

Introduction

Since the early days of European style building construction in Australia, timber floors have been a common feature in houses and public buildings. Conventional construction methods used the timber floor as an integral part of the building's structure.

Timber floors provide the basic walking surface in the building and increasingly they have provided an attractive feature in a home or entertainment venue, when they are polished to highlight the characteristics of the timber.

The attractive finish of any polished timber floor can be diminished in a number of ways including—

- Heavy foot traffic in only some areas of a floor, resulting in a “worn pathway”.
- Careless movement of furniture leaving drag marks.
- Chair legs which provide a very small load bearing area.
- Stiletto heels which can cause a great deal of damage to all types of flooring, even very hard timber species.



Stiletto heels will indent all timbers and related products

In most cases, appearance is the main consideration on which the selection of flooring species is made. Appearance is influenced by colour, amount of feature, general character, width of the boards, size of the room, direction of lay and the finish applied.

While many of our Australian hardwoods are rated as Very Hard or Hard, there are many Moderately Hard Australian species that provide an attractive and durable feature floor. Therefore, for most household applications, a species with a hardness rating of Moderately Hard will be appropriate.

For some heavy use applications greater consideration should be given to selecting a species of appropriate hardness to suit the application. The selection of a hard timber species can provide improved resistance to indentation and abrasion but it must be considered that most timbers are highly suitable as a domestic floor and aspects other than hardness will often govern the choice.

When choosing a soft species, which is often done to meet the specific character of a dwelling then additional care is necessary to prevent indentations such as the removal of certain foot ware. In other instances the indentations are seen as part of the character of the dwelling and not of concern to the owner.

One further point of importance is that finishes **do not** improve the hardness of the floor surface.

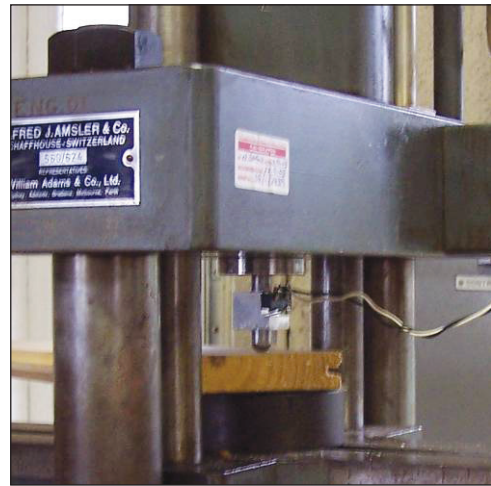
Janka Hardness Testing

The *hardness* of timber is not directly related to how hard or easy the timber is to work with various tools, but is a measure of the resistance of the wood to indentation. The hardness figures most commonly used are those obtained from the Janka test.

The Janka test is a standard test which measures the force (kN) required to press a steel ball of 11.18 mm diameter into the test specimen until the ball has penetrated to half its diameter.

There are Janka hardness figures available for many common species. The figures are for side grain and represent an average for tangential and radial surfaces. As some of the figures are based on only a small sampling, they are not appropriate for making fine distinctions between species. There are 2 sets of figures, one for “green” or freshly felled timber and one for seasoned or dried timber as you would find in timber flooring – i.e. timber with a moisture content of 12%.

In some species the hardness of younger growth material can also be much lower than mature timber of the same species, but this varies from species to species.



Janka hardness testing

Because the figures are not appropriate for making fine distinctions between species, species are generally rated as—

- Soft
- Moderately Hard
- Hard
- Very Hard

The table below provides some examples of species hardness ratings.

Very hard	Hard	Moderately Hard	Soft
Spotted Gum	Brushbox	Messmate	Radiata Pine
Red Ironbark	Tallowwood	Mountain and Alpine Ash	Araucaria (Hoop)
Grey Ironbark	Stringybark	Tasmanian Oak	Kauri
Blackbutt	River Red Gum	Victorian Ash	White Baltic
New England Blackbutt	Rose/Flooded Gum	Shining Gum	Western Yellow Pine
Forest Red Gum	Sydney Blue Gum	Manna/Ribbon Gum	Rimu
Turpentine	Southern Blue Gum	Myrtle	Teak
White Mahogany	Jarrah	Blackwood	
Gympie Messmate	Karri	Cypress	
Grey Box	Marri	American White Oak	
Forest Red Gum	Kwila/ Merbau	European Oak	
Wandoo	Northern Box	European Ash	
Brazilian Cherry	Kempas	Maple (Rock/ Sugar)	
Jatoba		Hevea	

Hardness of non solid timber flooring products

In addition to solid timber flooring products there is engineered flooring, laminate flooring and bamboo.

Engineered flooring generally has a solid timber face lamella of approximately 3mm in thickness on the upper exposed surface, it is sold as this timber species and the hardness of the product relates to that species. As such the hardness categories in the table above apply. There are a limited number of products where the upper lamella is much thinner and in such instances the core timber will influence the hardness.

Bamboo flooring is available as a laminated product (vertical and horizontal) as well as the strand woven product. In terms of our categories above the laminated products would be regarded as hard and the strand woven product as very hard.

Laminated flooring is constructed with a melamine coating over a hardboard core. With these products there is usually an ‘Abrasion Class’ associated with them which relates to their overall wearability and suitability from domestic through to commercial applications.