

TIMBER FLOORING AND UNDERFLOOR HYDRONIC HEATING

Timber floor coverings are used extensively with hydronic underfloor heating throughout Europe, Asia, USA and New Zealand without problems provided simple guidelines are followed.

Most wood floor suppliers in New Zealand have an aversion to heated floors that is unfounded. However, there are some suppliers that embrace the technology and offer assistance to customers with heated floor requirements. The fact is that wood floors have movement whether there is underfloor heating or not. Also, the sun coming through windows heats wood floors to a higher temperature than underfloor heating.

There are two main issues to be aware of:

1. How much heat will get through the floor?
2. Will the timber floor crack or deform when heated?



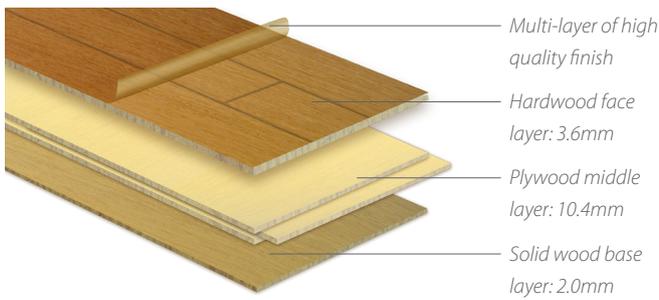
How much heat will get through the floor?

Thick wooden floors will reduce the amount of heat passing from the heated slab underneath to the room above. Flooring of more than 20mm thick is not recommended. From a heating point of view, the thinner the better.

EXAMPLE: R VALUE OF ENGINEERED HARDWOOD THICKNESS (MM) R VALUE

Floating floor pad membrane	3	0.04
Engineered hardwood	16	0.11
Totals	19mm	0.15

It is better to have an R value of less than 0.15, which is that of 16mm engineered hardwood on a 3mm floating floor pad membrane.



ENGINEERED HARDWOOD

Will the wooden flooring crack or deform when heated?

The warping and splitting of timber floors is usually caused by the reduction in moisture content of the timber when it is in a heated room. The reduced moisture content causes the timber to shrink.

Uneven shrinkage of the timber can cause crowning or cupping. Solid wood flooring is more likely to deform than engineered hardwood flooring because of the variations in density and moisture content due to the natural grain of the timber. Cupping or crowning is also dependent on the direction of the grain and uneven drying of the timber, resulting in different levels of moisture content within a single piece of timber.

Kiln dried timber is usually around 12% moisture content and processed timber products such as MDF or plywood around 10%, whereas the timber on a heated floor will be around 6 to 8%. Engineered hardwood is often around 6%.

TO REDUCE MOVEMENT OF TIMBER FLOORING WITH UNDERFLOOR HEATING:

1. Acclimatise the flooring prior to laying by stacking it in the area to be heated, turning on the heating and letting the moisture content adjust to the temperature.
2. Use manufactured flooring such as an engineered hardwood that will already be at a low moisture content and is less likely to deform. (Preferred.) Most species of wood are suitable for this use.
3. Use a floating floor method with a membrane to lay the floor so that any unavoidable changes in moisture content causing the floor to contract or expand will not result in cracking. The membrane will stop any moisture from the subfloor being absorbed.

A general rule in the flooring industry is that the surface of the timber floor shouldn't be more than 27°C. The temperature of the bottom of the flooring will be higher and is dependent on the required heat output of the floor. Placing a rug over the heated floor can trap the heat and lead to higher than ideal temperatures, which can lead to warping.

Suppliers

Ekowood is a supplier of engineered hardwood floors in New Zealand that can guarantee their product when used with hydronic underfloor heating. View their products and services at www.ekowood.co.nz

You can also visit www.junckers.com for more underfloor heating-compatible timber flooring options.

Types of Flooring

ENGINEERED HARDWOOD

- Plywood core with hardwood face layer (see diagram at left)
- Alternate direction of the grain in individual layers means most resistant to movement
- Most suitable for use with underfloor heating
- Planks typically 14-18mm thick

LAMINATE

- High Density Fiber (HDF) core
- Photographic top layer mimics look of wood
- Planks typically 5-8mm thick

HARDWOOD

- 100% hardwood
- Planks typically 18-25mm thick