

## Introduction

This information sheet outlines reasonable owner expectations for an onsite sanded and finished timber floor. This includes solid T&G flooring, parquetry and other flooring types that have been sanded and finished onsite or recoated. Concerning this, there are performance aspects of the floor which generally relate to fixing integrity, board shape and movement, and then there are appearance aspects which focus more on the sanding and finishing.

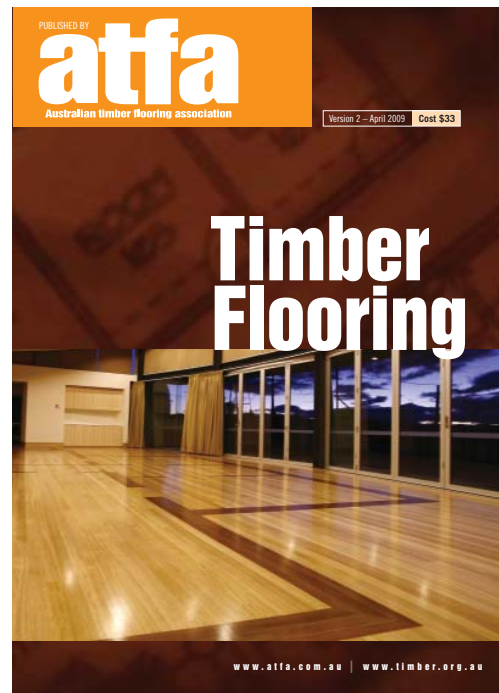
Although an imperfection free floor is the desire of any tradesperson, it is the process of installation and finishing where the environment and other conditions cannot be fully controlled that moves the completed job to one that is 'normal' and of an industry accepted standard. This however is not to say that the completed floor won't be of a high standard and well suited to its purpose as a floor which is to be walked on, but it does acknowledge that the finished product will not be the same as fine furniture and that due to seasonal influences and heating and cooling, that some movement reflecting the nature of timber will occur.

Concerning the installation of the floor, the provisions are outlined in either the ATFA publication 'Timber Flooring' (2009) or specific manufacturer recommendations for their products. The sanding and finishing of timber floors is covered by AS 4786 – Timber Flooring – Sanding and Finishing along with a general description of the process provided in 'Timber Flooring'.

## Floor Performance

### Even board surface

There are some conditions that affect the surface of the boards and these should not generally occur in timber floors. However, floors exposed to heat sources after occupancy (e.g. no curtains, fireplaces, vents from appliances, houses closed up for extended periods) may cause movement in the flooring resulting in effects such as gapping. Similarly, changes that affect the conditions beneath a floor can also result in board movement and shape changes resulting in cupping. It should be noted that the actions or inaction of owners and builders can contribute or even cause these effects to occur. Therefore it is beneficial for flooring contractors to make builders and owners aware of aspects that could affect their floor and that any concerns that the builder or owner has, be brought to the attention of the flooring contractor at an early stage. Product choice, particularly in terms of board width will also influence movement after installation, with wider or thin boards often being more prone to some cupping and gapping in a dry internal environment. The conditions defined below should however not normally occur in a floor and if they do, remedial work is often necessary.



**Cupping** – boards with their edges higher than the centre of the board. Moist conditions beneath a floor can cause cupping and heat in a specific location or a very dry environment above the floor can also cause boards to cup. Cupping is more likely to be observed in overlay flooring and in wide standard thickness boards. To some degree a small amount of observable cupping may occur in some locations where these types of flooring are used (e.g. sun exposed floor).

**Peaking** – This has the appearance of cupping but is the result of expansion pressure in the floor. Again it is generally expected that a floor would be free of observable peaking.

**Tenting** – This is not acceptable and occurs when the adjoining edge of two boards has lifted above the level of the adjacent flooring. This is often associated with high moisture beneath the floor and can be from a number of other causes.

**Buckling** – This is not acceptable in a floor and occurs when a section of flooring containing a number of boards has risen above an adjacent section of floor.

**Crowning** – boards with their edges lower than the centre of the board. This is not acceptable and occurs when a cupped floor from moisture effects has been prematurely sanded. Crowning may not become apparent until some months after finishing.

### **Gapping at board edges**

Gaps at board edges do not necessarily constitute a problem with a floor and simply reflect seasonal changes in weather conditions. Shrinkage gaps between boards may average 0.75 mm for an 80 mm wide board floor during drier times of the year or dry internal conditions. For wider boards, proportionally wider average gapping can be expected. Therefore owners of wider board floors need to be more accepting of gaps as this simply reflects the natural response of timber. Some gaps will be larger than the average and others smaller, however the appearance should generally indicate gapping between most boards. An appearance can be expected that is free from irregularly spaced wide gaps across the floor associated with edge-bonding (the finish gluing groups of boards together). The provision of expansion gaps as part of the installation process and evident throughout the life of the floor is acceptable.

### **Vertical movement at T & G joints**

Flooring is manufactured with the board tongue narrower than the groove. This is necessary so that boards will fit together during installation. When floor boards are laid over joists or battens, some differential vertical movement may occur between adjacent boards when there is foot pressure on an individual board. This is due to the clearance between the tongue and the groove. The clearance should not exceed 0.6 mm to comply with AS 2796 Timber – Hardwood – Sawn and milled products, but with this tolerance movement will be observable.

### **Squeaking**

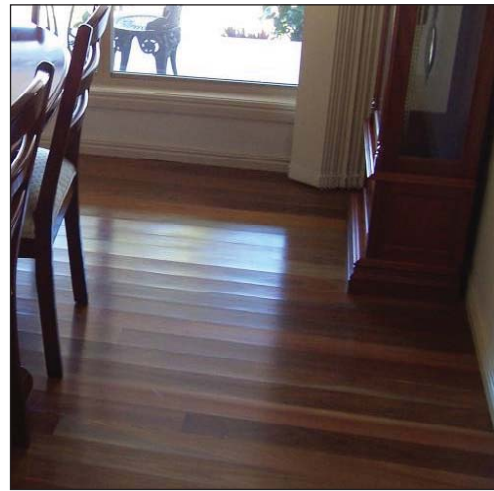
A small amount of noise can be expected from most timber floors when walked on. Noises can occur from movement of one board edge against another or from boards moving on nails. A floor is often more noisy during drier weather due to loosening at the joints. A floor that squeaks excessively requires remedial action.

### **Indentations**

Timber strip floors can be expected to show some indentations depending on the hardness of the species used, variation in density, volume of traffic and type of foot ware worn. Softer timber will indent more readily than harder timbers.

### **Drummy Spots**

When timber floors are laid direct to concrete slabs, drummy sounds can occur under some boards. When there are a limited number of instances associated with one or two boards in some areas of the floor, and no vertical movement when pressure is applied, remedial work is unlikely to be required. Refer to ATFA Information Sheet No. 6 Hollow Sounds.



*Observable peaking*

## Acceptable Floor Appearance

### Timber Colour, Grade and Species

Within a single species the colours and colour variation can be quite pronounced and can differ markedly from one floor to another. It is also possible that a limited number of boards of different species but similar in colour and character will be present in some floors and this should not be cause for concern. Through grading errors or when a floor is sanded, it is also likely that some features will appear or be a little larger than the grade description. There is however generally a clear difference between a floor that is of the incorrect grade and a floor where grade limits have been exceeded in some boards. Such floors where the grade description is exceeded in some boards should also not be a reason for concern. Refer to ATFA Information Sheet No. 5 Floor Colour and Grade.



*A select grade Blackbutt floor where the backsawn gum vein toward the top right exceeds grade limits but is acceptable within the floor.*

### Board lengths and distribution in the floor

Board lengths are generally a minimum of 900 mm long when laid on joists or battens. When laying over a structural sub-floor the minimum length may be shorter. Where possible end joints should not cluster together or align. Generally, only one end joint should occur in a group of three boards between floor joists. In the case of glue fixed flooring, it is preferred that end joints be a minimum of 300mm from end joints in adjacent boards.

### Sanding

The sanding process involves hand controlled equipment and due to this there will be some evidence of the sanding process in the floor. It can be expected that the floor will be fine sanded and that edging will not result in scalloping. Similarly it can be expected that corners will be scraped to an even surface and sanded to provide a fine surface. As such sanding marks in the timber should not be visible from a standing position. Generally, the viewing angle for assessment should be 45° from the eye to the floor.

At times there can be vibration that occurs which may be induced by the sanding machine or the sub-floor framing. Although this vibration can lead to chatter marks in the floor, it would be usual to expect a floor free of chatter marks.

With the re-sanding of an older floor it must also be recognised that the sanding process will not remove existing deep cuts or damage and that stains may also not be removed if they have penetrated deep into the timber.

### Nail Holes and Filling

Unless otherwise requested, all flooring nails are to be punched below the surface and the nail holes are to be filled. With solid T&G flooring it can also be expected that any gaps at board ends will also be filled. Filling at board edges is generally not recommended except for parquetry where flood filling is to be undertaken and in some instances with direct adhesive fixed floors. When one colour of filler is used, that colour should match the darker tone in the boards as with time the contrast generally becomes less.

### Coating and Finishing

A floor is subject to much heavier wear than furniture and although a good quality finish can be expected, the same finish quality to furniture should not be expected. There are a number of imperfections that are likely to be present to some degree in a finished floor and the degree to which they occur, where they occur and the presence of other imperfections, will determine their acceptability. When assessing the appearance of a floor it is to be done from a standing position and the floor should be viewed at an angle of about 45°. Common imperfections present to some degree in floors are outlined below.

**Dust and debris** – A degree of contamination in the final coat is unavoidable and will vary from one site to another being dependent on a number of factors such as draughts, heating and ventilation systems, insects and the like. It can be expected that the contractor will take reasonable measures to minimise the risk of contamination and that at job completion there will not be heavily contaminated areas in the floor that are obvious when assessing the floor.

**Swirl marks** – Swirl marks are caused by rotary sanders and to some degree will be present in all floors. Down lights will highlight sanding imperfections due to light refraction through the coating and as such this is not controllable by the contractor. Fine swirl marks that are not obvious under natural light when assessing a floor should not be a concern.



*The photo to the left shows circular swirl marks that are visible under down light. The photo to the right shows the same section of floor in natural light without the down lights on and the swirl marks are not visible.*

**Coat levelling** – Rejection, orange peel and quilting all relate to unevenness in the coating resulting in either a mottled effect or in the case of quilting discontinuity across joints. If instances are isolated, minimal in nature and not in areas frequently viewed then remedial work is unlikely to be necessary.

**Delamination** – Separation of one coating from another or from the coating to the board should not generally occur in a floor and in such instances remedial work is necessary. Minor delamination due to movement at board joints or ends can occur and provided it does not progress, remedial work is unlikely to be necessary.

**Gloss variation** – Differing conditions in the dwelling at the time of curing can result in gloss variation. Although consistency can be expected at the time of a particular application, some variation may be apparent between areas when finished at a different time. Gloss variation within a room particularly with satin finishes usually requires remedial work.

**White lining** – When gaps appear at board edges the stretching of the bridged coating can cause a white line to appear at board joints. Unless severe this conditions requires no remedial work.

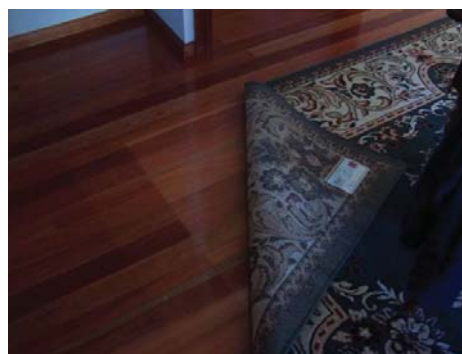
**Lap and roller marks** – Some finish systems are more prone than others and should lap or roller marks occur, they need to be minimal in number and not able to be observed from all directions, to be acceptable.

**Edge bonding** – Some finish systems can act as an adhesive and bond board edges together. With shrinkage in the floor, wide irregular spaced gapping and splits in boards can occur. Only minor edge-bonding resulting in small gaps at board edges is acceptable. Frequent splits and wide gaps are not acceptable.

**Ghosting** – Lighter toned boot and foot prints can occur in floors 6 to 18 months after the floor has been finished. In most instances the source of the mark cannot be identified and in most instances not likely to be associated with the sander and finisher. Re-sanding and finishing may correct the problem and a compromise between parties is often necessary to resolve the problem.

### **Colour Changes to Timber and Coating**

Over the course of time colour changes occur in timber floors from the effects of ultra violet light. Therefore it is usually more pronounced in sun exposed areas of the floor. This is partly associated with the changes in the timber and partly with the coating that is applied. Some coatings darken with time more than others and some timbers are more prone to colour changes than others. This process is natural and gradual but can result in distinct colour differences where rugs have been put on the floor. Some of this change can be minimised by not putting rugs down till six or so months after the floor has been completed. To avoid severe effects it is beneficial for flooring contractors to make clients aware of how the coating used may result in colour differences. From there it is up to the owner to manage how rugs are used.



*Colour change of timber and coating beneath this floor rug.*