

## Introduction

Timber floors are often directly fixed with adhesive over a concrete slab and it is not uncommon when walking on a floor to hear a hollow sound from some boards when walked on. This is often referred to as being a drummy board in the floor. Due to these areas not sounding as solid as other areas of the floor, owners often have a concern that the adhesive has 'let go' and that this could spread across the floor. The reality is that many floors have some drummy boards and this does not necessarily mean that there is a problem with the floor.

## The concrete slab and adhesive fixed floors

Concrete slabs are finished with trowelling machines sometimes referred to as helicopters. These machines create a very smooth surface, however slight undulation of say 3 to 5 mm are present. The variations are normally not visible by looking at the slab but can be seen soon after completion or after rain when small puddles are visible. Timber flooring adhesive manufacturers allow for these slight variations by recommending the use of notched application tools that provide an adhesive height that is normally 5mm or greater. This ensures that when adhesive is correctly spread, low spots in slabs have sufficient adhesive. Some adhesives are also of the foaming type and the expansion of the adhesive during the curing helps to provide a consistent adhesive layer between the slab and board. Enough adhesive is generally spread to cover 3 or so rows of boards and adhesive is generally spread at 90 degree to the direction



of the flooring being laid. Flooring is bedded in place and pinned or weighted down until the adhesive is fully cured. Timber flooring adhesives used in direct fix applications are generally moisture curing polyurethanes and these remain with some degree of flexibility, allowing the floor to expand and contract during seasonal relative humidity variations.

## Why are drummy boards present?

Due to the slight irregularities in slabs there will be areas where the adhesive thickness is greater than in other areas. In addition to this the application thickness of the adhesive may differ beneath the boards. These are some of the reasons for drummy sounds that occur when some boards are walked. Board shape changes after installation and prior to sanding can also cause some stretching of the adhesive and for the sound to differ from such boards. As an example of this, if boards are cupped due to say a water leak onto a floor, then the edges of the boards that have lifted will often sound drummy but the centre will not. In such instances the adhesive has stretched at the edges but the adhesion is still sound across the full width. It is apparent from this that in many instances where there is increased movement between the board and the slab, which will be quite small, drummy sounds may occur.

## When are drummy sounds a concern?

The occasional drummy board in a floor, with up to about 25% of the board area sounding hollow, are not considered a concern provided there is no vertical movement at board edges. In such instances there is no need to do anything about them. However in some instances where hollow sounds are extensive over the floor or a group of adjacent boards are drummy, this can indicate poor adhesion which may be associated with the fixing of a timber flooring or sub-floor. Where drummy sounds are more localised and there is vertical movement under foot pressure, then this too requires further investigation. In such instances the adhesive bond is likely to have been compromised and remedial work is likely to be necessary. This may only necessitate some small holes being drilled through the boards and injecting an adhesive, however in severe cases board replacement may be necessary. Where more extensive work is required aspects such as the provision of adequate expansion allowance, the condition of the sub-floor and any possible effects from moisture ingress should be checked.



## Drummy sounds in other floors

You should also be aware that drummy sounds occur in other types of floor installation. The most common of these being floating floors where the flooring is often clipped together and not fixed to the sub-floor. Such floors have a naturally drummy sound throughout. Flooring that is adhered to an acoustic underlay can also sound drummy and in this instance it may be associated with acoustic underlay and slab. When timber floors are fixed to battens over a slab, undulations in the slab or swelling of the timber can cause the batten to lift slightly, resulting in a small gap between batten and slab. In such instances drummy sounds can occur. It is important to realise that drummy sounds need to be assessed but often they do not constitute a problem with the floor.