



TECHNICAL BULLETIN #19

PROFESSIONAL ADVICE ON WOOD FLOOR SYSTEMS

If you have never lived with the enjoyment of the warmth, charm and beauty of a wood floor, then you have something to look forward to.

However, recognising that today, we live in a world where everyone has a “silver tongue”, you are encouraged to do your homework before contracting installation of your selected wood floor systems.

Many hold the view, that anyone, who can swing a hammer must be “qualified” to install wood floors.

However, the experience of an increasingly number of people is, that today, far too many are unskilled, untrained and are flying by the seat of their pants.

So to make sure that you are not “duped,” please absorb the following advice which is prepared with a view to alerting you to those matters, about which you need to be aware.

Regrettably, since the former NSW Government discontinued “**LICENCING**” of “**QUALIFIED**” Wood Floor Contractors in 2010, our trade has seen an ever increasing number of “johnny-come-latelies” leave a trail of destruction in their wake as unsuspecting consumers are left to deal with a myriad of problems.

There are highly skilled and very professional people in our industry who are passionate about delivering at the highest level of technical competence, however, you need to be wise about the “**choices**” that **you** make.

If you are looking for a specialist in **Timber Flooring**, is your selection of the local carpet / vinyl / tile / timber-shutter-do-it-all shop, the right place for you to be making such a selection ?

Seek out the industry “**experts**”. Deal with somebody who has a proven track record !

Even if it might cost you a little more to have a “**craftsman**” undertake your project, the experience of many is, that this is by far the most **cost-effective** option in the long run.

The old adage that you simply “get what you pay for” has never been truer than it is in this day and age.

EXECUTING THE WORKS

Before anyone commences to install any wood floor, there are **fundamental** issues which must be assessed by the wood floor experts.

1. Is this a suitable site for the installation of a timber floor ?

- A. Sites which are **below grade** or at the bottom of very elevated grades where there is significant “run-off” from above, unless there is very adequate site drainage etc, may **not** be a “suitable” site to install timber floors.

Competent and honest contractors will occasionally need to advise a client that their project is more suited for a ceramic tile installation, rather than a conventional wood floor situation.

Alternatively

Such sites may be considered “acceptable” for the installation of “*High Quality*” “**ENGINEERED**” Wood Floor or a Laminate Wood Floor system laid over a possible combination of liquid **waterproof membranes** and **secondary vapour proof barriers**.

SUB FLOOR MOISTURE TESTING

All competent wood floor experts own and daily use “*High Quality*”

- **Concrete moisture testing** equipment
- **Timber moisture testing** equipment.

All such equipment requires regular checking / testing and “**certification**” to confirm correct calibrations of the equipment.

Both concrete and timber sub floors need to be tested and assessed for **moisture content**, prior to the commencement of any wood floor installation.

All moisture test records should be permanently recorded as a “**site record**”.

The number of tests taken and their “*uncorrected*” and “*corrected*” values must be only “logged”.

ASSESSMENT OF POUROSITY

As many concrete structures are formed of **“pumped” concrete** and / or treated with **“chemical curing compounds**, it is vital that adhesive systems are not “compromised” by the presence of “waxes” or “chemicals” that will **reject** the proper establishment of a **“sound bond”** between timber and sub floor.

The process of “flicking” droplets of water around on a clean concrete sub floor, provides a ready assessment of how “porous” the surface is, **or** if water droplets “bead” on the surface of the concrete and do not rapidly penetrate the surface, then this is a clear indication of potential “contamination”, that must be **“dry”** ground by “diamond” grinding to remove.

I need to emphasise the use of **dry** grinding, as it is **essential** that the pour structure of the concrete sub floor is not “choked” by concrete **“slurry”** which is exactly where one needs to drive an **adhesive bond**.

CONTAMINATED RESIDUES

“WARNING”

Experience has shown that in the re-establishment of water damaged floors in “typical” insurance work, very often subsequent **“failures”** disclose incompetent removal of **contaminated** adhesives from around installations that have **not** been completely removed during the “sub floor preparation” process.

Contractors need to take note, that the “cutting of corners” could cost you, your house !

LIQUID VAPOUR PROOF MEMBRANES

Dependent upon site conditions, concrete moisture test procedures, porosity of the slab and the **“high end”** nature of the wood floor installation, there is often “wisdom” in the application of a **“high quality”** two (2) coat, two (2) pack epoxy vapour proof membrane being deployed.

- a) As long as the “liquid membrane is “checked” as being **“compatible”** with the adhesive system, a much greater depth of penetration in the adhesive bond is also possible due to the viscosity of the liquid membrane.
- b) This membrane is usually a very small **“insurance policy”** when compared to the “high value” nature of many up-market projects.

A word of “**WARNING**”

Proper “curing” of all coats, (1st & 2nd) of your “**liquid membranes**” is **essential** for quality performance results. Do not “**rush**” the process.

SUB FLOOR LEVELS

The **tolerance** and **levels** of your sub floor are **fundamental** to the establishment of a “quality” wood floor system.

If the **foundations**” for your floor are not right, then everything installed over that sub floor will be compromised.

It is therefore **essential** that your sub floors are “checked” by using a **3 metre straight-edge**.

Sub floor tolerances for the installation of **any** wood floor system **must not exceed** 3 mm anywhere under a 3 metre straight-edge.

Note

The use of a theodolite (dumpy level) and / or “laser level” will tell you what the tolerance is at certain datum points on a survey.

*However, the **only** instrument that will tell you what happens **between** these plot points is a 3 metre straight-edge which every competent floor layer and / or floor inspector, must possess.*

If sub floor tolerances exceed 3 mm anywhere under a 3 metre straight-edge, floor installation should **NOT** proceed until remediation work to adjust “levels”, has been undertaken and if necessary **DRIED !**

ADHESIVE SYSTEMS and TECHNIQUES of INSTALLATION

Consumers need to be aware that today, the wood floor industry has access to some exceedingly outstanding adhesive systems and liquid membrane technology.

However, there are still contractors who are installing wood floors using **water emulsified P.V.A.** adhesive systems !

The difference in nett savings to a contractor using a “cheap” adhesive compared with “recommended” waterproof polyurethane adhesives can be as much as \$10 - \$12 m² plus GST.

Competent wood floor experts today use waterproof polyurethane adhesive systems, often in concert with a “compatible” liquid membrane system.

When used effectively, these adhesive systems are capable of establishing extraordinary bondability to both timber and concrete sub floors in the securing of “*High Quality*” wood floor systems.

Be aware, that it is not **only** the **type** of adhesive system that is used, but the **quantity** of the adhesive used, the **method** of application and the “**bedding-in**” process, that all go to achieving competent and professional results.

INCOMPETENT INSTALLATION TECHNIQUES

Regrettably, over recent years, since Government policy has enabled totally unskilled, untrained people to jump off a boat and enter the wood floor industry, there has been a significant increase in **wood floor failures** and expensive **litigation**, largely caused by “**sloppy**” workmanship.

The majority of those failures can be categorised in three (3) main areas.

- a) A “**little-dab-will-do-you**” adhesive techniques.
- b) Skimping in the **volume** of adhesive used and applied with the “correct” notched trowel, spread with effective “**pressure**”.
- c) Failure to properly “**bed**” wood floor systems **into** the adhesive bed.

To enlarge upon the above **techniques** we advise the following information:-

- a) A “**Little-dab-will-do-you**” Adhesive Use

When manufacturers specify use of quality adhesive systems, (such as waterproof polyurethane) they **all** require a **full trowel bed** of adhesive, spread with a “notched” trowel.

For “most” floors this is generally a trowel with a 5 mm “square” notch separated by 5 mm of “square” metal from each successive notch.

Adhesive is meant to be trowelled over the sub floor with “**pressure**” such that the adhesive system is forced into the “pour structure” of the sub floor.

In recent years, an inspection of “**failed**” floors has revealed a use of adhesive in which a few “**dollops**” of adhesive are placed upon the **back** of a board, which are then placed onto the floor.

This **technique** is not approved by any adhesive or wood floor manufacturer and is a **“technique”** or installation **“method”** which must be **“outlawed”** before other unsuspecting consumers suffer serious loss through **“failed”** floor installations.

b) **Skimping on Volume of Adhesive Used**

Using the correct **“brand”** of adhesive is only one part of the equation.

If the **“right”** adhesive system is not trowelled on, using the right **volume** of adhesive film and **“set-up”** with the right type of adhesive **“ridges”** to enable the selected wood floor product to be properly **“bedded”** into the adhesive systems, then the correct **“bond”** and **“establishment”** of the floor will not be achieved.

“Drumminess” / “Lipping” / “Cupping” / “Curling” / “Movement” and Squeaks” are all phenomenon often associated with **insufficient** or **ineffective** use and application of the adhesive system and / or not **“Bedding”** the wood floor system into the adhesive film.

c) **Failure to properly “bed” Wood Floor Systems into the adhesive film**

Methods and techniques of installing parquet flooring are particularly **“specialised”** due to the **geometry”** with which parquet patterns are established.

With the massive resurgence of demand for an exciting range of both **Wood Block Parquet, Custom Classic Panel Floor Parquet** and **“Hand-Made”** panels, many of which are very intricate in design and / or are copies of floors throughout the palaces of Europe, have seen many more **“new comers”** seeking to break into the very specialised field of Parquet Floor installations.

Most parquet floors are **multi-directional** laid floors.

For this reason, they offer distinct advantage for use in any **“High Humidity”** site, as a well installed floor may literally reduce expansion and contraction co-efficiencies within a floor by as much as 50%.

Recognising that **all** wood floor systems are in a continual state of **“movement”** as timber gives-off and up-takes moisture from the atmosphere on a daily basis.

The physical size of the individual elements within a Wood Block Parquet floor can vary significantly.

For example, the size of a typical **“standard size”** block of parquet is 260 x 65 x 19 mm as might be installed in a Typical and Herringbone floor.

However, with an increasing amount of **European** Wood Block Parquet and Panel floor construction, parquet products increasingly being used throughout Australia, there is a significant **increase** in skill level required to install such floors.

- Because most of these floors are of “low moisture content” production and one **MUST** understand a number of uniquely technical tricks in being able to “successfully” manage the installation process of these materials.
- As block size increases, so does the **skill** and **discipline** required to correctly and professionally establish such floors to ensure that half your floor does not end up “drummy”.

Recognising that half the science of “**bonding**” is also the establishment of “**suction**”, it is absolutely essential that installation techniques establish a “**bedding-in**” process by which every individual element of the floor is **pressed** into or **hammered** into the adhesive bed, or you **will** have excessive floor “movement” and “druminess”.

The correct method of installation of a “typical” wood block parquet floor requires the placement of blocks into fully formed trowel bed of “ridged” adhesive approximately 12-19 mm away from adjacent blocks, before **pressing** and **sliding** each block into place against adjacent block already laid into the floor.

The action of **pressing** or **sliding** allows the block to roll over the adhesive “ridges” and flatten them across the full face of the sub floor, while achieving a small bead of adhesive at the base between adjacent blocks such that there is a timber-to-timber bond between each and every block in the floor and between timber and sub floor.

The underside of every properly machined wood block parquet element will have “**glue-grooves**”.

These grooves are not “warping grooves” they are “**glue-grooves**”, and they are there to allow any excess adhesive to roll into those grooves, during the **pressing** and **sliding action** of bedding every wood block element, firmly into the adhesive bed.

Any block which is correctly “bedded” into the floor in this manner will be difficult to remove from the floor, even immediately, due to the action which will have been achieved by application of the correct “**installation technique** or **method**”.

Regrettably, with many “johnny-come-lately’s” being released into the industry by unregulated Government sanction, there has been a significant increase in complaints about the “**drummy**” nature of newly installed parquet floors, by people who have had no experience and little or no training in the essential elements of being able to competently install parquet floors which should last the life of the building.

Increases in **block size** only exacerbates this type of problem.

The “standard” size in Australian production of wood block parquet is “typically” 260 x 65 x 19mm.

While other sizes are possible, in Australia, anything other than “standard” constitutes a “custom made” special production order.

However, with EUROPEAN manufactured wood block parquet, “standard sizes” include the following options:-

260 x 65 x 19 mm

390 x 65 x 19 mm

400 x 80 x 19 mm

600 x 100 x 19 mm

and larger

What should be “obvious” to any logical person is, that the **larger** the block, so the greater, the **care** and **attention to detail** in ensuring that such larger blocks are also, “**fully bedded**” into the correctly prepared, adhesive bed.

When making your decisions, please place **quality, competence** and **integrity** at the top of your shopping list.

When assessing a contractor, ask plenty of questions, don’t believe all that you are told, and “check out” their track record before you place a noose around your own neck.

WARRANTY OF THE WHOLE TRADE PACKAGE

NWFAA has often issued “**warnings**” against the practice of breaking-up elements of the Wood Floor Trade.

Through long experience at seeing people go through the litigation process, please recognise that when someone supplies the wood, someone-else installs, and someone-else sands and finishes the work. You the consumer have absolutely **ZERO WARRANTY** of the most foundational part of your home, your floors.

Long experience has shown that everybody runs for cover and says “**it’s not my fault, it’s theirs**”, and invariably, we see the home owner left to carry the can.

Accountability must embrace every aspect of the trade from the sub floor up, or you do **not** have a warranty on this most vital part of your residence.

CURING OF “ADHESIVES” and “SETTLING”

As noted above, wood is “hygroscopic”, giving-off and taking-up moisture from the environment “daily”.

Regardless of whether or not any wood floor system was “**acclimatised**” or not, NWFAA strongly advises against the sanding and finishing of **any** wood floor system prior to a 7-10 day curing of adhesive system and “settling” period.

TYPES OF FLOOR COATING SYSTEMS

Over recent years there have been some extraordinary advances in surface coatings that are available on **some** wood floor systems.

However, you need to do your research.

Remember, we live in an age in which, and by large, “**you get what you pay for**” !

Some products can look great but don’t perform - **WHY ?**

Well the answer to this question can be many-fold, but generally broken into two (2) distinct categories.

- A. **Pre-finished** Products
- and
- B. **Site-finished** Products

In this document, our primary focus is to offer advice to all parties on competent use of quality materials to enhance the quality and performance of exciting wood floor systems that (if installed correctly), can be just “**stunning**” !

Allow me just to say, that in relation to the **pre-finished** wood floor market, some of the 7 and 8 coat German polyacril finishes, that even in “**high wear**” commercial situations are still delivering outstanding performance in after more than 20 years of stiletto heels and very heavy traffic (probably the equivalent of over 300 years in your home).

SITE FINISHED COATING

Here again there have been some exciting developments in floor coating technology, but the coating systems available for **pre-finished** systems are different from the type of coatings used on **site-finished** work.

NWFAA are quick to point out that the advice that we offer, might often be different to what you may be advised by others. **Why !**

Most contractors undertake work to make money. So the advice offered is often “tempered” by what might put more money into a contractors pocket, rather than what might deliver YOU the best long-term outcome for your project.

So you need “wisdom” !

Firstly, with regard to any site-finished, mechanically bonded (T&G) timber floor system, regardless of what the manufacturer might publish on his product, **NWFAA strongly** advises against the use of **any** polyurethane coating system on any T&G floor.

WHY ?

Because all polyurethane coating systems have the potential to “**edge-bond**” which is the phenomenon that when your wood floor wants to “move”, most usually during winter months when your home has its lowest level of “humidity”, the **welding power** of the coating will bond your T&G boards together, such that when movement takes place, it can either tear the groove off the edge of boards or actually tear boards clean in half.

With **parquet** flooring, where-ever there is no T&G joint, you can apply almost any coating system, but we advise against any **2 pack technology**.

WHY ?

Because all two (2) pack technology tends to be much more **inflexible**. As wood moves, we require coatings which are more “**flexible**”!

NWFAA strongly recommends the use of **only** “*High Solid*” oil **based** finishes on any **T&G** wood floor system.

Here one has the ability to choose from a range of excellent products.

The importance of this advice is to cause people to comprehend the importance of floor finishes that allow your floor system to “**move**”.

Quality oil based systems will prevent and avoid typical “edge bonding” problems.

Good quality **oil based** systems are available, that will perform similar to polyurethane coatings and are just as simple to “**maintain**”.

These systems also **include oil modified** systems which provide for:-

1st Coat **Penetrating Oil**

2nd Coat **Surface Oil**

3rd and any subsequent coat an **Oil Modified System**.

Note:

Oil modified systems are a **combination** of oil and polyurethane, but are **restricted** in their use to **only** be applied as **top coat** applications over **base** coats of penetrating oil that will guarantee against **“edge bonding”**.

As the top end of this market, are the **new generations hard wax oil systems** out of Europe, which, instead of being applied as a **minimum** 3 coat application of finish (as are traditional coating systems), these products are **“wet burnished”** into the timber in small patches at a time where men are on **“wet oil”** with electrical equipment **wet-burnishing** those oils **into** the wood (rather than as a **surface** coating sitting on top of the wood).

The beauty and the unbelievable performance of these types of finish, really do need to be seen to believe.

These are the same systems used on airport terminals in Sweden and Norway where people are on these floors with ice and snow.

These floors, if **set-up correctly** and **“maintained” correctly**, can be floors that may never need to be sanded ever again.

Should a “scratch” or similar ever occur, a quick rub with a tiny amount of **“maintenance oil”** and your scratch has disappeared.

Please make enquiry of these types of finishes, before you allow anybody to put **their** selection of finish on your floors.

CURING OF COATING SYSTEMS

NWFAA is strong in pointing out to consumer's, **honest** technical advice.

Unfortunately, many consumers take advice from their contractor, who regrettably is providing advice influenced by this income, and not necessarily, your best long-term interest.

Therefore, we offer the following advice:-

In recent years, the use of **water based polyurethane coating systems** have rapidly penetrated the wood floor market.

Some of these systems are very, very, good products.

However, what many floor sanding & finishing contractors will not tell you, is that often times, this allows them to come and slap 3 coats of finish on your floor in one (1) day, put their hand out and take your money, and say **“don’t walk on the floor for 2 days”** !

The problem that the average consumer does not recognise is, that **all** coats must be **fully cured**, before applying additional coats or you are wasting your time and money.

Depending upon the size of the job, the **geographic location**, the **“humidity”**, **time of year**, **general weather conditions**, it might be possible, that if one coat is applied to a **raw** timber floor early enough in a morning that a second coat might be intelligently possible the same day.

However, competent floor sanding and finishing contractors might then **skip** a day to allow for proper curing and drying, before applying final coats.

What needs to be understood is this.

The greater **number** of coats, the more time that every base coat requires to **dry** and **cure** before additional top coats are applied.

Now, while “water based polyurethane coats” may be excellent technically, no matter who manufacturers the coating system, **all** water based coatings go on **much thinner** than conventional **solvent** based coating systems and the experience of many in NWFAA considers the application of **five (5)** coats of “water based technically equivalent in longevity and performance to 3 full flood coats of a quality *“high solid”* solvent based system.

But remember, we do not advise the use of **any** polyurethane system on **any** floor that has a T&G joint (mechanically jointed floor).

Apart from intelligent assessment of individual site conditions and current weather patterns that might dictate, what, when and how the works might proceed. However, many coats of decorative finish might be applied, the following advice might be useful:-

- A. Stains and finishes (such as “liming”) will add to both construction **time** and **curing** times.

Individual contractors have a responsibility to provide sound advice in this regard.

Please respect that there is usually a “sound” reason for providing such advice as often, *“High Solid”* coatings applied too soon over stains and custom finishes can cause the stains and finishes to **“pull”** and / or **“bleed”**.

- B. To avoid “ghosting” occurring in your floors, it **essential** that **strict discipline** be maintained such that **No One** , for **any reason**, step as much as a toe on a floor from the time that the sanding and finishing process commences, until at least 48 hours after the application of final coats and processes.

“**Ghosting**” is a phenomenon of where foot prints can commence to appear in your floor, just like a photograph being developed by U.V. light up to 2 years after the successful completion of a project.

NWFAA advice then says:-

No-one on the floor for minimum - 48 hours.

No-one with street shoes minimum - 7-10 days.

Full Cure on any coating system - minimum 4 weeks.

Alpine regions and “high humidity” sites will take longer than 4 weeks.

Clients are encouraged to regard their floors as “**green**” until “full cure” is achieved.

Rugs and similar floor coverings should not be placed **prior to full cure**.

FLOOR PROTECTORS

The use of good quality floor protectors under furniture is also an intelligent provision.

Best floor protectors are generally made in either Sweden or Canada and allow your furniture to “glide” upon your beautiful timber floors.