

When installing a solid T&G timber floor directly over a concrete slab, moisture vapour barriers may be applied, particularly where there are concerns that current or future moisture vapour transmission from the slab could affect the timber flooring above. Many of the moisture vapour barriers on the market are roller applied water based epoxies and these are often used when slab moisture assessment is toward or a little above the recommended limit for timber floors. In other instances where there are possible concerns of future moisture migration through a slab, they are also being used. During the installation of the floor it is often necessary to perforate the moisture barrier with nails to hold the boards in place while the adhesive cures. This may be temporary or permanent and may also include holding temporary flooring clamps in place. This information sheet outlines what needs to be considered when perforating moisture vapour barriers with fixings and has been prepared following testing undertaken by a number of moisture vapour barrier manufacturers.

What does a moisture vapour barrier do?

When we talk about moisture vapour barriers it is important to understand that when we are referring to vapour, it is the invisible moisture that is present in air. We are not talking about liquid water. However, if this moisture vapour (which is measured as relative humidity) is too high beneath a floor then it will cause the flooring to absorb the moisture from this source and may result in cupping and other expansion related problems. It is also important to realise that moisture vapour barriers are not 'water proofing membranes' and they will allow a small amount of moisture vapour transmission through them. The timber floor, even with finishes applied, also permits moisture vapour to pass in, out and through them. That is why we have seasonal movement in timber floors. What is important is that the timber flooring can allow this moisture vapour transfer at a much faster rate than that which may occur from the concrete slab.

What happens when a moisture vapour barrier has fixings going through it?

When a fixing is put into a slab and the moisture vapour barrier is perforated, you would expect that there would be some leakage of moisture vapour around the fixing and if the fixing was removed then there would be even greater moisture vapour transmission. This is true, but the question to be answered is how much is too much. Figure 1 provides an indicative diagram of the effects of moisture

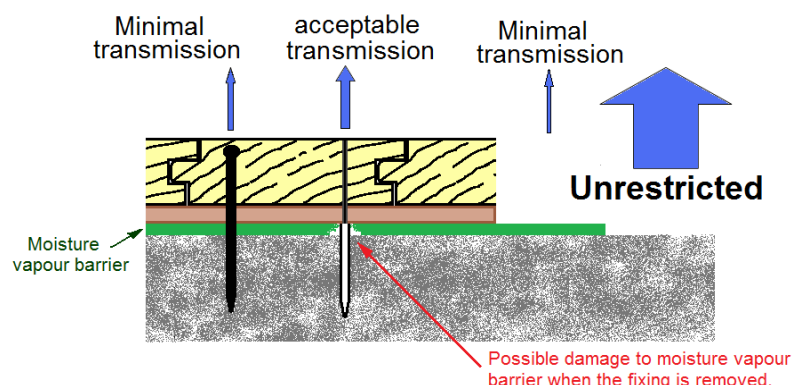


Figure 1 – Effect of fixings through moisture vapour barriers

vapour transmission through moisture vapour barriers that have perforations from fixings. It should be noted that when a fixing is removed there will generally be some damage to the moisture vapour barrier. Hence the practice of leaving fixings in place where possible is preferred.

What needs to be considered when fixing through moisture vapour barriers

It must be recognised that there are often product limitations with moisture vapour barriers and specific installation instructions. It is the contractor's responsibility to be aware of such limitations and that the moisture vapour barrier must be installed strictly in accordance with the manufacturer's instructions.

Slabs that are drier naturally present less risk from moisture vapour transmission and it is recommended that all slabs be at or near the recommended levels for timber floors over concrete slabs, prior to the use of moisture vapour barriers.

Consideration must be given to the effect on damage to the moisture vapour barrier if temporary fixings are removed. Damage can expose a much larger area than the hole size of the fixing. For this reason it is best to leave fixings in place. If temporary fixing is used with clamps or similar this may mean grinding them off flush with the sub-floor surface. It is necessary that nails are vertical as angle fixing, as would occur with secret fixing, invariably chips the concrete surface and moisture barrier.

Where companies have undertaken testing it was considered that up to ten fixings of a diameter of 3 mm to 4 mm per square meter would not significantly affect the performance of the moisture barrier or the timber flooring above. As such, provided the manufacturers' recommendations are complied with in all respects, this number of penetrations should not affect the manufacturers' warranties. This is the case with those companies that undertook testing. To ensure the warranty is maintained, confirm with your moisture vapour barrier supplier that this applies to the product being used.

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