ARCHITECTS MEMO
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things ancient and modern

Back in the day I often seemed to be drawn to books the heroes of which were somewhat intellectual, had 'private means' and lived in tasteful homes which, inevitably, contained a comfortable study housing a well-stocked library along with a few exquisite 'pieces' – the mementos of an exotic career. The furniture was leather, and the polished wooden floors were waxed and burnished regularly, by a devoted servant, to a honeyed patina.

Sounds delightful eh! Such floor finishes are beautiful and regularly burnished wax does give a uniquely appealing finish. Beeswax was by far the most popular finishing material, and has been known and used from ancient times – indeed it has been referred to as the first plastic!

A beeswax polish was typically applied as a solvent/wax paste, spread evenly and thinly over the floor, then levelled and burnished with lots of elbow grease or with mechanical polishers. Beeswax is a relatively soft material with a melting point of about 63° C which does mark relatively easily; it also 'dulls off' over a few weeks. However, the frictional heat of more elbow grease melts and reflows the wax, returning it to its original state. Some wax is lost through this procedure and more wax needs to be regularly re-applied, which can be done without any technical recoat problems.

Beeswax can be hardened by blending with harder, higher melting point waxes. Most favoured of these is carnauba wax, harvested as a film from the outside of the leaves of a palm tree which grows, almost solely, in the north-east regions of Brazil. It is called Copernicia Prunifera (after Copernicus) although the local inhabitants refer to it as the 'tree of life' due to the amazing number of uses they have derived for virtually every part of it.

Carnauba wax is one of the hardest of the natural waxes with a molecular weight about 25% higher than beeswax and a melting point of about 84°C – chemically it is probably the most complex of the waxes. In itself it is quite a brittle material, generally too brittle to be used on its own, but it blends well with beeswax to improve the latter's hardness and durability.

Vegetable oils also have been used for ages to treat wood, to reduce its porosity and to improve its water and stain resistance. The only oils of real use were tung oil in the orient and linseed oil in the occident, simply because these were the only oils with sufficient unsaturation to air dry. Drying of these oils is really slow even with the addition of the relatively modern metal-soap drier catalysts; prior to this innovation drying times were interminable. To compensate for this, these oils were applied very thinly such that they sat just on the surface of the wood with any excess being wiped off to avoid surface build up with the accompanying 'stickiness' that begat. Scandinavian wood oils (or teak oils) were a simple formulae based on boiled linseed oil, vegetable turpentine and methylated spirits which were popular back in the 70s, 80s and 90s, being used to wipe over timber every 2-3 months to liven it up.

Vanishingly small amounts of semi-drying oils such as safflower, soya, tobacco seed, milk thistle etc. could be added to such preparations but major modifications of these oils (such as polymerising into an alkyd) would be needed if any significant quantity was to be used.

Oils and waxes can be blended but they can be fractious bedmates. While a solution of wax and oil can be perfectly compatible, one has to be sure that it isn't simply the presence of the solvent that is holding the wax and the oil together. As the counselling solvent leaves the odd couple during the drying process the wax and the oil can literally fall out and form two separate phases with the wax floating to the top and the oil forming a layer underneath. This phenomenon is more prevalent when the application is slightly thicker than the 'apply very thinly' recommendation. A layer of wax can substantially seal off the access of atmospheric

continued overleaf...

oxygen that the oil needs for its curing process and, if there is insufficient porosity in the substrate for the oil to penetrate, one can end up with a sticky mess!

One should also always be aware of the fire hazard associated with drying oil preparations, and I'm not talking about the quite high levels of VOC that they carry! The drying reaction of an oil is exothermic and although I have said the drying rate is painfully slow, it can be accelerated if the surface area is increased and it is a form which doesn't allow the heat of reaction to dissipate. Ideal conditions are a cloth, which has been used to wipe off excess oil, 'scrunched' into a ball and thrown into a corner.

I came within a whisker of burning our first house down before we moved in! It is a very real issue! My advice is to thoroughly soak such oily rags under water or to reduce the risk by laying the contaminated cloth out flat in a safe place so as to allow the heat to readily dissipate.

But I ask you the question, not withstanding my youthful dreams, "Why would you bother with all of the above? Have you really had a close look at what the industry is offering in its current waterborne, polyurethane dispersion, floor coating portfolio?"

Coatings which look soft and tender but have pachydermatous hides, flatted by means of agents made of the same material (and thus same refractive index) as the binder to achieve an uninterrupted transmission of light, which are available in customised sheens, which are low in VOCs, which are insensitive to variations in film thickness, which are indefinitely re-coatable and which can be further crosslinked if resistance to tracer bullets is required! What more need I say?

But wait! I hear you cry – isn't it very difficult to repair the coatings? I could give the simple answer of 'No' but I would rather come back with the comment 'First, one has to damage them!'

For ourselves, we have developed an 'in house' test which we do consider to be a real 'torture test.' We have a stairway from our factory floor to our canteen which gets heavy traffic from soiled booted feet on a daily basis. We have replaceable, screw down treads which we coat with our prototype floor coatings and we then sit back for a year. Imperceptible surface marking is the only pass mark!

While this memo appears to have descended into an unseemly sales rant for Resene ProSelect (and accepting that beauty is always in the eye of the beholder) I do believe that the ability to achieve the desirable aesthetics of yore yet requiring only normal housekeeping as a maintenance was worth bringing to your attention!

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