TRADE AND CONSUMER GUIDELINE

Use Of Fillers In Wood Floors

Purpose of this Guideline

The purpose of this guideline is to review the situational requirement for filling of wood floor surfaces and inter-board gaps prior to, or during the process of, coating with a protective finish.

It will also review the types of fillers used and offer advice.

Applicable references are:
Australian Standard AS 1693 section 2.5
National Timber Development Council – Timber Strip Floors, Fixing and Finishing
Timber Flooring Association of SA Inc – Technical and Consumer Guideline on Quilting

When is filling conducted?

The two areas of when filling is generally a normal part of the process, and when filling is an option with associated risks are reviewed.

As a normal part of the process

- Filling of punched nail holes
- Filing of borer or other insect damage to surface
- Dislodged knots
- Surface chips or indentations
- Minor surface scratches and cuts
- Surface irregularities from sanding process
- End mismatch
- Small splits around nails
- Parquetry and direct stick flooring to reduce ‘quilting’ of certain coating types

As an optional part of the process

- Larger inter-board gaps (e.g. often applicable to old floors that may have had carpet previously installed); typically over 1.5 mm wide.
- Where a appreciable damage is evident (e.g. old floor with impact or cut damage)

Types of Fillers

Many different types of fillers are used including:

- Purpose made timber putties, caulking compounds and fillers (must be oil free for use with floor coatings). Most of these are supplied in timber colours.
- Purpose made products all contain clay, talc, whiting, silicate or some other fillers, and have a binder that may be acrylic, alkyd or other material.
- 'Home brew' mixtures are used by some installers that may include: cornice cement, plaster, often dosed with a binder such as PVA adhesive, and may have wood buffing dust from the floor mixed in to assist colour matching

However, persons filling floors should be mindful of the following regarding non-'designed for purpose' fillers.

- Certain materials are used for filling gaps in floors that are not recommended by the manufacturers of those products (eg Agnews Water Putty) for that application. If filler related failure occurs, mainly from shrinkage or compressive failure from floor movement, the filler manufacturer of non-recommended application products that may have been used, assumes no responsibility or liability for the 'misuse' of their product.
- The same applies to 'cocktails' especially those made from cornice cement and such. The person using hose products assumes full responsibility for the performance of that 'cocktail'.
- It is always the official recommendation that any gap fillers used should be designed by the manufacturer as 'fit for purpose'

A Filler is required to perform the following

- Fill in a hollow (eg punched nail hole) or correctible defect
- Have a reasonable working time and dry time
- Be compatible with the coatings applied over it
- Be of an average colour to the timber species it is applied to (some timber species can vary considerably in colour – an option to use various colours on the one floor may be considered)
- Minimal, low or consistent colour change with floor finishes.
- Not brittle or crumbly when sanded
- Will not dislodge when sanded
- Have minimum shrinkage
- Flexibility and extensibility so as to accommodate a degree of inter-board gap increase or decrease (filler in compression) without cracking or compressing out of the gap.
- Adhesion to all timbers
- Ability for all finishes to adhere to it, so as not to create fracturing of coating with timber expansion or shrinkage.

Note. Fillers will change colour, often to varying effects, depending on coating types applied over them

Methods of applying Fillers

Neat Fill

Fillers are applied neat in situations where maximum fill and minimum shrinkage is required.

This would include larger surface repairs and nail hole filling.

Method of applying is usually with a putt knife, scraper or hand apply.

Trowel Fill

'Slurry', 'trowel' or 'flood fill' applies to diluting the filler into a low viscosity form by adding water or other diluent

This form of filling is conducted to fill a larger floor area where typically numerous small gaps exist.

This form of filling is conducted to reduce unsightly 'quilting' (a gap 'surface tension condition) and small gaps between adjacent boards.
It may also be used on some open grain timbers (eg from a peeling process) to provide for a flatter surface.

Method of application is usually with a squeegee or other spreader tool.

As a general rule, the greater the dilution of the filler, the greater the after-dry shrinkage.

When to apply Fillers

No hard and fast rules apply but industry good practice is considered to be;

Nail holes and surface imperfections.

Punch nails to approx 2 mm below surface and fill all holes with a filler colour that best represents the timber colour when coatings are applied (this latter point is very important). Press in neat filler with finger or thumb or putty knife and wipe off or scrape off excess.

Surface imperfections are treated the same way via use of neat material pressed into the imperfection. Excess is scraped or wiped off.

Filling prior to sealer coat is desired for the timber face. Applying filler in between coats can result in dulling of the finish or sinking of the finish into the filler.

Small inter-board gaps

Flood filling of very fine gap floors (typically less than 0.5 mm) is common practice to reduce 'quilting' of Solventborne finishes, or to give a more continuous surface with all types of finishes.

This also applies to cork flooring and glued or snap lock floating floors.

Larger inter board gaps (including end matching)

For 'direct stick' floors (includes parquetry) or 'plank on ply' constructions where very little floor movement is likely, flood filling of larger gaps up to 1.2 mm is known to occur with satisfactory results.

However, better results of less likelihood of dislodging in sanding or future life are best achieved by using undiluted neat filler into such gaps in direct stick or plank on ply constructions.

For batten-supported flooring, joist supported flooring or secret nailed floors where a higher degree of floor movement is to be expected, filler dislodgement in service is more likely especially where gaps are over 1.5 mm in width.

For old floors where large gaps are evident and often sub-floor ventilation does not meet modern building codes, filling of gaps over 1.5 mm poses a high risk of filler dislodgement and related issues and is not recommended without prior discussion with premises owner.
If premises owner wishes the large gap filing to go ahead after the explaining of the risk, the contractor should obtain written waiver against future filler related failures.

Note that this waiver will have a challengeable standing in Law if non-manufacturer approved filler systems are used by the contractor.

Common Filler Related Issues

Colour match

- Due to the at times major differences in timber board colour of certain species, an average colour should be used. Premises owners must accept that where timber colour varies, then a degree of mis-match of filler to timber colour is unavoidable.
- Filler colour will change with coatings type. It is usually the sealer coat that influences the filler colour (fast dry sealers and waterborne coatings will tend to lighten the filler, solventbornes tend to darken it, but exceptions can occur. The contractor should evaluate the influence on filler colour of the coating and filler combination they intend to use. This is readily conducted on test pieces.

‘Dulling’ of coating over filler

This is usually too high an absorption and usually observed with ‘cocktail’ fillers of high absorbency.
In this situation of high filler absorbency, there may also be a depression or distinct hollow of the coating into the filler.
‘Quilting’ of later applied coats can occur at shrunken filler depressions due to ineffective between coats sanding of this recessed area.

Timber movement related failures

- A well designed wood filler will possess a degree of elongation and compressibility. High timber shrinkage may lead to inability of the filler to accommodate the increasing gap and a distinct gap can occur. This may be a ‘staggered gap’ and the coating may well crack at the gap.
- Board expansion from moisture uptake will compress the filler. Again, the more brittle the filler, it will crush and push up from the closing gap. The coating will probably separate in this situation. This coating separation may appear as a blister or as a distinct crack and peel, sometimes extending some distance into the adjoining timbers.

Disclaimer

Australian Specialty Waterborne Coatings Pty Ltd the manufacturers of Enviropro Polyurethane's, assumes no responsibility for the use of the above advice. It is provided in good faith from knowledge if industry practices. Filler manufacturer's advice for a specific product supersedes any advice given herein

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