Insulating suspended timber floors

One of the most important issues with timber floors is their propensity for air leakage and draughts can be significant. Insulating a suspended timber floor can help raise the temperature of the floor and cut down draughts. This factsheet sets out the options.

❖ In general – above or below?

- Insulating on top of floor-boards is the easiest way to insulate a wooden floor.
- Floor insulation is however, most effective when placed under the floor-boards.
- It is very important to include a vapour proof barrier in any floor insulation work.
    - Warm air carries moisture and, as this passes through carpets or laminate floor layers onto a cold surface underneath, it will chill and condense, causing dampness.
    - To stop this, you must add a vapour proof membrane (vpm) **on the warm side** of the insulation. Most floor insulation products these days include a suitable membrane in the product but *do* check this before you buy.

❖ Insulating on top of floor-boards

- This is the easiest way to insulate a wooden floor.
- If you are laying a membrane or insulating panel products beneath carpets or laminates, carefully check the manufacturer's specification first. Most products need to be sealed with a suitable vapour proof tape around the edges, so make sure you have this also.

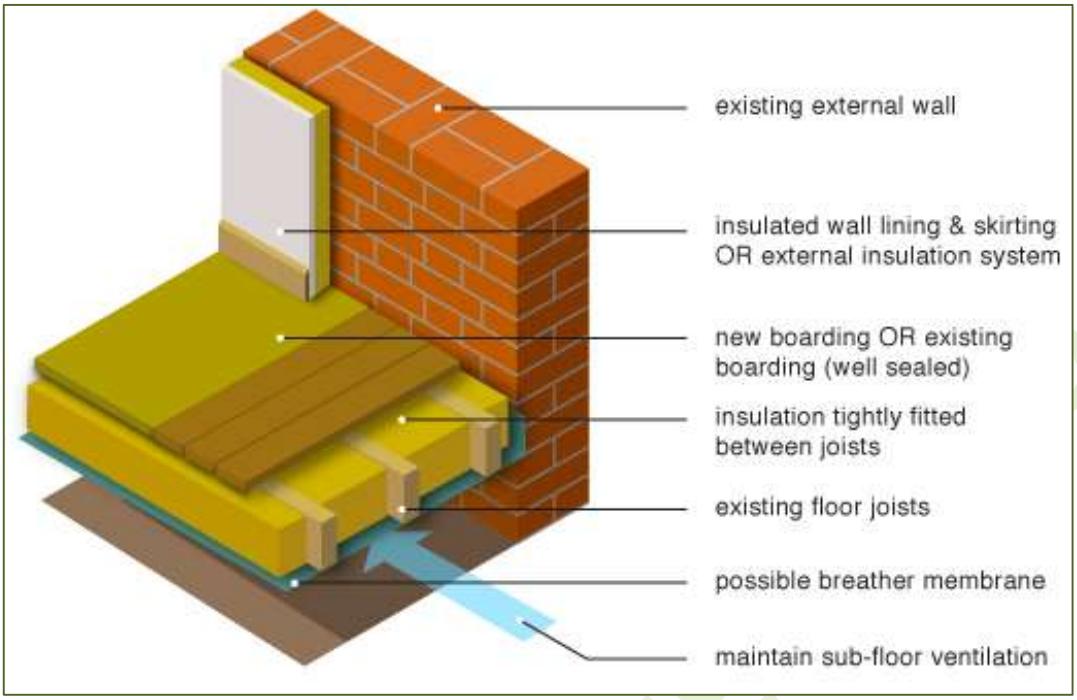
The Rural Community Energy Fund

This Project is supported by the BEIS funded Rural Community Energy Fund which is managed by the North East Yorkshire and Humber Energy Hub and administered by Tees Valley Combined Authority

Example of insulation under laminate floor and a thin flexible insulation product on a roll (image shows 6mm Palziv product)
Image courtesy of http://www.palziv.com/Thermal_insulation.html

❖ Insulating under floor-boards

- Floor insulation is most effective when placed under the floor-boards.
- Suspended timber ground floors can easily be upgraded if you can access the underside of the floor.
- If you can't get access under the floor (e.g., in a cellar) then you will need to lift the entire floor, which can be time consuming.
- For older floors, lifting the floorboards intact can be very difficult, as they tend to split and crack.
- A range of insulation materials can be fitted between the joists to make a quick and efficient contribution to reducing overall heat loss.
    - **Rigid slabs** can be friction fitted from above against nailed timber bearings to the sides of the joists
    - **Insulation quilts** can be installed upon mesh or netting to suspend between or fixed to the underside of the joists
    - **Blown insulation** needs to be contained by mesh or boarding beneath the joists.



General layout of underfloor insulation for suspended timber floors
Image courtesy of: http://www.greenspec.co.uk/building-design/ground-floor-insulation/

- Where old floorboards are re-laid or new ones installed, careful attention is needed to ensure that all joints between boards are adequately sealed.
- Insulation should be taken right up to the edge of the floor and any space close to the outside wall filled with insulation to avoid any gaps. Be sure to insulate between the last joist and the wall.
- Ensure that there are no gaps between the insulation and the underside of the floor.
- Insulate any water pipes, including central heating pipework.
- Provide a flexible sealant between the skirting and the floor finish to limit air leakage.
- Where polystyrene insulation is specified, ensure that it does not come into contact with PVC cabling.
- Maintain sub-floor ventilation (see Building Regulations Approved Document Part C for guidance).
- One of the problems of providing continuous ventilation to the underside of the floor, is that it can greatly restrict the efficiency of the insulation, particularly loose-fill and mineral fibre. One consideration might be to attach a breather membrane to the underside of the floor joists - but check first with local Building Control that this is acceptable.

- The insulation should not block the air bricks in the outside wall.
- A fire-resistant board should be used beneath the joists if the floor is above a garage or basement.
- If you are considering fitting a laminate floor, an easier alternative is to lay insulation on top of the existing floorboards, underneath the laminate.

Loose fitted rockwool

Friction-fitted rigid slab insulation

Version1.1
09/04/2021