

Introduction

Many types of floor finishes are currently available in the market place. This data sheet provides information on the types of finishes commonly available. It also provides guidance on choosing an appropriate finish system for timber tongue and groove strip floors that are to be sanded and finished after installation. For advice on particular brands, contact finish manufacturers or professional floor sanders or finishers.

Movement in timber floors

Timber is a natural product that responds to changes in weather conditions. During periods of high humidity timber will absorb moisture from the air causing it to swell or increase in size. Conversely, during drier times when humidities are low, timber will shrink, reducing in size. Unless T & G flooring is placed in a permanently controlled constant environment, it will move (shrink and swell) in response to changing environmental conditions. Gaps between individual T & G boards may be expected at certain times as the floor accommodates these changing conditions.

The overall movement occurring in individual boards and rate of movement will depend on the timber species and cutting pattern. Small differences in moisture content between boards at the time of manufacture (a 5% range is normally allowed by applicable standards) and variable conditions within the house (e.g. westerly facing room compared to southerly facing) will also cause further variation in board width. Consequently, it can be expected that small gaps will occur at the edges of most boards, particularly during the drier months, and that the actual gap sizes may differ across a floor.

In cases where shrinkage occurs after installation, wider boards (e.g. 130 mm) will result in larger gap sizes at board edges than if narrower boards are used. Air-conditioning installed after a floor has been laid, may increase the size of shrinkage gaps at board joints. Localised shrinkage may also occur when areas of flooring are exposed to heat sources such as fireplaces or sunlight through unprotected doors or windows.

Effects of floor finishes on timber movement

Some movement usually occurs in timber floors after laying and although floor finishes may retard this movement they will not prevent it.

In applications where greater movement is expected after finishing (e.g. from seasonal changes, use of wide boards, air-conditioning installed after floor installation), a flexible finish is recommended that will allow boards to move **individually**. If flexible finishes are not used, adjacent boards may become glued together by the finish penetrating into the joints. With subsequent shrinkage, wide gaps between groups of four or five boards may occur or boards may split.

A less flexible finish should be used only where minimal movement is expected after installation. This usually applies only to a

permanently controlled environment. In applications such as shopping centres that may be air-conditioned for 20 hours per day, lower relative humidities can be expected but with little fluctuation throughout the year. Provided the average moisture content of the flooring when laid is near the inservice moisture content (achievable after a period of acclimatising the floor in the air-conditioned environment), subsequent board movement will be very small. In this case, there is little risk of edge gluing being a problem. The use of an appropriate sealer prior to the application of the finish greatly reduces the risk of edge gluing.

Timber floor finishes

Timber floor finishes can be grouped into four broad categories. These are the oil-based finishes, composite finishes (mixes of oil-based and solvent borne polyurethane finishes), solvent borne polyurethane finishes and water borne finishes.

Oil-Based Finishes

Oil-based finishes (alkyd/oleoresins) are the more traditional types of finish manufactured by reacting a natural oil (e.g. linseed and tung) with another chemical. Varnishes and the traditional tung oils fall within this category and are associated with the polished and waxed timber floors of the past. These types of finishes are still commonly available and require greater regular maintenance than the other finishes. However, with the use of acrylic floor polishes, they have become easier to maintain. These finishes will darken with time. They are flexible and are very unlikely to edge bond boards.

Composite Oil-Based/Solvent Borne Finishes

Finishes containing oil-based alkyds with the addition of urethanes provide a finish with reasonably good abrasion resistance. These finishes provide a subdued, satin to semi-gloss appearance and are very unlikely to edge glue boards. They darken with time and require more frequent maintenance particularly in high traffic areas than polyurethanes. Acrylic floor polishes may be used to protect the finish.

Solvent Borne Polyurethane Finishes

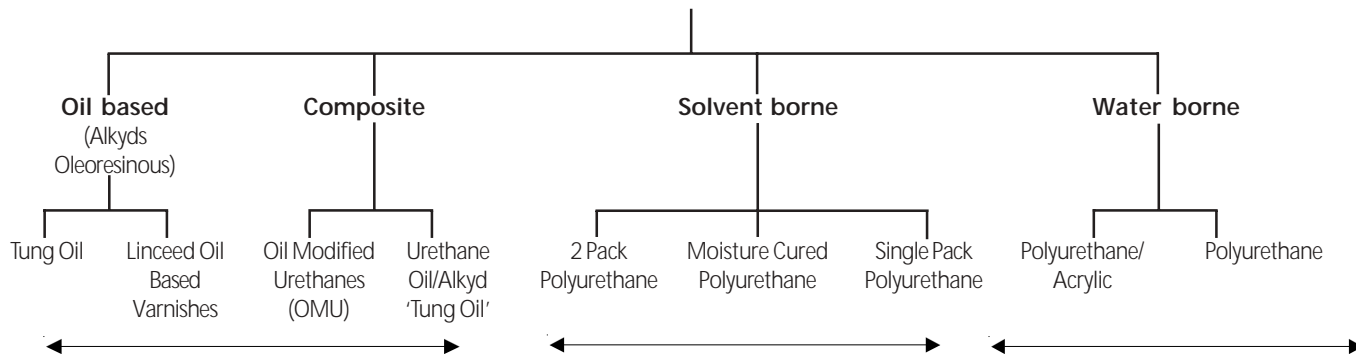
Solvent borne polyurethanes (one pack and two pack) were developed during the 1950's and 1960's. They provided a harder finish, generally with limited flexibility but much greater abrasion resistance. Consequently, this greatly reduces the level of routine maintenance. They currently provide some of the hardest finishes available today with gloss levels from matt through to a very high gloss. These finishes, as with the oil-based finishes, will generally darken with time and although hard, may scratch if care is not taken. Repairing such damage is often not as easy as with other finishes. The odour after application is also very strong with these products. Due to their high strength and generally limited flexibility, edge gluing of boards can occur, unless an appropriate sealer is used.

Water Borne Finishes

Water borne polyurethane/acrylic mixes and straight water borne polyurethanes are gaining in popularity. They are generally applied over a sealer (either solvent or water based), that not only enhances the colour of the timber but also greatly reduces the risk of edge bonding. Matt through to gloss finishes are available and many of these finishes do not darken significantly with time. There is little odour associated with water borne finishes. A curing additive (catalyst) may or may not be recommended by the manufacturer.

Refer to figure 1, which outlines the types of finish available and lists various characteristics of each. For further information contact Timber Queensland or finish manufacturers.

Timber Floor Finishes



Less wear resistant finish requiring more frequent maintenance. Very unlikely to edge bond boards	High wear resistant finish. May edge bond boards. Less likely to edge bond when applied over an appropriate sealer.	Moderate to high wear resistant finish. Unlikely to edge bond boards when applied over a sealer
6-24 hour cure by solvent evaporation. Some tolerance to waxes. Moderate to strong odour on application. Avoid inhalation and contact	1-4 hour cure by chemical reaction. Not tolerant to waxes. Strong odour on application. Avoid inhalation and contact	2-4 hour cure by evaporation and reaction. Not tolerant to waxes. Minimal odour on application
Matt to gloss levels. Darkens with age. Relatively easy to repair	Matt to very high gloss levels. Darkens with age. Some not easy to repair	Matt to gloss levels. Less darkening with age. Relatively easy to repair
Generally ready for use 2-5 days from completion*	Generally ready for use 2-3 days from completion*	Generally ready for use 2 days from completion*

*Varies with weather conditions and product. Full curing may take a longer time.

Safe Working

Working with timber produces dust particles. Protection of the eyes, nose and mouth when sanding, sawing and planing is highly recommended. Refer to tool manufacturers for safe working recommendations for particular items of equipment.

For specific recommendations on handling, use and disposal of floor finishes, refer to manufacturers recommendations.



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