

Resene ProSelect Technical Information

Timber Staining

Timber stains and coloured coatings can effectively alter the colour of natural timber and provide a range of aesthetic effects to complement building architecture. Stains and colours also reduce the amount of light that reaches the timber surface, thereby reducing the amount of light-induced colour change in the timber itself. The most effective stains/colours will reduce the amount of UV light transmitted in addition to absorbing some visible light, which is important since the higher energy UV light is responsible for the majority of timber colour change.

There are many different materials for colouring timber and coatings and they have varied effects when it comes to shielding the timber from light. Dye stains typically do not offer much protection from light and often are not colour stable themselves, which leads to additional colour changes. Pigment-based stains are generally much more colour fast, especially those based on metal oxide pigments (yellow and red iron oxides and titanium oxide – white) and carbon blacks. In addition, these pigments are excellent at absorbing UV light, which reduces the rate of light-induced changes occurring at the timber surface. In most coatings, pigments are used to completely block light from reaching the substrate, however for timber floors normally the timber is a feature and will remain visible or partially visible. This of course means that light will be able to reach the timber surface and cause colour changes, so timber stains and coloured coatings will only be partially effective at reducing light-induced timber colour changes.

The colour of the coating or stain determines which wavelengths of **visible light** reach the timber surface **but not the amount of UV light**. Reducing the amount of shorter wavelengths (the higher energy blue and violet wavelengths) passing through the coating will reduce the rate of colour change for some timber species. Red, yellow and brown coating/stain colours absorb these shorter wavelengths and will provide more resistance to colour change for timbers of similar colour to the stain. Blacks absorb all wavelengths of visible light, so provides some protection and whites scatter all wavelengths, which also provides some protection since some of the light is scattered away from the timber surface. The amount and physical size of a pigment particle determines the actual amount of light reaching the timber surface with, for any particular pigment, more intense colour equating to greater protection. Since blacks tend to be intense in colour, the amount used in floor coatings is not high, therefore the protective effect is limited.

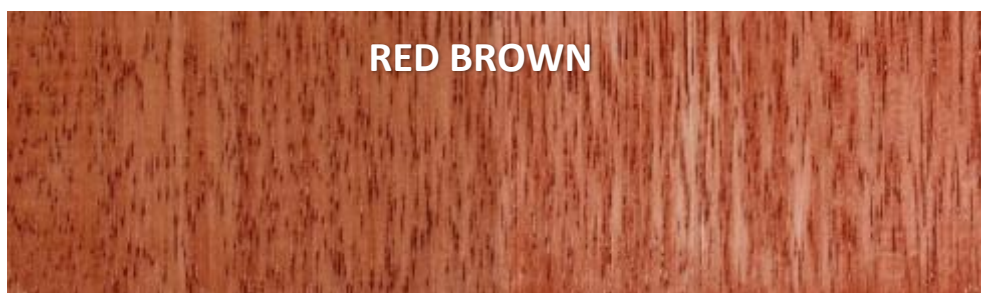
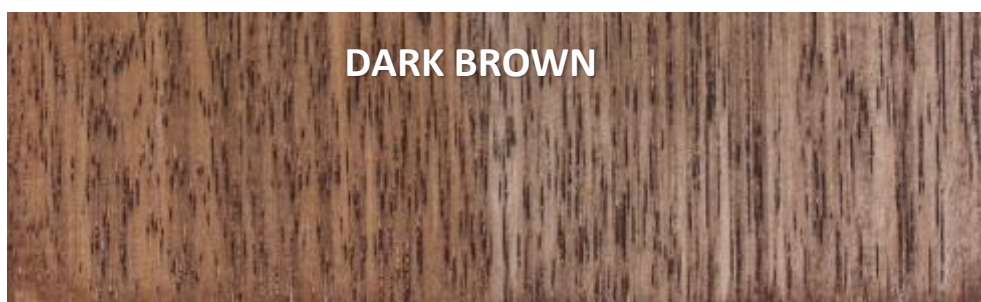
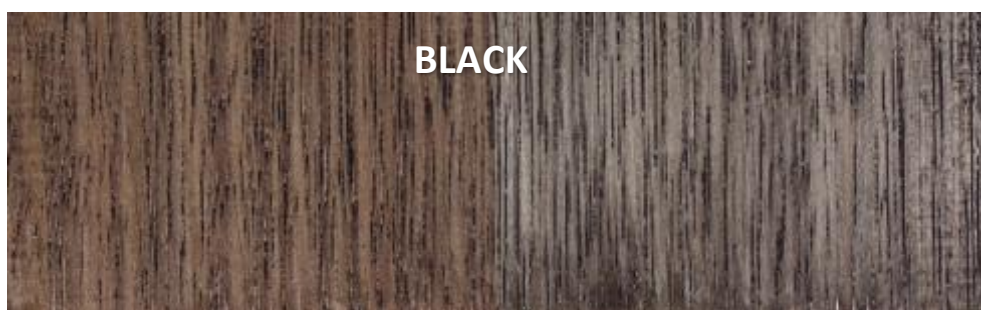
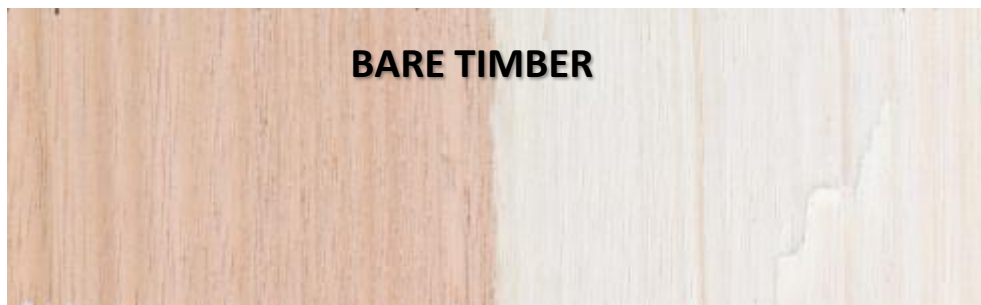
Use of non-coloured UV light absorbing materials in coatings (Resene ProSelect for example) also decreases the rate of timber colour change but does not provide protection from colour change due to visible light. Used in conjunction with coating/stain colours these non-coloured UV light absorbing materials are very effective.

Using the Resene ProSelect Stain Colour Concentrates and the Resene ProSelect Stain Base, colours can be mixed and matched to achieve a large range of colour tones and effects.



Resene ProSelect Stain – Colour Concentrates

The below ProSelect Stain samples have been applied to sanded Australian Oak (aka Victorian Ash/Tasmanian Oak) by the rag wipe method. The left hand side is bare natural and the right hand side has been bleached before staining.



Whitewash effects are possible by colouring the Stain Base with the White Colour Concentrate and the addition of small amounts of the Black Colour Concentrate provides Greywash and fumed effects depending on the amount of Black used. Examples of a Whitewash and Greywash applied to Australian Oak (aka Victorian Ash/Tasmanian Oak) are shown below including the higher contrast effect available by bleaching the timber prior to staining (left = natural timber, right = bleached timber).



The effect of timber staining varies with timber species and timber porosity, even across the same floorboard, and the application method plays a major role in determining the final colour effect. To illustrate this the images below show the same stain colour (Dark Brown) applied to a light coloured plywood by different methods. Note - for waterborne stains the final colour cannot be seen until the water has fully evaporated from the timber surface.



Rag on



Rag on 2 applications



Brush on/rag off

IMPORTANT NOTE: Due to the variations that can exist it is advisable to test colours and effects on the same type of timber to be coated and using the same application technique before making final colour selections.