



## Workplace and Health Benefits of Timber

Timber is a natural and renewable material used widely in building construction and fit-outs. International research has shown that using timber in buildings can contribute to healthier homes and more productive workplaces. Timber is a natural insulator which, with proper design, can reduce heating and cooling costs and result in more comfortable living and work environments. In addition, using timber has many intrinsic benefits for the health and wellbeing of building occupants, including reduced stress levels and improved air quality.

### Timber as a Natural Insulator

Timber is a natural insulator. Small air pockets in the timber's cellular structure create a natural barrier to heat and cold. With good design, this natural property can be used to enable buildings (houses or workplaces) to better regulate their internal temperature. Lightweight insulated timber buildings stay cool in warmer climates because timber transfers heat and allows heat to escape. In colder climates, where internal heating is required, insulated timber frames can retain heat and contribute to a warm environment. Timber can be combined with other thermal mass products, such as masonry materials, to optimise passive solar design. A timber framed house with a masonry feature wall exposed to sunlight will warm up during the day and radiate heat at night which can be retained by insulated timber frames. This natural insulating property increases the energy efficiency of the building, and reduces costs for the occupants. In comparison, aluminium and steel are building materials that conduct thermal energy rather than insulate; buildings using these more thermally conductive materials typically require more energy to heat and cool.

### Quick Facts

1. Due to its natural insulation properties, timber reduces internal heat gain in summer and loss of warmth in winter.
2. Timber can store and release moisture, which helps to regulate humidity and air quality in an indoor environment.
3. The natural visual appeal of timber in the workplace helps to lower blood pressure and stress levels.
4. Adding natural elements, such as wood, to our workplace environments is associated with increased feelings of wellbeing and higher productivity. A survey of Australian workers in workplaces with exposed timber have higher levels of satisfaction, concentration, improved mood and productivity (Pollinate, 2018).

## Health Benefits

Use of timber in buildings can provide many health benefits for users and occupants. Timber helps to regulate humidity and improve air quality because of its ability to absorb, store, and release moisture depending on the ambient air moisture content. This helps to prevent rooms becoming too humid or dry which can affect the health and productivity of occupants. Low humidity dries out and irritates nasal passages and sinuses which is uncomfortable and lowers occupants' resistance to colds, flu and other nasal infections. Alternatively, high humidity can increase the presence of moulds and dust which can cause illness and trigger symptoms in those who suffer from asthma and allergies (Planet Ark, 2017).

Timber is hypoallergenic because it traps less dust than soft materials like carpet, making it more suitable for those with allergies and asthma. Timber has better acoustic performance than hard surface materials, absorbing more sound, preventing loud echoes and creating a more pleasant, less aurally stressful environment (see Figure 1).

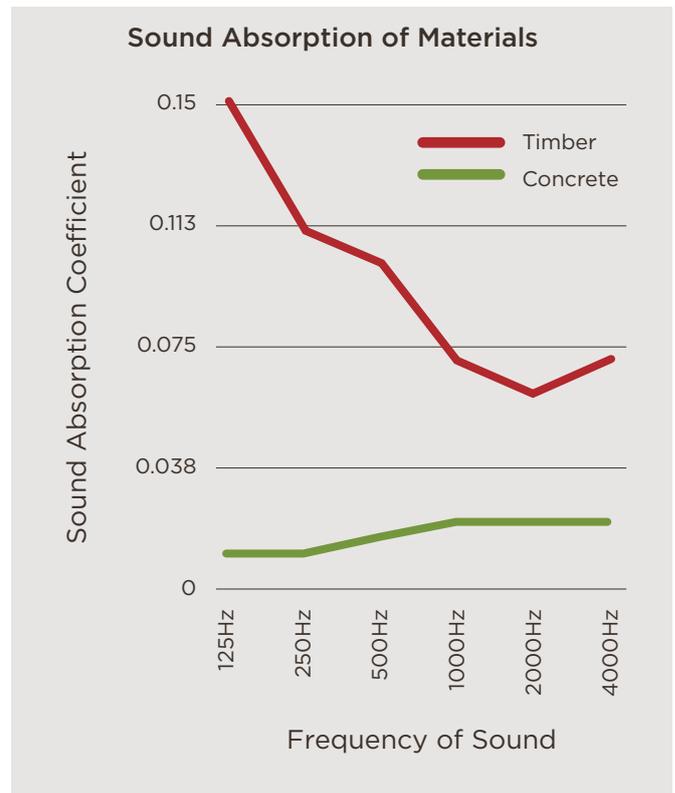


Figure 1 Sound absorption capabilities of materials (Image courtesy of Edge Environment, with data from Acoustical Surfaces Inc (2017))

## Case Study — Marist College Bendigo, Montagne Centre

The Montagne Centre was designed to have strong connections to the surrounding natural wetlands. It was constructed of rammed earth and timber, with piers out over the wetlands to bring teaching out into the environment. The building is thermally efficient and provides many flexible open spaces, with movable

partitions. The principal of Marist College has noted that the students who work within the building have been noticeably calmer which is attributed to the connection to nature that the building has through location and the use of timber and other natural materials.

Figure 1 Montagne Centre at Marist College in Bendigo (Image courtesy of Marist College Bendigo). Architect – Y2Architecture, Photographer – Press1 Photography



Achieving optimal between-room acoustic performance when using timber construction, however, requires good engineering and acoustic design.

### Timber and Workplace Satisfaction

Along with the physical health benefits of timber, people psychologically find the natural visual appearance of timber calming which can result in reduced blood pressure, lowered stress levels and improved emotional states for occupants. This effect is enhanced with the use of real timber over imitation wood (Planet Ark, 2017). A 2018 survey of 1000 indoor Australian workers provides evidence to support 'biophilia' - the principle that exposure to nature increases human wellbeing (Pollinate, 2018). **The study found that the more nature looking wooden surfaces workers could see from their workstation, the higher their workplace satisfaction and wellbeing.** Over 80 per cent of workers (82%) exposed to eight or more wooden surfaces in their workplace reported being 'satisfied or very satisfied' with work, compared to over two thirds (69%) exposed to five to seven wooden surfaces and half (53%) with no wooden surfaces.

### Further Reading

Acoustical Surfaces Inc, 2017. *Sound Absorption Coefficients*. [Online] Available at: [www.acousticalsurfaces.com/acoustic\\_IOI/101\\_13.htm](http://www.acousticalsurfaces.com/acoustic_IOI/101_13.htm)

Arch Tool Box, n.d.. *R-values of Insulation and Other Building Materials*. [Online] Available at: [www.archtoolbox.com/materials-systems/thermal-moisture-protection/rvalues.html](http://www.archtoolbox.com/materials-systems/thermal-moisture-protection/rvalues.html)

Association for Learning Environments, 2015. *Montagne Centre, Marist College Bendigo*. [Online] Available at: <http://a4le.org.au/awards/2015-awards/2015-vic-chapter-awards/vic-2-new-construction/-/new-individual-facility/montagne-centre,-marist-college-bendigo>

Planet Ark, 2017. *Wood, Nature Inspired Design*. [Online]. Available at: [www.makeitwood.org/documents/doc-1501-wood---nature-inspired-design-report-final.pdf](http://www.makeitwood.org/documents/doc-1501-wood---nature-inspired-design-report-final.pdf)

Pollinate, 2018. *Workplaces: Wellness + Wood = Productivity* [Online] Available at [www.woodsolutions.com.au/wood-at-work](http://www.woodsolutions.com.au/wood-at-work)

Think Wood, 2013. *Wood and Indoor Environment*. [Online] Available at: [www.thinkwood.com/our-ceus/wood-indoor-environment](http://www.thinkwood.com/our-ceus/wood-indoor-environment)

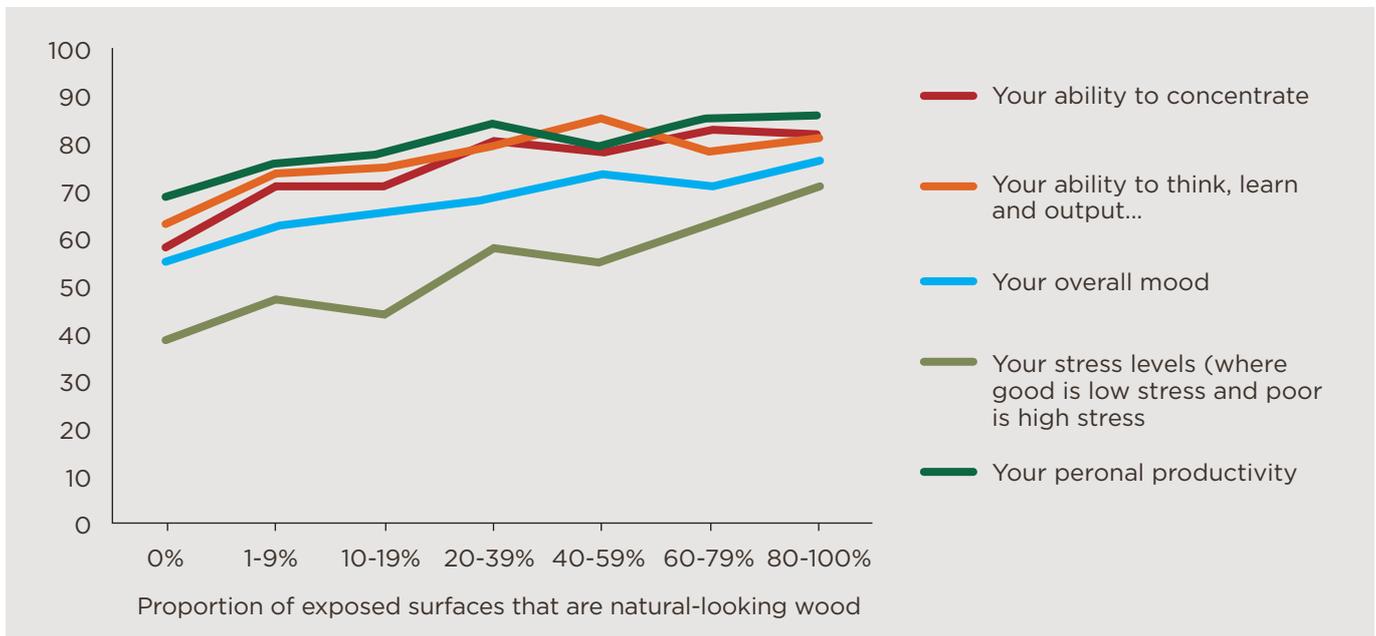


Figure 2 Productivity, concentration and mood by proportion of natural looking wood surfaces. (Pollinate, 2018)

