



5 Star Fact Sheet for Timber Floors

5 Star homes can have timber floors

Since 1 July 2004, the introduction of the 5 Star Standard has seen all new homes in Victoria become more energy and water efficient, reducing greenhouse gas pollution and saving our precious water resources. By making the design changes to comply with 5 Star, all new homes in Victoria will not only save their home occupants money on energy bills but are more comfortable year-round, compared to the average 2.2 Star house built before the 5 Star Standard

5 Star homes are often built on suspended timber floors. Some misperceptions about whether homes with timber sub-floors can achieve the 5 Star Standard have arisen.

The fact is that well designed timber-floored homes can meet the 5 Star Standard. There are examples of 5 and even 6 Star Energy Rate timber-floored homes being built throughout Australia

This Fact Sheet provides information about the 5 Star Standard and the design changes that you should discuss with your designer and builder if you choose to build your new home on a suspended timber floor.

Achieving 5 Star compliance

From 1 September 2007, the building industry must demonstrate full compliance with the 5 Star Standard for all types of construction, including timber sub-floor homes. This means that all new homes in Victoria must fully comply with the national energy efficiency requirements of the 5 Star Standard. Accredited House Energy Raters assess the performance of new homes against the 5 Star Standard at the design stage.

To achieve 5 Star compliance all new homes must:

- Meet a 5 Star House Energy Rating for the building fabric; and
- Include either a rainwater tank for sanitary flushing or solar hot water system

Because 5 Star is a performance-based Standard, a wide range of options are available for homeowners, builders and designers to achieve the required House Energy Rating, irrespective of the building construction type.

Good design is the key to achieving a full 5 Star House Energy Rating.



That's why it is recommended that, at an early stage, you discuss design options with your architect, designer, or builder, who will be able to advise you on the specific changes, which will be required for a timber sub-floor home to comply with the 5 Star Standard.

Rating to a 5 Star Standard – with timber floors

New generation House Energy Rating tools provide additional design options to achieve the 5 Star Standard. Throughout Victoria over 1,000 House Energy Raters have been trained to rate new homes to a 5 Star Standard using a range of sophisticated software tools that are accredited under the national Building Code of Australia.

Independent research shows that 5 Star energy and water measures add just two per cent to the average upfront cost of building a house in Victoria. However, these upfront costs are offset in a short period of time. Research also shows that the average household will have budget savings with energy bills cut by about \$200 and water bills by \$50 each year.

Energy raters can give you a range of options to consider without compromising the design or having to change from a home with timber sub-floor construction. With good design, a home with timber sub-flooring should be able to achieve the 5 Star Standard for a reasonable cost and without major changes to standard construction techniques.

What is the best way to achieve a 5 Star energy rating using a timber sub-floor?

The process for achieving a 5 Star rating is very flexible, while there is no single formula for obtaining the required energy rating; a range of features can be used.

Most important of these are:

- Optimizing building orientation,
- Adding wall ceiling and underfloor insulation – a most cost-effective approach
- Attention to window type, size, positioning, and window shading

Of course, the approach to successfully design an energy efficient lightweight home with timber flooring will be different to the approach that works best for a design with high thermal mass, such as a double brick home on a slab floor. So be sure to ask your builder, designer or architect to explain what design features are needed for your timber floored home to comply with the 5 Star Standard.



The design options that are likely to be considered for a home with timber sub floors to reach the 5 Star Standard rest with good building practice such as minimising draughts where possible.

Typically, adding R3.5 in the ceiling and adding R2 in the wall insulation levels produces good energy outcomes. The Building Code recommends at least R1 additional insulation under timber sub-floor construction. A range of insulation products are available.

Good window design is crucial for 5 Star homes, particularly in the case of lightweight designs with timber sub-floors.

- To minimise heat uptake in summer, east or west facing windows need to be shaded from the summer sun with eaves or external blinds.
- For winter, a number of energy efficient options are available, including:
 - Thermally improved windows. This includes the choice of window frames used and/or the type of glass. Double glazing can dramatically reduce winter heat loss. It can also overcome the need to reduce window sizes, particularly for south facing windows.
 - Maximising north facing glass to help heat the home in winter. In summer it is useful to shade northern facing glass using design elements, such as pergolas or including external awnings.

The important thing to appreciate is that house designs have changed because of the energy efficiency requirements of the 5 Star Standard. New house designs may well look different to the poorly performing houses being built in the past, which only rated around 2 Stars.

Are some types of construction more suited to particular sites?

On a flat, no-flood prone site, either a concrete slab on ground or a raised timber sub-floor are good options. However, for both low lying, flood prone areas and sloping sites, raised sub-floors may provide a more appropriate option. On sloping sites, suspended floored building systems sit above the landscape, reducing the need for bulk site excavation, retaining walls and specialised drainage to control soil erosion. In low lying areas, raised sub-floors raise the occupants and their belongings above potential water damage levels.

There are many factors to consider when deciding which flooring system to use. The nature of the site can often influence the construction solution and materials selected. For example, is the site flat or sloping is it subject to flooding? It is recommended that you speak to your builder, designer or architect about the most suitable type of



construction for your home with respect to your building site to comply with the 5 Star Standard.

Do timber sub-floor systems provide any other benefits?

Raised sub floors (which are often timber) allow easy access for under-floor ducted heating, easier construction of split-level designs and greater adaptability for extensions.

Timber sub-floors are an attractive and practical option for homeowners and with good design a new home with this type of construction should be able to meet the 5 Star Standard.

The benefits of a 5 Star home

There are economic, social and environmental benefits of living in a 5 Star home, including one with timber sub-floors, such as:

- Using less energy for heating and cooling, which means installing smaller heating and cooling systems that cost less to buy and install initially
- Saving money on energy bills, reducing greenhouse gas emissions and water consumption and being more comfortable all year-round, in summer and winter
- 5 degrees warmer in winter and up to 10 degrees cooler in summer compared with the average new Victorian home before 5 Star took effect.
- Improved resale value.

Timber is a natural choice

Timber is a natural building material and recognised widely as having potential sustainability benefits.

Well designed timber floored homes can achieve the mandatory 5 Star House Energy Rating in a cost-effective way. When designed carefully, timber floored construction can deliver sustainability benefits that even go beyond minimum building regulatory requirements.



For further information

5 Star building regulations, visit the Building Commission website at www.buildingcommission.com.au or phone: 1300 360 380

Energy raters or design of a 5 Star house, visit the Sustainability Victoria website www.sustainability.vic.gov.au or phone: 1300 363 744

Plumbing regulations or water fixtures, visit the Plumbing Industry Commission website at www.pic.vic.gov.au or phone: 1800 015 129

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