‘Coating Choices’

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Australian Timber Flooring Association
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Timber Floor Coatings are YOUR CHOICE….take care to choose the coating that suits your needs!

In the not too distant past the sanding and finishing of a timber floor was a relatively straight forward task with a three coat system of gloss polyurethane being used in most instances. This coating methodology still dominates in the Australia market, however such a system and for that matter all coatings are not without their issues. Due in part to this, a resurgence in other technologies particularly with the advent of metalised polishes and emerging new waterborne technologies, the choices of coating have greatly diversified.

A search on the internet quickly reveals that a wide range of coatings are now available and that many manufacturers are able to supply a full range of coating types. You will find brand names that are quite familiar to you and others that you probably have not heard of. As such your choice of coating is much greater now than in the past and while this should be seen as a positive, it can also be somewhat bewildering to those with limited knowledge about coatings and coating types.

In addition to this contractors are unlikely to be familiar with all the options available and will tend to favour the range of coatings they more frequently use and have sound knowledge of and experience with. Due to this, today’s reputable coating contractors are constantly involved in updating their knowledge to keep abreast of the frequent changes in this developing industry. For this reason the ATFA play an important role in providing not only training but also an avenue for networking and providing up to date information to their members.

Most contractors will have the skills to use any coating type, however each coating will have its specifics and due to this some time in research and support from the product supplier may be necessary and is important. This is particularly so if the chosen coating system to be used differs from that more commonly used or recoating over an existing finish system is being requested. When choice is available for any product there is also varying quality and price differences between products. This too is true for floor finishes and due to the nature of some coating systems there can be a significant variation in overall project costs depending on the option chosen. Similarly those products of lower quality can be more prone to problems at time of application or in ongoing performance.

In this article we are specifically concerned with the regular levels of confusion and potential disappointment expressed by flooring contractors, architects, building managers, and the general public alike, regarding issues that often stem from coating selection. This aspect should not be treated lightly. Although the process of preparing and coating a floor is relatively “inexpensive”, especially when compared to the purchase and installation costs of timber flooring, an unsuitable coating choice can result in expectations not being realised with short lived enjoyment of a new or rejuvenated timber floor. For the consumer appearance, durability and cost are generally the key factors.

A poor choice of coating will ultimately result in disappointment and often additional expense in extra work necessitating possible re-sanding or recoating. It cannot be over emphasised that choosing the right coating for your requirements will greatly reduce the likelihood of any potential problem down the track.

As the owner, specifier or recipient of a new floor, the most important fact to be recognised when considering the coating type is ‘does it fit’ your project? All floor coating types are suitable for specific applications. The difficulty lies in balancing up the attributes of each coating type to ensure that you select one that is going to be highly suitable. Good coatings in wrong applications result in poor performance – not bad coatings!

For the contractor the most important information is provided by the product manufacturer. This information needs to be followed, enquired about, even debated, but never ignored. Coatings can be complex and you can be sure significant time has been spent in research and development before the product enters the market. The product information is what enables the contractor to both apply coatings correctly and advise clients accurately as to the suitability of a coating system for a particular project (appearance, durability, cost, application considerations and environmental considerations).

When researching products always consider that with the variety of timber floor coating technologies available, each will have its benefits and limitations and that the balance of these will differ from project to project. It is also necessary to ensure that coating decisions relative to your requirements are made based on accurate and complete information.

It is generally the owner’s choice as to what coating or coating type is applied to the floor and the contractor is often called upon for advice. So what steps are involved in selecting a coating system that needs to be considered by both the recipient of the floor and the contractor for a particular project?

- Firstly, a selection of suitable floor coating type alternatives should be developed that are most appropriate to the project.
- Considering the broad coating groups, the visual effects they provide should be considered and ones selected that fit preferences.
- The benefits and limitations of this ‘control group’ should then be assessed for the type that will best meet the requirements of the project.

From this, particular manufacturer products within that group can be assessed and an informed choice made. However the basis for selection does not end there! Of equal or greater importance is what the recipient of the floor is prepared to do to keep the floor looking good! No matter what angle you take, *'MAINTENANCE'* is the key aspect that ensures the ongoing appearance of a floor. It must be stressed that all coated timber floors will require some level of activity to keep them clean and to prolong their original aesthetic qualities for as long as possible.

This includes:-

- regular sweeping,
- dust catching mats at external doorways,
- prompt cleaning of spills,
- occasional mopping with a recommended cleaning product,
- felt pads on chair legs and other moving furniture,
- sealing paved/concrete area's abutting entrances,
- regular monitoring of wear to plan for any remedial coating requirements,
- not wearing street shoes on the floor where possible and avoiding leather soled shoes and stilettos as damage is accelerated by the combination of dust, grit, and aggressive foot traffic.

These tasks are not debatable. They can be regarded a minimum requirement of owning a timber floor. However, the frequency that these tasks are carried out, as well as additional maintenance activities, is what sets different floor coating technologies apart. Put simply a lot depends on what the recipient of the floor is prepared to do 'for their floor'. Aspects such as traffic type and level of traffic, flooring environment (e.g. residential or commercial etc) is what will greatly influence the coating decision.

If as an owner or specifier you are unable to determine a suitable coating using these considerations, then an industry professional should be consulted to assist. Though remember, although a contractor or similar professional can assist with technical information, the owner, or person specifying on behalf of the owner, should be the one choosing the finish, as they are the ones also determining the acceptable degree of ongoing maintenance.

Assuming as an owner that you have made your choice and ultimately the prolonging of the 'original' appearance of your floor is the ideal, maintenance is accepted as reality. Start with this understanding and it is more likely that you will be satisfied with your floor coating choice.

Coatings are made to protect and beautify timber flooring, but from day one the various degrees of foot traffic will begin the deterioration process that can only be managed and replenished by the "owner" or caretaker of the floor. If that happens to be you, then it is important that you make your coating choice carefully, as it is your floor and your choice that will be on display, now, in twelve months, in five years, a decade; so choose wisely.

Coating Types

Timber Floor Finishes

Timber floor finishes can be grouped into four main categories. Penetrating oils and waxes, curing oils and alkyds, oil modified urethanes, and polyurethane's, the latter three categories being available in solventborne and waterborne. Performance parameters such as durability or resistance to wear can vary significantly within a category as well as between categories. All categories can be recoated with refurbishment coats.

Penetrating Oils and Waxes

These are blends of natural oils and waxes which penetrate the timber surface to provide a rich colour, enhancing the timber grain and natural characteristics. It is the natural subdued look of the coated timber that is often the basis of selection and these finishes are generally recognised as the traditional or natural finishes. Curing in cold weather is slow and this may require consideration. Regular application of metalised acrylic polishes are used as part of the maintenance requirements to prolong an attractive appearance that darkens with age. Hard waxes differ in that they not only penetrate but also leave a hard film of wax on the surface, thereby reducing maintenance requirements. Currently these types of finish do not form a large part of the floor finish market.

Oil-Based Finishes - Curing Oils and Alkyds

Curing oils such as 'Tung' or 'linseed' are usually selected because of their lower cost and ability to produce a rich timber colour. Gloss levels vary from high gloss to satin and they are not prone to edge bonding. Similar to penetrating oils these finishes are slow curing in cold weather, will darken with age and metalised acrylic polishes are a necessary part of ongoing maintenance activities. Alkyds are produced from reacting curing oils with a synthetic resin and this results in improved durability and reduced maintenance activities. Curing oils and alkyds are also not as frequently used as those outlined below.

Oil Modified Urethanes (UMO's)

These spirit based solventborne coatings combine an oil with a smaller amount of a urethane. The higher the urethane proportion, the less the oil properties such as flexibility but the higher the durability. Gloss levels vary from high gloss to satin and in recent times higher cost waterborne UMO's providing lower emissions have appeared on the market. All UMO's darken with age and their slow curing in cold weather needs to be considered. These mid range cost coatings are often selected as they are of intermediate durability, are not prone to edge bonding and are isocyanate free. As such they hold a moderate share of the market.

Polyurethane – Solventborne

This coating type in the 1 pack moisture cure and 2 pack varieties provide the highest durability and film build of all coating types as well as the highest gloss levels. Gloss levels range from ultra high gloss to matt and some darken less with age. However, there is a strong solvent smell on application and due to the

isocyanates present additional precautions are necessary until the coating has cured. These intermediate cost coatings are often selected as they provide the best durability resulting in low maintenance, can provide a very high gloss and generally provide trouble free application. Care is however necessary regarding their edge bonding potential which can cause irregular gapping or split boards in floors. Currently, this type of finish is commonly used in Australia.

Polyurethane – Waterborne

This has the widest selection of sub-categories resulting in a spread of properties with durability from poor to arguably as good as solventborne polyurethane. Greater care is therefore necessary in selection noting that those without acrylic provide higher durability. They are available in one and two pack options, provide a finish from matt through to gloss and generally darken little with age. These coatings are often selected due to the absence of any strong solvent smells on application and because they are not prone to edge bonding. Product cost is however high and they can provide a lighter timber appearance depending on the sealer and coating used. Rapid shrinkage can also result in light coloured lines at board joints. These finishes have developed significantly over recent years and as such their market share is moderate and increasing.

The following table outlines the types of finish available and lists various properties of each.

COATING SELECTION CHART

Timber Floor Coatings							
Property	Penetrating oil / wax & hard wax	Oil based finishes	Oil Modified Urethane	Polyurethane			
				Solventborne		Waterborne	
				1 pack	2 pack	1 pack	2 pack
Durability (Ability to resist wear)	Low-Med	Low-Med	Medium	Very High	Very High	Med-High	Med-VH
Ability to accept careful foot traffic 3 days after coating. (Ave. temperature 20°C)	Low	Low	Medium	Medium	High	Medium	High
Timber colour 'richness'	Low-High	High	High	High	High	Low-Med	Low-Med
Darkening with age	High	High	High	Low-High	Low-High	Low-Med	Low-Med
Ability to cure in cold & dry weather	Low	Low	Medium	Medium	High	Medium	High
Ability to cure in cold and damp weather	Low	Low	Low	Medium	High	Low	Low
Edge bonding resistance	High	High	Med-High	Low-Med	Low	High	Med-High
Rejection resistance	High	Medium	Medium	Low-Med	Low-Med	Medium	Medium
VOC emission at application	Low-High	High	Med-High	High	High	Low	Low-Med
Inhalation hazard when coating is applied	Low	Medium	Medium	High	Very High	Low	Medium
Odour on application	Low-Med	Medium	Medium	High	Very High	Low	Low-Med
General product cost	Med-High	Low-Med	Medium	Medium	Medium	High	Very High