. These resins are thicker than polyurethane resins and give a higher film build (on a coat for coat basis). On doors, panelling and super structures this is the preferred product. However, on floors or traffic areas, alkyds are **too** soft to handle that type of abrasion.

### WEATHERFAST POLY CLEAR

This is a fast drying tough coating for general timber surfaces and will withstand traffic. Ideal on tables, handrails, floors and walls. Available in gloss (and satin for shaded areas).

### NORTHANE CLEAR (2 pack polyurethane)

The toughest clear gloss finish. Ideal on benchtops, high traffic floors, racing skiffs, food service areas, fish ponds, terracotta pots and a multitude of other applications. Northane Clear is unlike all other single pot clears oils and varnishes which yellow with u/v exposure. It stays “waterclear” for the life of the coating and can be applied over paint coatings to produce a tough “glasslike” waterproof film with graffiti barrier properties.

## WEATHERFAST MARINE TEAK OIL

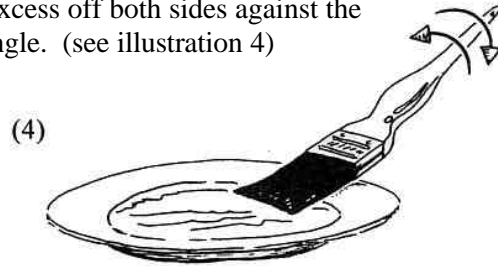
A fast drying urethane oil with U/V inhibitors and stabilisers to feed timber such as Teak, Cedar etc for a natural finish look. Requires regular maintenance.

### NOTE:

With the exception of NORTHANE CLEAR, all other clears will have a pale honey-coloured appearance. While this is not a problem when applied to timber, using these clears over a pigmented paint finish will result in patchy discolouration as the film ages. If a clear finish is desired over a painted surface NORTHANE CLEAR, which is water clear should be used. If compatibility is considered an issue, contact NORGLASS TECHNICAL ADVISORY SERVICE on (02) 9708 2200.

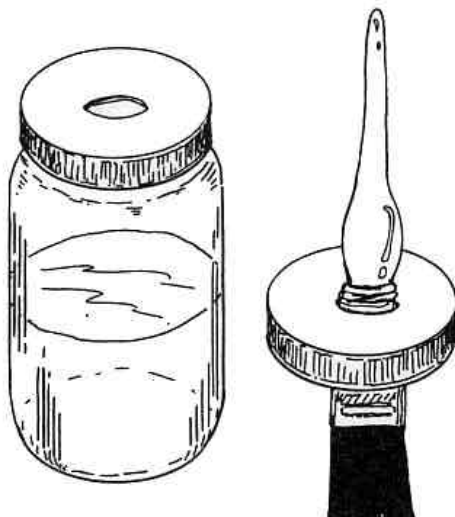
### TIPS FOR A GOOD FINISH

- Pour out a small quantity of clear into a shallow dish. Place the brush into the clear and then withdraw and tap the excess off both sides against the outer rim, by laying the brush at an angle. (see illustration 4)



This eliminates the frothy aeration created by wiping the brush against the can rim. It also reduces dust particles being constantly returned to the can contents.

- Any residue left in the dish upon completion, should be discarded, **NOT** returned to remaining contents of the can because of contamination.
- To keep a varnish brush in mint condition, it should not be stored dry because of accumulating dust particles. Follow the 6 step recommendation in (illustration 5).



1. Rinse the brush out 2-3 times in clear solvent. Spin the brush inside a plastic bucket between the palms of your hands to remove solvent.
2. Use a clean plastic (or glass) jar with a large screw top lid.
3. Cut a hole in the lid and push the brush handle through.
4. Roll down a tight rubber band over the handle until it sits on top of the lid.
5. Place the brush into a jar and mark where the top of bristles are with a felt marker. The bristle tips should be clear of the base (suspended).
6. Pour in solvent to the mark and screw lid on tightly. Seal with cling wrap and store, until reuse.