

Resene

Coating Technologies



ProSelect

Blending System

Technical Information

April 2018



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The ProSelect INDEX

Section	Subject	Page
1.0	General Overview	1
2.0	Data Sheets – Base & Cure	5
3.0	Mixing Charts	9
4.0	Data Sheets – Additives	13
5.0	VOC Chart & Information	21
6.0	Gloss Level & Charts	25
7.0	Performance Test Results	31
8.0	Timber Colour Change	41
9.0	Timber Bleaching	51
10.0	Timber Staining	57
11.0	Sports Court Line Marking	65
12.0	Applied Static Pressure Limits	69
13.0	Caring for your floor	73
14.0	Your Notes	79



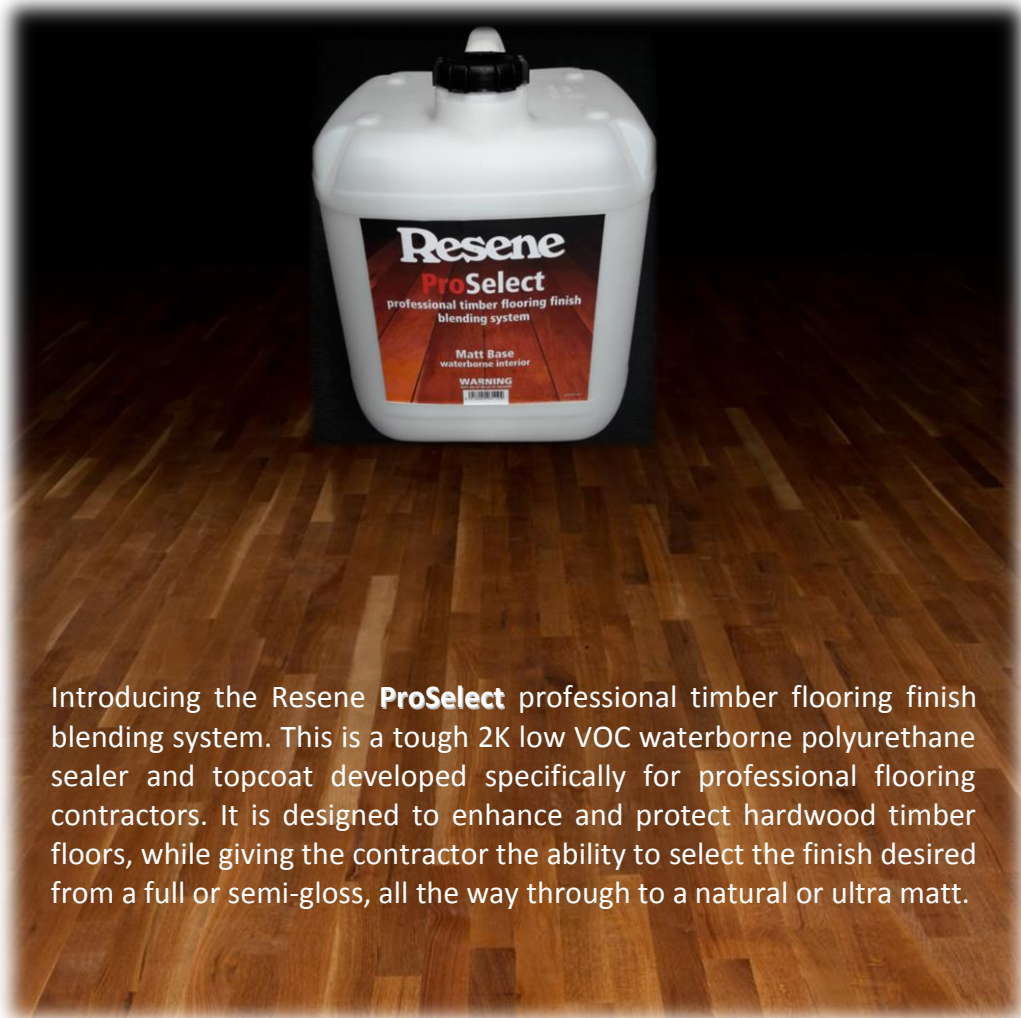
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Section 1.0

General Overview

ProSelect

professional timber flooring finish



Introducing the Resene **ProSelect** professional timber flooring finish blending system. This is a tough 2K low VOC waterborne polyurethane sealer and topcoat developed specifically for professional flooring contractors. It is designed to enhance and protect hardwood timber floors, while giving the contractor the ability to select the finish desired from a full or semi-gloss, all the way through to a natural or ultra matt.

This then gives the contractor freedom to select any finish they wish, with just the minimum of components.

This system was developed and is manufactured in New Zealand. Extensive testing and site trials with professional flooring installers and coaters/finishers were carried out to ensure suitability and ease of use, while also reducing costs and wastage.

Application was made to the Australasian Timber Flooring Association (ATFA) for Product Compliance which we received in July 2017 and proudly display.

We actively promote the ATFA in all its endeavours and strongly encourage all Professional Flooring Contractors to join as members of a profession that should be held in high regards.

For more information and up to date data please visit

www.resene.co.nz/proselect

Section 2.0

Data Sheets – Base & Cure

Resene ProSelect Base & Cure (2K System)

The Resene ProSelect Blending System is a tough 2K low VOC waterborne polyurethane sealer and topcoat developed specifically for professional flooring contractors that is designed to enhance and protect hardwood timber floors while giving the contractor the ability to select the finish desired from a full or semi-gloss all the way through to a natural or ultra matt.

Physical properties

Vehicle Type:	Waterborne Polyurethane base
Cure:	Isocyanate hardener
Solvent:	Water
Volume Solids:	32% ± 1 before thinning
Finish:	Full range from Gloss to Ultra Matt *
VOC:	refer to TVOC Table for mixed products
Dry Time:	2 – 3 hours at 18 to 25°C
Recoat:	3 - 4 hours
Mix Ratio:	10 parts Base to 1 part Cure (by volume)
Pot Life:	3 hours @ 20°C
Spread Rate:	10 sq. metres per Litre
Dry Film Thickness:	32 µm per Coat ≈100 µm for 3 coats
Usual no. of Coats:	Three
Abrasion Resistance:	Very Good refer to ProSelect abrasion resistance chart
Shelf Life:	2 Years minimum
White-scratch Resistance:	Excellent
Thinning	Water and or ProSelect Additives
Cleanup:	Water or Soapy Water

* Refer to the ProSelect Gloss Level Chart to select the gloss level of your choice

Typical uses

- Commercial and Residential
- Solid hardwood timber flooring
- Engineered hardwood timber flooring
- Cork Tiles

Performance

- Very low odor
- Fast hardness development
- Easy application

	TVOC for ready-to-use 2K ProSelect Products (g/L)						
	Gloss	Semi-gloss	Satin	Velvet	Low Sheen	Natural Low	Extra Matt
Water or Fast Set Diluent	57	56	56	55	53	51	47
Water or Fast Set Diluent +	61	61	61	59	57	55	51
Xtend Diluent	73	73	72	71	68	66	61
Xtend Diluent + Sunblock	78	77	77	76	73	70	65

Taber weight loss (mg)	72	34	21	13	19	26	31
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Testing Details: ISO 7784-2 CS-17 wheels , 1 kg weight per wheel , 1000 cycles at 23 °C and 50 % RH.

Dry Slip resistance CoF	0.50	0.45	0.50	0.45	0.60	0.75	0.70
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Testing Details: AS 4586 – 2013. Measured on Vic Ash - Dry CoF for normal walking surface must be >0.4

Limitations

1. Oily timbers such as Totara may require additional preparation to remove surface oils prior to before coating application. Contact Resene ProSelect for additional advice



Surface preparation

All timber floor installation, preparation, including sanding and finishing must be carried out to acceptable industry standards and methods to ensure the best possible result. This and additional information is covered in detail under the AFTA Technical Data Sheets on Floor Finishes atfa.com.au

Mixing

Select desired finish and then mix appropriate components and additives according to the ProSelect Mixing Chart. Always thin product **BEFORE** application, see below. Mechanical stir. Do not shake.

Thinning

Thinning is required - Thin **10%** by volume of mixed product with clean water, ProSelect Xtend or ProSelect Fast Set depending on application conditions. See ProSelect Xtend / Fast Set Data sheets for more information.

Application

For use by experienced professional applicators only. Pour sufficient material to cover the immediate area and spread/roll with a smooth continuous motion avoiding excessive pooling of product and pressure on the application equipment. Always maintain a wet edge and ensure correct spread rate is achieved. **DO NOT SPREAD TOO THIN**. To aid in drying ensure good ventilation during the application and drying period. Do not apply below 10°C. Application between 10 and 25°C and below 85% RH is desired. For best results do not apply more than 2 coats per day to reduce risk of timber swelling from excess moisture.

Note: This product is not suitable for spray application.

If required remove any dust or nibs with a fine abrasive paper or screen and then ensure removal of any dust thoroughly before application of the final coat.

Allow a minimum of 8 hours (12 hours preferred) for light traffic. Allow at least 7 days before placement of heavy furniture or covering with mat's, rugs, etc. Do not use wet or damp cleaning process during this time. Refer to the ProSelect Applied Static Pressure Limits chart for protection selection pad selection for the bottom of furniture / appliances feet / pressure points.

Clean Up

Water or soapy water. Read below for handling of left over material.

Precautions

DO NOT seal up left over 2K mixtures within 12 hours after mixing due to potential CO₂ gas pressure build up.

Users of this product should be familiar with the Approved Code of Practice (ACOP) for the safe use of Isocyanates issued by WORKSAFE.

Consult the Safety Data Sheet and product labels / data sheets for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. **IF IN DOUBT DO NOT USE THIS PRODUCT.**

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C. Do not store directly on cold on concrete floors.

Floor Care

Please refer to the **ATFA Caring for Your Timber Floor** brochure available from Resene or your timber flooring contractor.

DO NOT use Steam mops, wet mops, hard head vacuum cleaners, warn brushes/brooms, abrasive cleaners, silicone sprays, steel wool or abrasive pads, wear high heels or work footwear on your coated wooden floor. Additional information is available in the above mentioned brochure.

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information. In addition the AFTA Technical Data & Information available at www.atfa.com.au

Section 3.0

Mixing Charts

ProSelect – Mixing Chart

Ready to use products are formed by blending by volume **10 parts of ProSelect Gloss/Matt Base** in any combination **plus 1 part of Cure plus 1 part of diluent** (either Water, ProSelect Fast Set or ProSelect Xtend).

Additional ProSelect components (Additives) may then be added to achieve a particular appearance or aid application properties.

Products are blended to achieve a target gloss level as in the table below. Just always remember that the Base to Cure ratio is always **10:1** and so that means that the 10 parts (of Base) can be made up with any combination of the Gloss or Matt you wish. Intermediate gloss levels (gloss levels between the finishes below) as seen in the Gloss Level Charts in Section 6.0 can be easily achieved by varying the Gloss to Matt Base mix ratios.

Mixing Ratio parts by volume

	Gloss	Semigloss	Satin	Velvet
ProSelect - Gloss	1000	900	600	
ProSelect - Matt		100	400	1000
ProSelect - Cure	100	100	100	100
ProSelect - Naturadd				

VOC (g/L)

60

60

59

56

	Low Sheen	Natural Low Sheen	Ultra Matt
ProSelect - Gloss			
ProSelect - Matt	1000	1000	1000
ProSelect - Cure	100	100	100
ProSelect - Naturadd	50	100	200

VOC (g/L)

54

51

48

Remember that before use, ProSelect MUST be thinned 10% with either Water, ProSelect Xtend or ProSelect Fast Set

ProSelect MIXING CHART

Mixing Ratio parts by volume

2K ProSelect Blending System

	Gloss	Semigloss	Satin	Velvet	Low Sheen	Natural Low Sheen	Ultra Matt
ProSelect - Gloss	1000	900	600				
ProSelect - Matt		100	400	1000	1000	1000	1000
ProSelect - Cure	100	100	100	100	100	100	100
ProSelect - Naturadd					50	100	200

VOC (g/L)

60

60

59

56

54

51

48

Before use ProSelect MUST be thinned 10% with either Water, ProSelect Xtend or ProSelect Fast Set

Section 4.0

Data Sheets - Additives

- **Fast Set**
- **Naturadd**
- **Sun Block**
- **Xtend**
- **V-Hold**
- **Anti-Slip**

Resene ProSelect Fast Set

Developed specifically for professional flooring contractors, Resene ProSelect Fast Set is an accelerator for increasing cure speed under colder conditions or where rapid turnaround is required.

Physical properties

Material type:	Molybdenum based catalyst
Solvent:	Water
Usage:	To accelerate Mixed ProSelect Base
Dose Rate:	10% by volume of mixed product. Replaces water or ProSelect Xtend when thinning
Usual no. of coats:	Can be added to all coats or the final coat.
Cleanup:	Water or Soapy water

Typical uses

- for increasing cure speed under colder conditions or where rapid turnaround is required

Mixing

For use by experienced professional applicators only.

Replaces water or ProSelect Xtend when thinning.

Add after Base, Cure and any Additives have been thoroughly mixed. Mechanical stir. Do not shake. DO NOT add more than the specified Dose Rate.

Dose Rate

10% by volume of mixed product (replaces water or ProSelect Xtend when thinning)

Clean Up

Water or Soapy water

Note

ProSelect Fast Set does not change the evaporation rate of water. To aid in drying ensure good ventilation during the application and drying period.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect Naturadd

Developed specifically for professional flooring contractors, Resene ProSelect Naturadd is a matting concentrate to reduce sheen and/or provide a more natural timber appearance.

Physical properties

Material type:	Combination wax & organic matting agents
Solvent:	Water
Finish:	To achieve Low Sheen to Ultra Matt
Dose Rate:	Up to 20% by volume per Litre of Base
Usual no. of coats:	Can be added to all coats or the final coat.
Cleanup:	Water or Soapy water

Typical uses

- To reduce gloss level in ProSelect Base to offer the following finishes;
 - Low Sheen
 - Natural Low Sheen
 - Ultra Matt finish

Mixing

For use by experienced professional applicators only.

IMPORTANT NOTE/S:

Ensure Naturadd is added and mixed thoroughly into the **Base** BEFORE the addition of **Cure**.

During application the finished product DO NOT overwork and DO NOT spread too thin

Mechanical stir. Do not shake.

Select desired finish and then mix appropriate components and additives according to the ProSelect Mixing Chart.

Dose Rate

Up to 20% by volume per L of Base. Refer to the ProSelect Mixing Chart.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect Sun Block

Developed specifically for professional flooring contractors, Resene ProSelect Sun Block is an additive to reduce photo oxidation caused by UV radiation on light coloured timber. Note: Does not stop lightening of darker timber species.

Physical properties

Material type:	UV light absorbing additive
Solvent:	Water
Pigmentation:	None – Slight Yellow tone
Finish:	Suitable for use in all ProSelect finishes
Pot Life:	Does NOT affect Pot Life
Dose Rate:	Up to 25 mL per Litre of Mixed Product
Usual no. of coats:	Add to at least two coats of the applied system
Cleanup:	Soapy water

Typical uses

- to reduce photo oxidation caused by UV radiation on light coloured timber
Note: does not stop lightening of darker timber species

Mixing

For use by experienced professional applicators only.

Mix into ProSelect Base when required at any time. Ensure thorough mixing. Mechanical stir. Do not shake.

Ensure at least two coats of the applied system have Sun Block added to them.

Dose Rate

Up to 25 mL per L of mixed product

Clean Up

Wipe up any excess before cleaning with soapy water

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect Xtend

Developed specifically for professional flooring contractors, Resene ProSelect Xtend is an additive for extending wet edge time, particularly useful during application on hot days or where areas are exposed to direct sunlight during application.

Physical properties

Material type:	Glycol ether
Solvent:	Water
Finish:	Suitable for use in all ProSelect finishes
Pot Life:	Does NOT affect Pot Life
Dose Rate:	10% by volume of mixed product. Replaces water or ProSelect Fast Set when thinning
Usual no. of coats:	Can be added to all coats or the final coat.
Cleanup:	Water or Soapy water

Typical uses

- for extending wet edge time during warm days or direct sun application

Mixing

For use by experienced professional applicators only.

Replaces water or ProSelect Fast Set when thinning.

Add after Base, Cure and any other Additives have been thoroughly mixed. Mechanical stir. Do not shake. DO NOT add more than the specified Dose Rate.

Dose Rate

10% by volume of mixed product (replaces water or ProSelect Fast Set when thinning)

Clean Up

Water or Soapy water

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect V-Hold

Developed specifically for professional flooring contractors, Resene ProSelect V-Hold provides resistance to runs and sags when applying ProSelect finishes to vertical surfaces such as stair risers, balustrades etc.

Physical properties

Material type:	Polyurethane thickening additive
Solvent:	Water
Finish:	Suitable for use in all ProSelect finishes.
Dose Rate:	Up to 25 mL per Litre of Mixed Product
Usual no. of coats:	Can be added at any stage to the mixed product.
Cleanup:	Water or Soapy water

Typical uses

- To help provide resistance to runs and sags when using ProSelect on a vertical surface

Mixing

For use by experienced professional applicators only.

Add when required at any time during the pot life. Mechanical stir. Do not shake. Product will thicken after addition of V-Hold. **DO NOT add more than the specified Dose Rate.**

Dose Rate

Up to 25 mL per L of mixed product

Clean Up

Water or Soapy water

Application

Add into the mixed ProSelect product and then apply with a high quality synthetic fibre brush or application pad.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. **IF IN DOUBT DO NOT USE THIS PRODUCT.**

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect Anti-Slip

Developed specifically for professional flooring contractors, Resene ProSelect Anti-Slip is an additive for the ProSelect system providing wet slip resistance sufficient to meet the requirements of the NZ Building Code & AS 4586:2013.

Physical properties

Material type:	Silica glass microbead
Solvent:	Water
Finish:	Micro texture
Dose Rate:	100 mL per Litre of Base
Usual no. of coats:	One - add to the final coat
Cleanup:	Water or Soapy water

Typical uses

- To provide wet slip resistance when added to the final finishing coat. When added at the recommended rate a P4 rating is achieved (AS 4586:2003 Wet Pendulum Test Method).

Mixing

For use by experienced professional applicators only.

Can be mixed into ProSelect bases before adding Cure and diluent or after all other components are mixed. Mechanical stir. Do not shake. Agitate the mixture periodically during application to ensure a uniform mixture is maintained.

To achieve a P4 rating the specified dose rate must be achieved and the finish spread to evenly distribute the antislip material.

Dose Rate

100 mL per litre of base or 80mL per litre of ready-to-use (premixed) ProSelect finish to achieve a P4 wet slip resistance rating. Lower dose rates will provide lower levels of slip resistance. Do not exceed the specified dose rate by more than 20%. Refer to the ProSelect Mixing Chart.

IMPORTANT NOTE/S:

Use of this anti-slip additive will alter the appearance of the finish providing a surface with a smooth micro-texture. Do NOT add ProSelect Anti-Slip to finishes containing Naturadd – replace Naturadd with ProSelect Anti-Slip where slip resistance is required.

Refer to the ProSelect Gloss Level Chart to compare gloss levels with and without the Anti Slip additive.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Section 5.0

VOC Information & Charts

VOC Information & Charts

The Resene ProSelect blending system consists of a number of individual components with varying Total Volatile Organic Compound (TVOC) levels.

The TVOC values provided in the following table are based on theoretical calculation using the known TVOC values for the individual raw materials used in the ProSelect components.

Product Code	Component Name	TVOC (g/L)
27500	ProSelect Cure	131
27510	ProSelect Gloss Base	55
27520	ProSelect Matt Base	52
27530	ProSelect Naturadd	3
27540	ProSelect V-Hold	0
27550	ProSelect Fast Set	0
27560	ProSelect Sunblock	291
27570	ProSelect Xtend	197

Ready to use products are formed by blending by volume 10 parts of ProSelect Gloss/Matt Base in any combination plus 1 part of Cure plus 1 part of diluent (water, ProSelect Fast Set or ProSelect Xtend). The other components may then be added to achieve a particular appearance or aid application properties.

Products are normally blended to achieve a target gloss level and ready-to-use TVOC levels for standard gloss levels are provided in the table below.

	TVOC for ready-to-use 2K ProSelect Products (g/L)						
	Gloss	Semi-gloss	Satin	Velvet	Low Sheen	Natural Low Sheen	Extra Matt
Water or Fast Set Diluent	57	56	56	55	53	51	47
Water or Fast Set Diluent + Sunblock	61	61	61	59	57	55	51
Xtend Diluent	73	73	72	71	68	66	61
Xtend Diluent + Sunblock	78	77	77	76	73	70	65

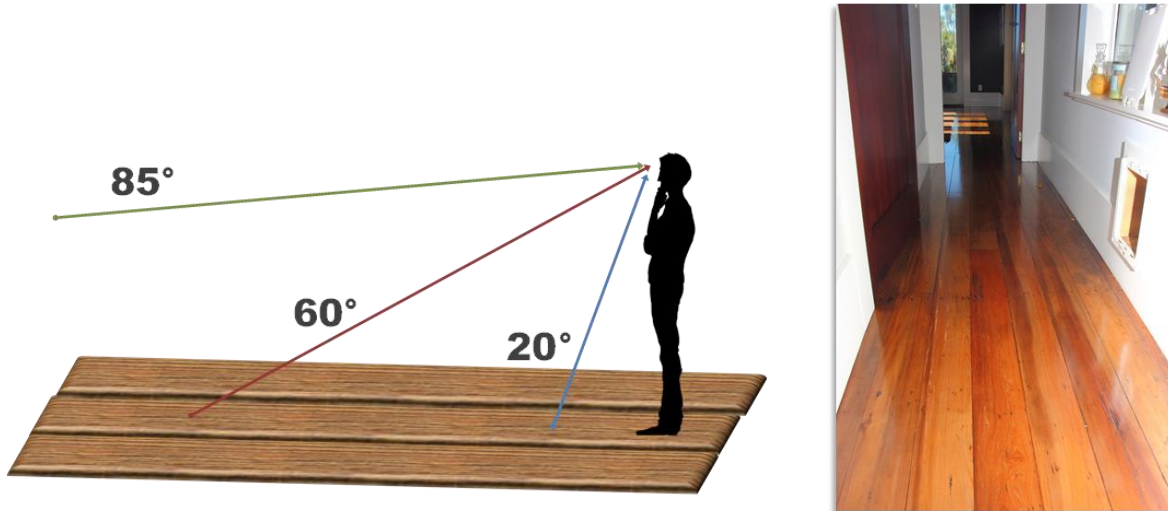
Section 6.0

Gloss Levels & Charts

Gloss Levels & Charts

The appearance of surfaces such as timber floors vary greatly depending on the angle they are viewed at. This is especially noteworthy in areas such as hallways where side sheen is evident.

Coatings such as paints and polyurethanes are typically measured at three (3) different angles, that being 20, 60 and 85° to represent different fields of view (as demonstrated in the below picture).



Typical gloss of coatings is quoted at the 60° angle however the 85° angle is also good to know, as it helps to indicate side sheen affect, especially relevant for long hallways (as in the photo example above).

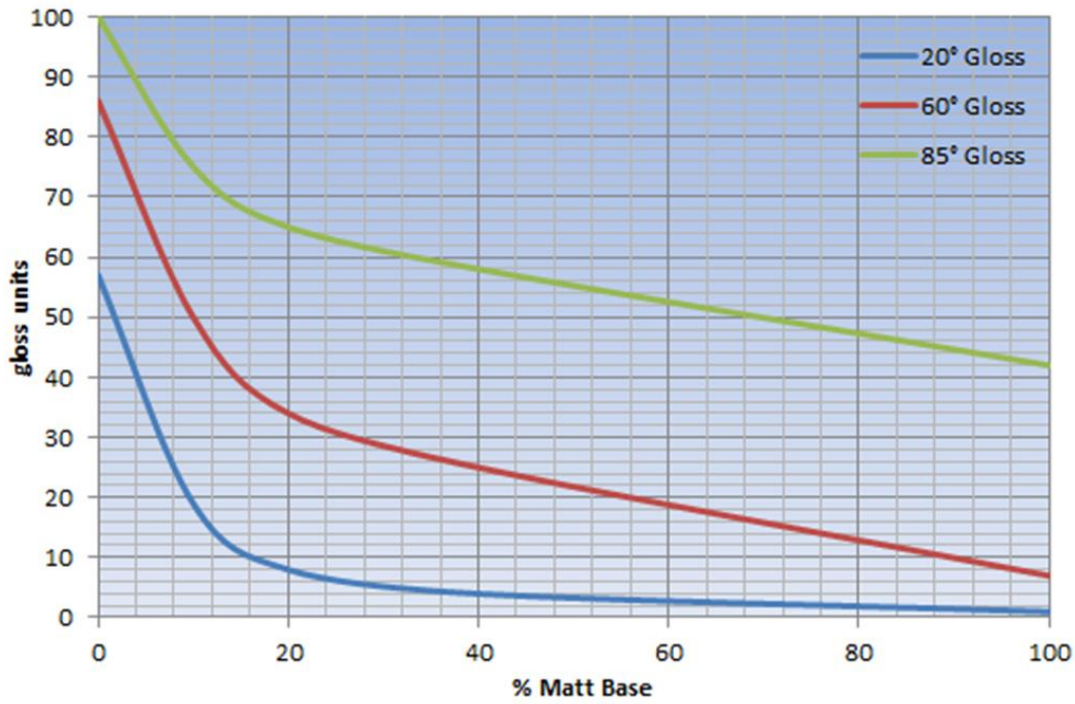
Typical coating appearance and gloss when viewed directly at your feet when standing is represented by the 20° angle.

Gloss measured on samples of Australian Oak (aka Victorian Ash / Tasmanian Oak) with 3 coats of ProSelect applied and cured.

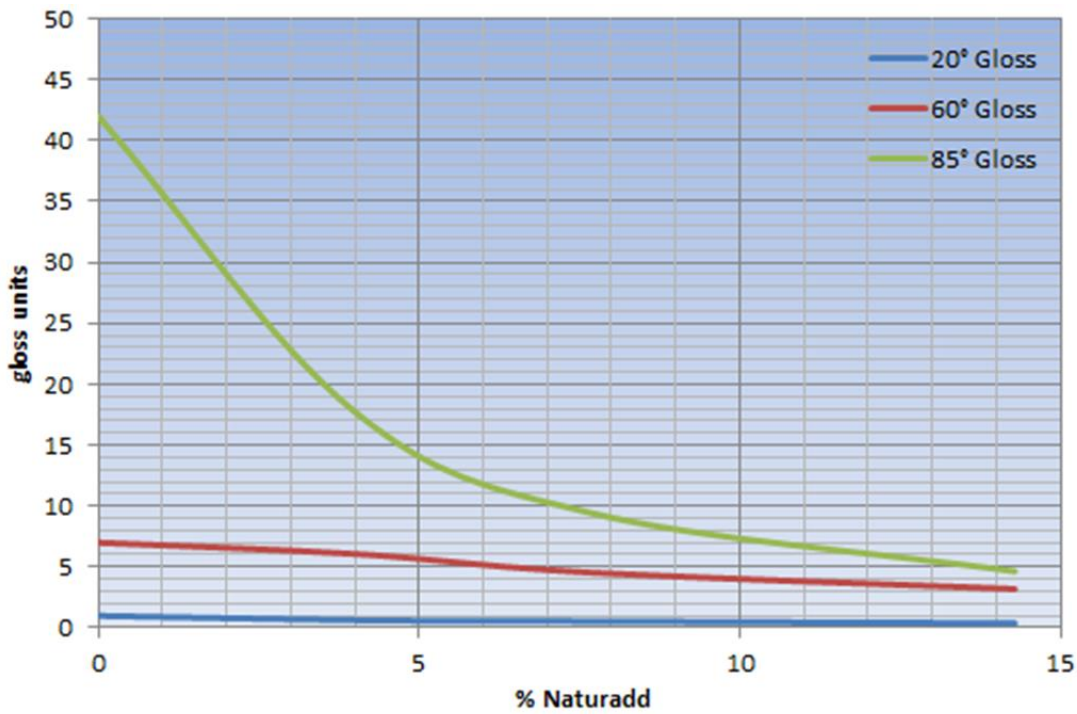
Product Finish	angle of measurement			with ProSelect Anti-Slip added *		
	20°	60°	85°	20°	60°	85°
Gloss	49	82	90	7	29	25
Semi-Gloss	14	54	71	6	26	23
Satin	4	24	50	2	12	10
Velvet	2	10	36	1.3	8	8
Low Sheen	2	10	17	refer note on ProSelect Anti-Slip Data Sheet PS10 for more information		
Natural Low Sheen	2	8	9			
Ultra Matt	1	5	5			

* at 100 ml per Litre of Base

ProSelect gloss levels as standard



ProSelect gloss levels with Naturadd



Timber Natural Gloss Levels

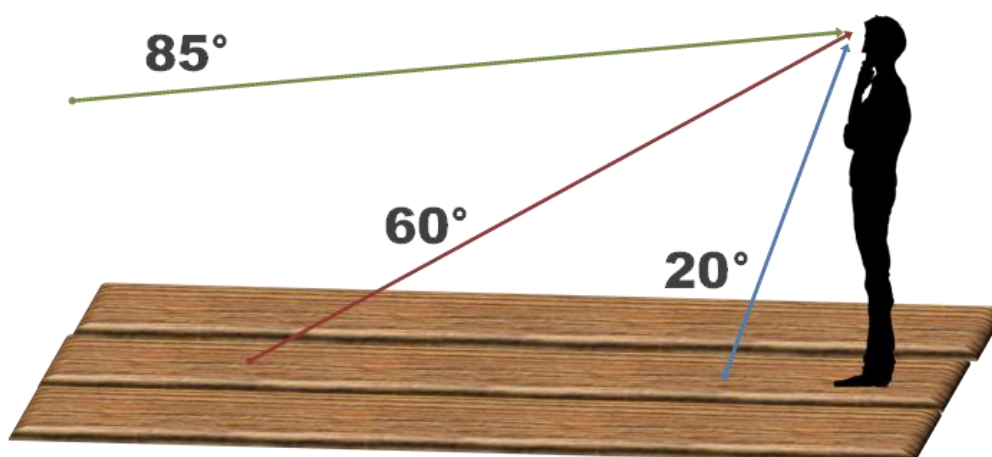
We took samples of natural timber that had been processed through a timber planer and then measured the natural gloss level. This process involved using a RHOPPOINT Gloss Reader and readings taken in sets of 5 areas avoiding any timber knot areas at 20°, 60° and also 85° angles.

The idea is to get a feel for what the natural gloss levels are on various species of timber so to help assist in matching the gloss level of any urethane to be applied if the client wants the best “natural” look possible.

Bare Timber	20°	60°	85°
Jarrah	0.6	2.8	9.6
Rimu	2.1	8.8	26.2
Matai (recycled)	0.9	3.8	10.6
Matai	1.2	4.0	8.0
Totara	1.0	3.7	7.6
Australian Oak*	1.9	6.7	10.8
European Oak	1.1	2.9	7.4
NZ Oak	1.0	3.3	12.1
American White Oak	1.0	4.0	16.3
Ash	1.1	3.6	7.6

*aka Victorian Ash / Tasmanian Oak

It is important to note that at very low gloss levels it is sometimes very difficult to tell the difference between some gloss levels. For example, at levels less than 5% at an angle of 60° and levels less than 10% at an angle of 85°, may all look very similar to the human eye.



Section 7.0

Performance Test Results

Abrasion and Weight Loss

Testing abrasion resistance of coatings has always presented difficulties to coating developers, primarily because mimicking natural abrasion and wear in laboratory tests does not fully account for the wide range of wear conditions found in the field. A wide range of laboratory tests have been used to simulate wear but correlation with field wear is not always accurate and the results are best used for comparative purposes. The most popular abrasion test (with a large number of variants) is the Taber abrasion test. Results from this test are widely reported for a range of coatings and indicate the resistance of a coating to wear – specifically loss of coating thickness during heavy use. While popular, the test is dominated by wear modes that are not typical of field use and fails to take into account the appearance of a coating after abrasion occurs. Other more appropriate methods have been sought and currently the most appropriate is a modification of a well-established test in the textile industry, the Martindale Abrasion test. This test focuses on the appearance of a coating after abrasion and is appropriate for surfaces such as hardwood floors, where appearance is one of the most important elements.

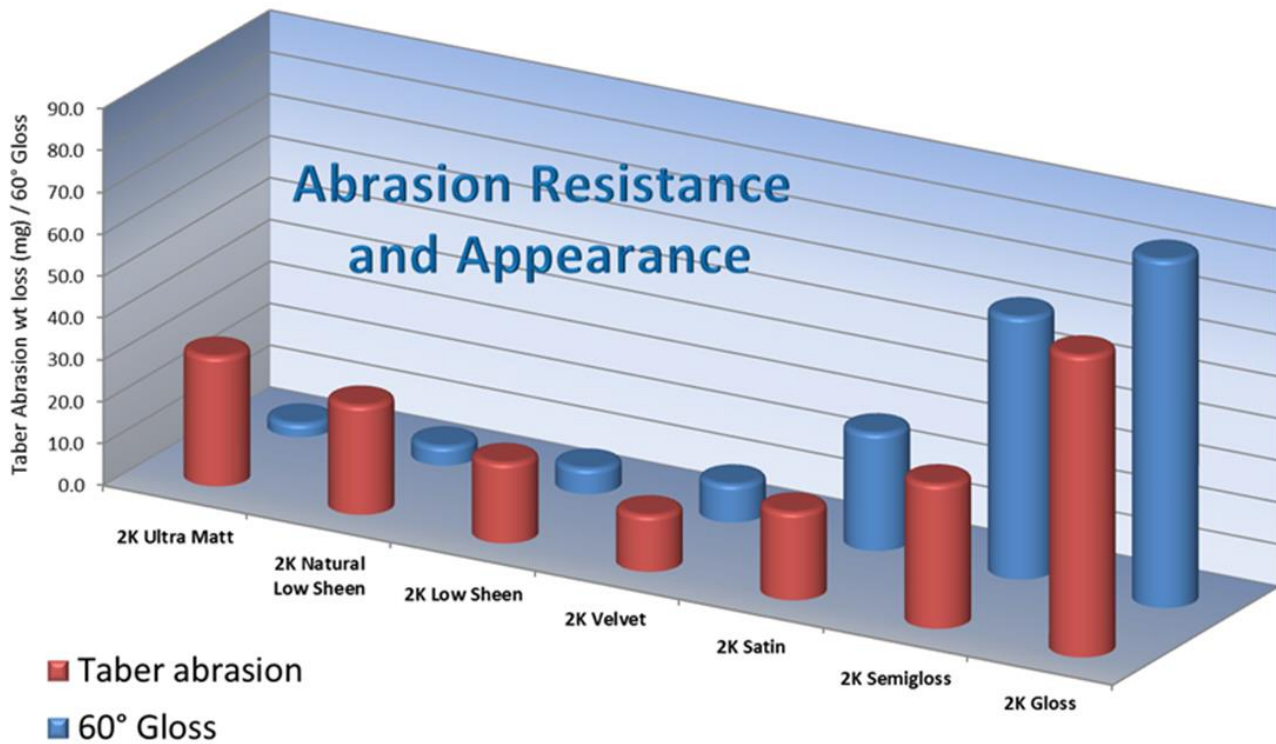
Taber weight loss testing

The **TABER** Abraser (Abrader) is used to perform accelerated wear **testing**. Referenced in numerous international standards, materials include plastics, coatings (including flooring polyurethane coatings), laminates, leather, paper, ceramics, carpeting, safety glazing etc. While this is a good “tool” to help establish wear properties, it does not necessarily show actual performance of floor polyurethane, with regard to other critical factors. When it comes to viewing applied floor coatings such marring, scratching and burnishing are properties that can “degrade the floors appearance, but these cannot be measured using the Taber Test. These properties are different but affect how the floor looks to the viewer.

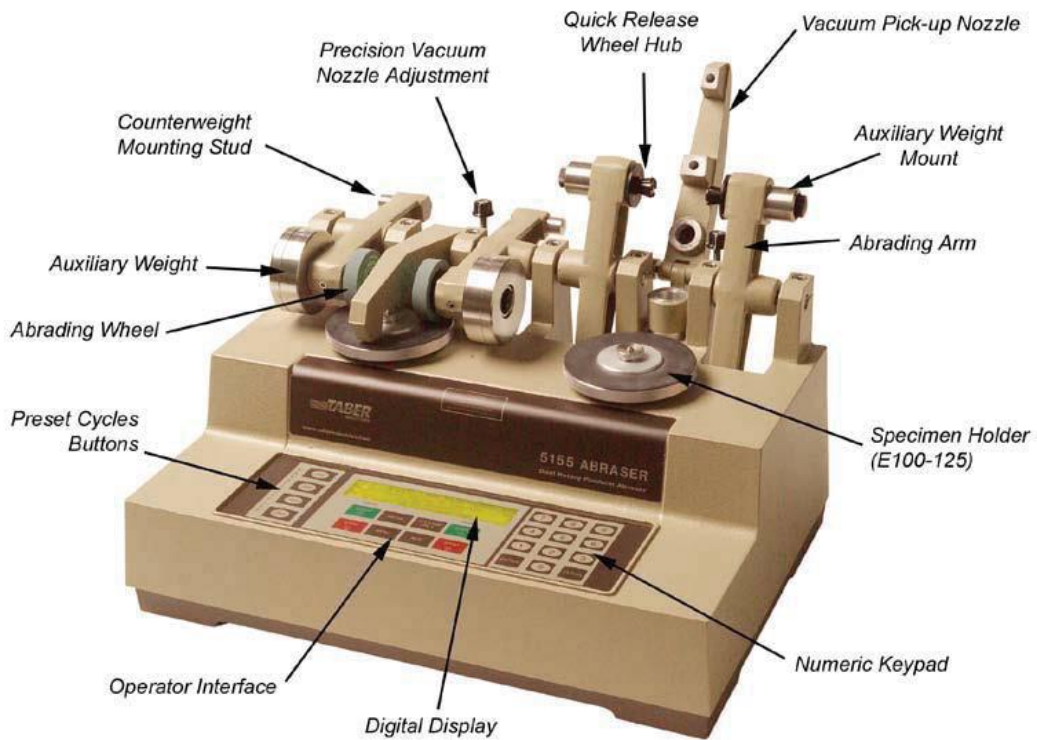
ProSelect	Taber wt loss (mg)
Gloss	72
Semigloss	34
Satin	21
Velvet	13
Low Sheen	19
Natural Low Sheen	26
Ultra Matt	31
<i>Gloss Moisture Cure (MC)</i>	24
<i>Competitor (semigloss) W/B</i>	53

Testing Details: ISO 7784–2

CS-17 wheels, 1 kg weight per wheel, 1000 cycles at 23°C and 50% RH.



The Taber test equipment is illustrated below

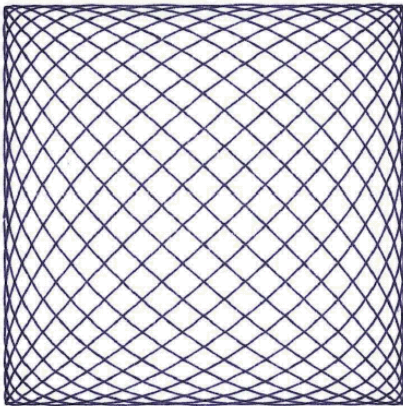


More information on the process of testing can be found on the AFTA Taber Testing Information Sheet #32

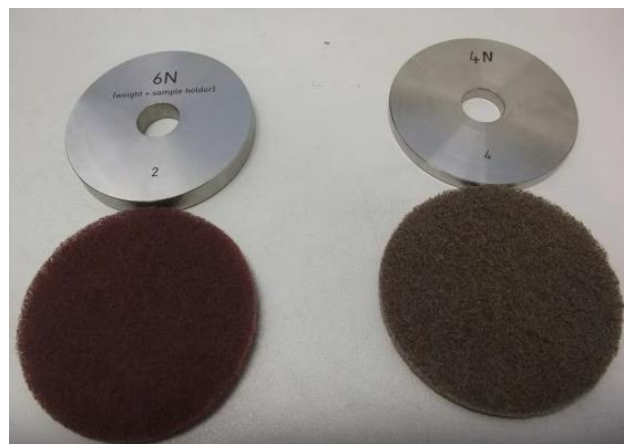
Martindale Abrasion Test

Martindale Abrasion Test

The Martindale method simulates natural wear where the test sample is rubbed against a standard abrasive surface with a specified force. A rub pattern (called a Lissajous pattern named after the French physicist Jules Antoine Lissajous) consisting of numerous different elliptical paths is used and the pattern is repeated a number of times, before being rated using a standardised reference chart. Many variations of the test of the test are possible although standardised methods have been adopted in Europe. The test procedure used for ProSelect is based on the European test method CEN TC 207 and uses 10 Lissajous patterns of an abrasive pad with a 6 N load



Lissajous pattern used for ProSelect Martindale Abrasion testing



Abrasive pads



Martindale Abrasion test equipment

Martindale Abrasion testing results

Product	Martindale rating
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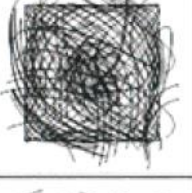
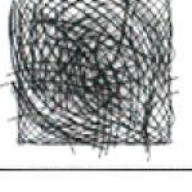
ProSelect

Gloss	4
Semigloss	3 - 4
Satin	3
Velvet	2 - 3
Low Sheen	2
UltraMatt	2

Competitor

<i>Competitor (semigloss) W/B</i>	2 - 3
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<i>Gloss Moisture cure (MC)</i>	4 - 5
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Numerical rating	Scratch picture	Description
5		No visible scratches or only few scratches. No matt area.
4		Visible scratches. Lissajous figure (square) not visible. No matt area.
3		Many visible scratches. Lissajous figure (square) partly visible. No matt area.
2		Many visible scratches. Lissajous figure/figures visible, and/or small matt abraded area.
1		Many visible scratches. Lissajous figure/figures visible, and/or large matt abraded area.

Rating chart used for ProSelect Martindale Abrasion testing

Slip Resistance Testing

Access routes must have “adequate slip-resistant walking surfaces under all conditions of normal use. Exceptions include the interior of residential houses or where safety matting is provided. Acceptable solutions for level walking surfaces are described in the NZ Building Code Acceptable Solutions and Verification Methods with reference to AS/NZS 4586 (2013).

For surfaces that will usually remain dry:

A surface must either be tested to AS 4586 (2013) Appendix B and **achieve a coefficient of friction greater than 0.40**, or be of an appropriate type listed in the NZ Building Code. In practice almost all floor-coverings provide acceptable dry slip resistance, Resene ProSelect has been tested to confirm resulting surfaces exceed the minimum coefficient of friction.

For surfaces that may become wet:

Two methods are listed for compliance in the NZ Building Code.

- 1) Have a Slip Resistance Value (SRV) classification of **not less than 39** from the **wet pendulum test method (AS4586 - 2013), Appendix A**
- 2) Use the materials listed in Table 2 of the building code as acceptable wet slip resistance.

ProSelect Anti-Slip additive is available to provide increased wet-slip resistance (see test results in the table below).

For sloping surfaces and stairs:

Increased slip resistance is required for these surfaces. A P4 rating is an acceptable solution for stairs and on ramps not steeper than 1:12. For steeper ramps consult AS/NZS 4586 (2013) which contains reference tables and a method to calculate the required wet-slip resistance.

NOTE: Transition zones between areas that will usually remain dry and areas that may become wet require extension of the wet-slip resistant walking surface and/or absorbent matting to be installed. Details are included in AS/NZS 4586 (2013) with typically at least 6 m of slip-resistant flooring required in such zones.

ProSelect Dry CoF (coefficient of friction) for a normal walking surface must be **≥0.40** and for stairs, sloping and wet areas a ProSelect wet slip resistance value of **>39** must be achieved.

ProSelect	Dry Slip Test	AS4586 Classification	Wet Slip Test	Wet Slip	With ProSelect Anti-Slip additive	
	CoF		SRV	P Rating	Wet Slip Test SRV	Wet Slip P Rating
Gloss	0.50	D1	11	P0	48	P4
Semigloss	0.45	D1	-	-		
Satin	0.50	D1	15	P1		
Velvet	0.45	D1	19	P1		
Low Sheen	0.60	D1	32	P2		
Natural Low Sheen	0.75	D1	-	-		
Ultra Matt	0.70	D1	45	P4		

refer note on ProSelect Anti-Slip Data Sheet PS10 for more information

Testing Details: AS 4586 - 2013

Substrate: Australian Oak (aka Victorian Ash / Tasmanian Oak)

Substrate Dimensions: 112 x 1200 mm (13 mm thick)

Coating: 2-component waterborne polyurethane, 3 x layers @ 25-30 microns dry film per coat

Anti-Slip Additive Test Results: ProSelect Anti-Slip added at 100 mL per Litre of Base



The Pendulum Test

The Pendulum Test measures dynamic coefficient of friction (CoF). The test is designed to replicate a pedestrian heel strike, the point at which most slips occur.

The Pendulum Test can be used to accurately test the slip potential on clean and dry or contaminated floors. The test also works with dry contaminants.

More information on the process of testing can be found on the AFTA Understanding Slip Resistance Information Sheet #45

Adhesion Testing

Timber samples are coated with 3 coats of ProSelect finish and then cured for 7 days at ambient temperature. Adhesion test results are based on AS 1580.408.4-1993 Adhesion (cross cut) Standard using Tesafix 4970 Tape @ 20 N / 25mm strength and using an Elcometer 105 template at 2mm cut spacing.

Timber samples are coated with 3 coats of ProSelect Velvet finish and cured for 7 days at ambient.






<u>Timber</u>	<u>ProSelect Velvet Adhesion Result</u>	<u>ProSelect Gloss Adhesion Result</u>	<u>General Notes</u>
Jarrah	0	0	
Rimu	0	0	
Matai (recycled)	0	0	
Matai	0	0	
Totara	0	0	No degreasing / cleaning
Totara	0	0	Methylated spirits wipe
Totara	0	0	Turpentine wipe
Australian Oak*	0	0	
European Oak	0	0	
NZ Oak	0	0	European Oak planted by settlers
American White Oak	0	0	
Ash	0	0	

*aka Victorian Ash / Tasmanian Oak

<u>Existing Coated Timber</u>	0	0	
HD Polysatin -Alkyd Poly	0	0	Sanded with 120 g
Qrystal - Alkyd Poly	0	0	Sanded with 120 g
M/C Polyurethane	0	0	Sanded with 120 g
ProSelect Gloss	0	0	Sanded with 120 g
ProSelect Velvet	0	0	Sanded with 120 g

AS 1580.408.4—1993

5
TABLE 1
CLASSIFICATION OF TEST RESULTS

Classification	Description	Appearance of surface of cross-cut area from which flaking has occurred (example for six parallel cuts)
0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	
1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not distinctly greater than 5 percent is affected.	
2	The coating has flaked along the edges, at the intersections of the cuts, or at both locations. A cross-cut area distinctly greater than 5 percent, but not distinctly greater than 15 percent is affected.	
3	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, it has flaked partly or wholly on different parts of the squares, or both have occurred. A cross-cut area distinctly greater than 15 percent, but not distinctly greater than 35 percent is affected.	
4	The coating has flaked along the edges of the cuts in large ribbons, some squares have detached partly or wholly, or both have occurred. A cross-cut area distinctly greater than 35 percent, but not distinctly greater than 65 percent is affected.	
5	Any degree of flaking greater than classification 4.	

Section 8.0

Timber Colour Change (Photo-oxidation)

Timber Colour Change

Colour Change in Timber Floors after installation

What causes colour change in timbers?

Colour changes that occur in timbers after they are installed in a building are due to many factors including the amount and type of extractives (the materials that can be extracted easily with organic solvents or water), sap vs heart woods, amount of lignin, exposure to light (visible and UV), exposure to oxygen, temperature and any coatings that may be applied. Understanding of colour changes is not complete although general features are well established. The lack of understanding evolves from the combination of the many different factors that influence colour change occurring at different rates under different conditions.



Flooring that has had a carpet rug moved

This is further complicated by variations in timber composition between different trees and growing conditions. Despite the range of factors, there are two dominant factors which we need to be aware of – degradation of lignin by UV light and changes to the extractives. Extractives can be changed by photo-oxidation (effect of light and atmospheric oxygen) and by reaction with ingredients of coatings and it is the extractives changes that produce some very dramatic colour changes, even over very short timeframes. The lignin degradation rate is very dependent on timber type (and can be influenced by the extractives present) and typically results in yellowing of the timber over time. Eventually this yellowing may become very dark (oranges or browns) before stabilising. Due to the different colours of heartwood and sapwood in many species, each will undergo different colour changes.

How can colour change be stopped?

It is not possible to completely stop colour changes from occurring unless the timber is isolated from the environment. Obviously a timber floor is exposed to a range of environmental conditions so the best we can expect is to slow changes or limit the extent of colour change. Many of the factors listed above are not easy to change and are related to the timber itself, therefore selecting a timber that is more stable towards colour change is a good start, but not always practical. All is not lost if a less colour-stable timber is being used, as there are ways to reduce the effects of aging. Primarily the exposure to light plays a large role in colour changes as described earlier and this can be controlled to a large extent through design choices, coating choices and positioning (and regular re-positioning) of furniture.

Using a coating containing UV light-blocking materials is an excellent strategy. ProSelect Sun Block is an additive containing UV light-blockers that can be added to the ProSelect coatings to help reduce light induced colour change. The use of some stains also helps protect the timber from light and using these in conjunction with UV light-blocking materials in coatings results in additional protection. It is also possible to bleach the colour-forming extractives before coating the timber which then reduces the colour changes associated with these materials and also allows excellent whitewash effects and more vibrant stain colours to be produced. Bleaching does however have the effect of pronouncing yellowing changes caused by other mechanisms such as UV light degradation of lignin.

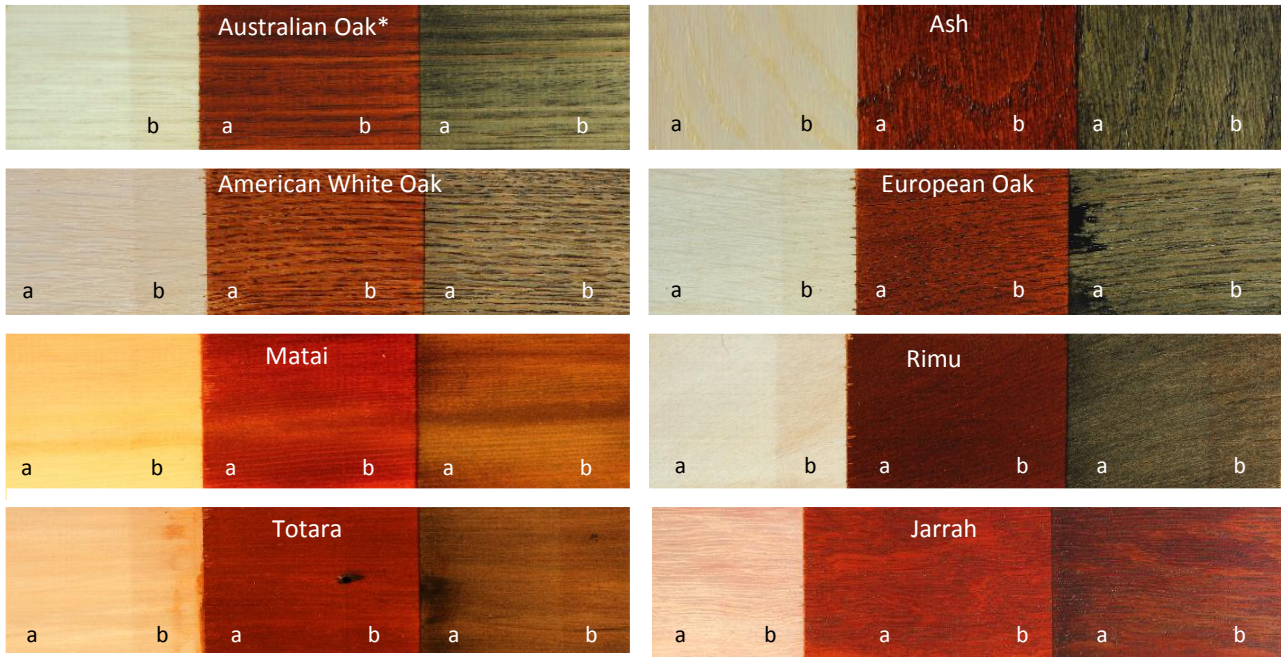
Photographic examples of colour changes occurring in common timber flooring materials are provided for reference including the effects of UV-blockers, stains and bleaching. Note that successful timber bleaching requires a specific type of bleach, not the hypochlorite found in household and industrial products. Resene recommends Rustins Wood Bleach. Further details about colour changes and the effects of stains and UV light-blocking materials are provided after the photographic examples (for readers interested in strategies to manage colour change and to improve fundamental understanding).

Effect of ProSelect Sun Block on different timber



*aka Tasmanian Oak / Victorian Ash

Effect of Stains on different timber



*aka Tasmanian Oak / Victorian Ash

a = uncovered; **b** = covered

Effect of bleaching on different timber (6 weeks interior exposure)



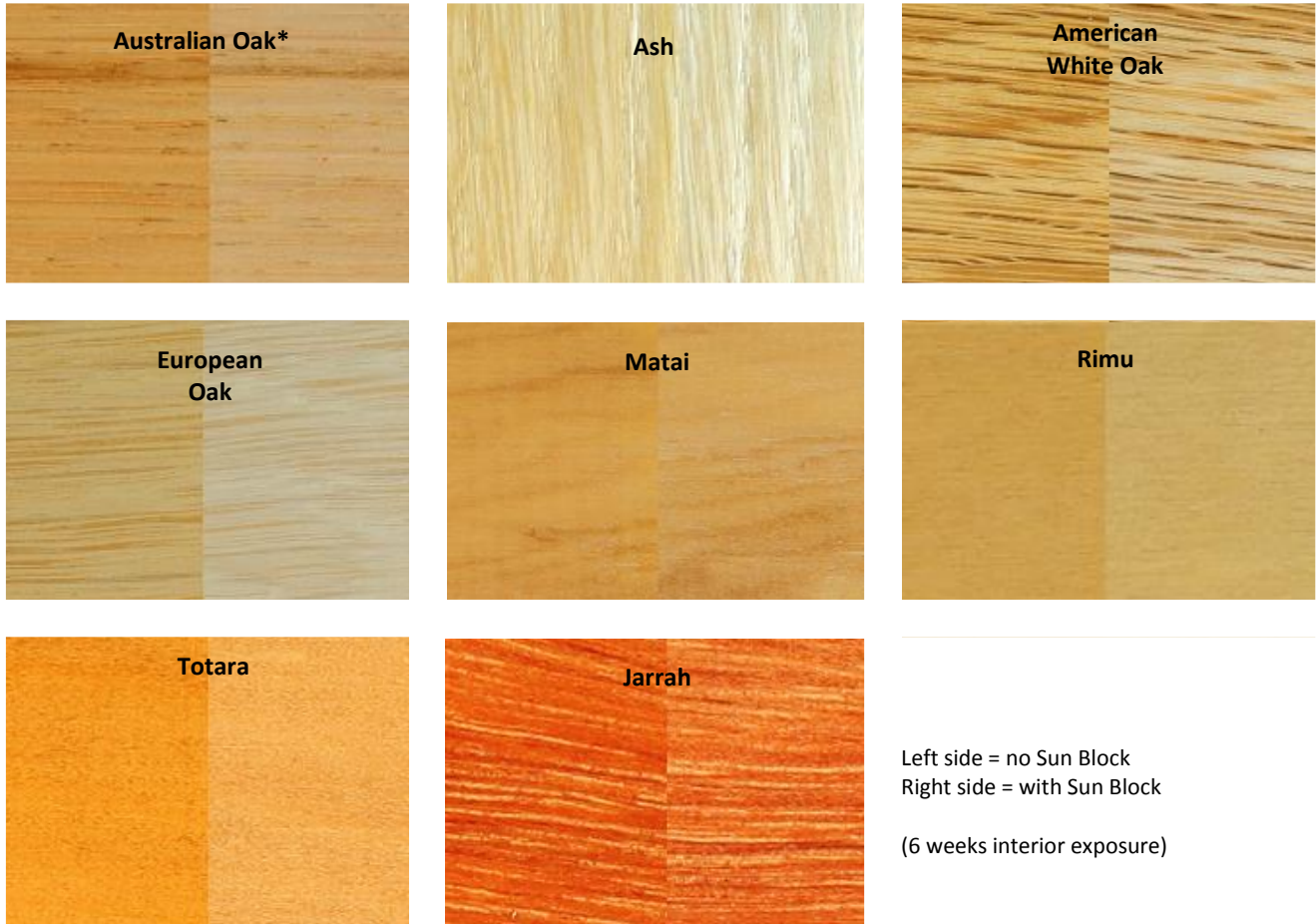
Top of each timber sample
Unbleached

a = single bleaching step

b = second bleaching step

*aka Tasmanian Oak / Victorian Ash

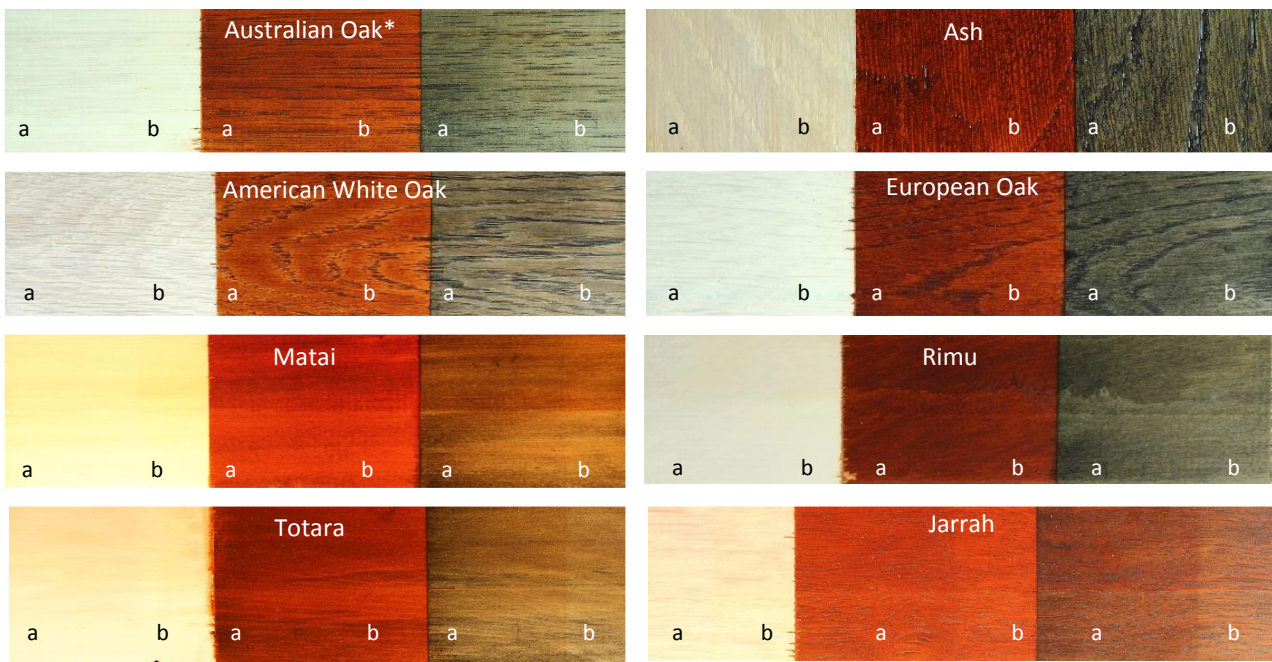
Effect of ProSelect Sun Block on bleached timber



Left side = no Sun Block
 Right side = with Sun Block
 (6 weeks interior exposure)

*aka Tasmanian Oak / Victorian Ash

Effect of Stains on different bleached timber



a = uncovered; **b** = covered

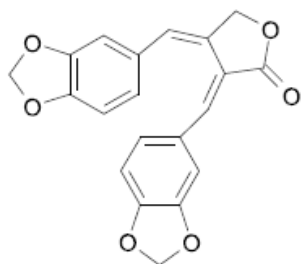
(6 weeks interior exposure)

*aka Tasmanian Oak / Victorian Ash

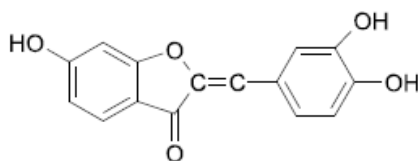
Colour Change Fundamentals

Where does the initial wood colour come from?

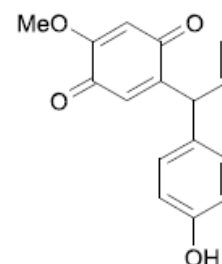
The main components of wood (the cellulose, hemicellulose and lignin) are not highly coloured. Colours, along with other properties like odour and decay resistance, are produced by other materials in the timber, primarily grouped together under term extractives. These make up typically 1-5% of the timber but may be more than 10% for some tropical species. The name extractives comes from the ease in which these materials can be extracted from timber by wet processing typically using water (neutral, acidic or alkaline) or organic solvents. While there are thousands of extractives, the ones responsible for colour make up only a small fraction of the total. The chemical structure of some of these coloured extractives are shown in the figure below along with the characteristic colour they produce.



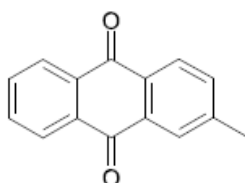
Red-Orange
Taiwanin A
(*Taiwania cryptomerioides*)



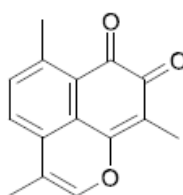
Orange-yellow
Sulfuretin
(*Rhus cotinus*)



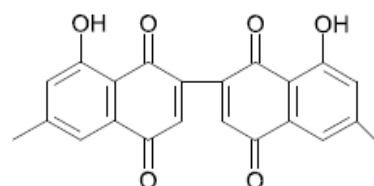
Orange
4-hydroxydalbergione-4'-
methoxy-dalbergione
(*Dalbergia spp*)



Yellow
Tectoquinone
(2-Methylantraquinone)
(*Tectona grandis*)



Purple
Mansonone F
(*Mansonia altissima*)



Orange (reacts to form ebony black)
Memagakikinone
(*Diospyros spp.*)

As a tree grows the inner parts become a repository for many of the extractives. Since extractives become concentrated in the heartwood it should be no surprise that heartwood has more vibrant colour compared to sapwood. Degradation of these extractives results in reduction in colour intensity and eventually loss of the particular colour. Some coloured extractives also degrade slowly due to reaction with oxygen and free radicals formed in the timber and this can eventually result in colour loss deep into the timber. Other coloured extractives may remain intact below the outer surface and mechanical removal of the surface exposes fresh coloured material. In some species other extractives such as acids, resins and waxes are responsible for problems encountered with coatings. These include slow curing and poor adhesion.

Why does light change the timber colour so much?

Timber is a natural organic material – its main constituents are made up of carbon, hydrogen and oxygen. Like most organic materials, nature and time are able to change them through a range of processes.

Focusing on light-induced changes, UV light causes more colour change than visible light simply because it has much higher energy. This is the same energy responsible for sunburn on skin. With exposure to light it is generally observed that light-coloured softwoods such as pine become more yellow and darken and darker woods often lighten. Of course there are exceptions where darker woods darken (cherry and mahogany) and there are some comparatively light-stable light-coloured timbers such as ash, oak and maple. These are generalisations but the yellowing is caused by lignin being degraded while lightening of darker timbers is likely to be due to breakdown of coloured extractives. When these different processes combine things become complicated.

The particular extractives of most importance for colour changes after installation are those comprising phenols (this group includes the various tannins) and quinones which are oxidised forms of certain types of phenols (the lignin also comprises phenolic materials which are linked to the previously discussed lignin degradation colour). Both of these extractive types range from simple to complex forms and change colour when their chemistry is altered. Light alters the materials by being absorbed and once absorbed the light energy is channelled into breaking and making chemical bonds. New molecules are formed and these new molecules have different colours or no colour at all. When combined with oxygen in the atmosphere some of these new molecules can be highly reactive and unstable and accelerate colour changes through chain reactions.

Why does the colour change when coatings are applied?

There are several reasons for this. Firstly, coatings displace air from the surface of timber and this changes the way visible light interacts with the surface with less light being scattered. When light is scattered from an object it appears white or light (think clouds) so a coating reduces the lightness of timber. Typically people will say the timber darkens. Better coverage and penetration of the timber fibres increases the darkening (less light scattering). Solventborne coatings are well known for this effect and the German word *anfeuerung*, meaning accentuate, is often used in the coatings industry to describe it. Coatings may also have an inherent colour which will be imparted to the timber which also contributes to colour change. Some constituents of coatings can also chemically react with the timber leading to changes. The alkali used in some coatings, particularly in waterborne coatings to improve storage stability and other properties, is able to chemically react with phenolic materials (including tannins and some extractives) which can be enough to change the light absorbing properties, generally forming more intense colours. Typically darker yellows and browns are formed but some extractives may become red or orange. When lighter colours are present from stains or on lighter colour timbers this can be observed as pink. The alkali can also act to accelerate oxidation of coloured materials through reaction with atmospheric oxygen. Other minor coating ingredients include metal-based materials which are also able to chemically react with extractives with the potential to form a large range of colours. In most coatings these are only very minor ingredients used to accelerate curing and do not contribute significantly to the colour. Many waterborne coatings do not even contain these types of materials.

Protection by Timber Stains

Timber stains and coloured coatings act to reduce the amount of light that reaches the timber surface. The most effective stains/colours will reduce the amount of UV light transmitted in addition to absorbing some visible light. UV light does more damage since it has higher energy than visible light.

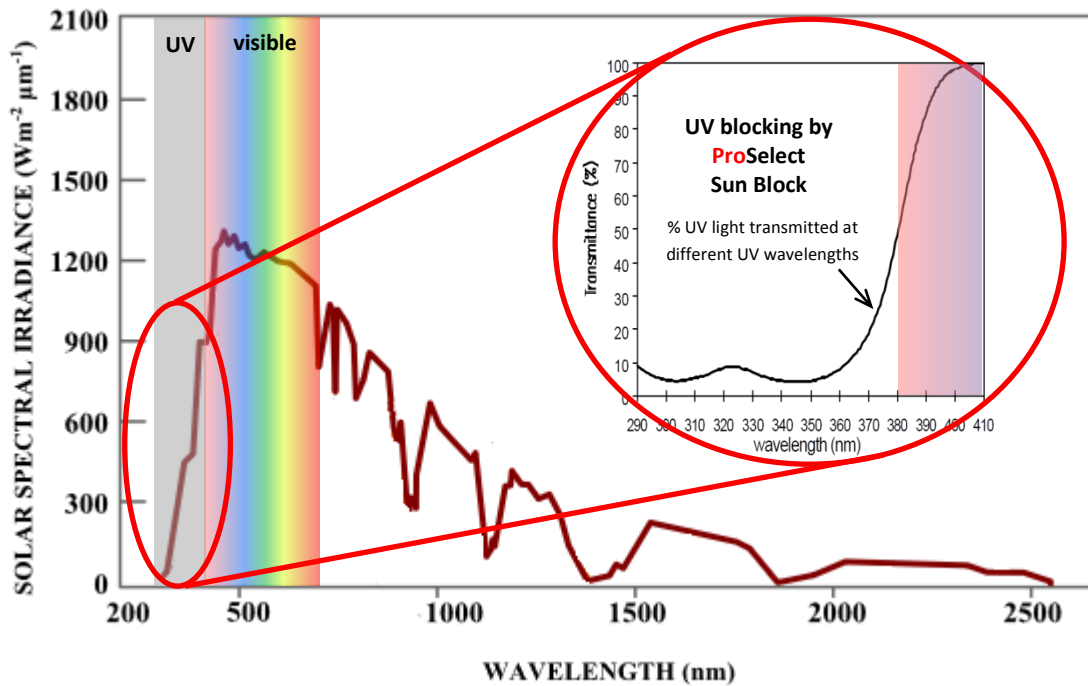
There are many different materials for colouring timber and coatings and they have varied effects when it comes to shielding the timber from light. Dye stains typically do not offer much protection from light and often are not colour stable themselves which leads to additional colour changes. Pigment-based 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 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 provide some protection and white scatters 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 (ProSelect Sun Block for example) in coatings 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.

What are non-coloured UV-light absorbing materials?

There are a range of these materials for different applications. Commonly they are specific organic materials (some nano-sized inorganic types are also available) which have a chemical structure ideal for absorbing only the UV portion of light. After the light is absorbed, instead of the energy being dissipated by breaking and making chemical bonds, the energy is dissipated as heat and the materials have a long lifetime. Only very small amounts of heat are produced, not enough to be detected in everyday use. The figure below shows the energy distribution of light across different wavelengths (at sea level since the atmosphere absorbs a great deal of light before it reaches the ground). The UV portion seems low until it is understood that this energy is capable of breaking chemical bonds whereas the rest of the light is not.



What happens if the coloured extractives are removed or modified prior to coating?

It is possible to reduce the amount of extractives in timber by particular types of processing although typically this is not carried out for flooring. Some treatments that can be carried out on timber after kiln drying are able to remove certain types of extractives or to chemically change them so that their impact on colour change is altered or reduced. Typically these treatments only affect the surface or outer layers of the timber. Ammonia fuming and lye treatments are two such treatments that alter the colour through chemical modification of extractives and other polyphenolics. Another is bleaching. Timber bleaching with household bleach is not suitable for decolourising timber and typically the opposite is found as the alkali in the bleach and the oxidation process forms coloured species. A dedicated timber bleach is required to lighten the surface of timbers and this type of bleach is typically a two-component product which forms a short-lived “super-oxidiser” inside the timber once both components have been applied. Within minutes of application, up to 2 hours depending on timber species and the amount of bleaching components used, the timber lightens dramatically. Repeating the bleaching step can produce even lighter colours. Colour changes associated with the extractives is minimised or eliminated after bleaching although protecting the lighter timber from UV-induced yellowing with a UV-absorbing product and/or an appropriate stain is generally required. Susceptibility to colour change after bleaching is dependent on timber species. The darker colours produced by lye or ammonia fuming are still prone to colour change although the amount and rate of change will vary.

What about the other ways timber can change colour?

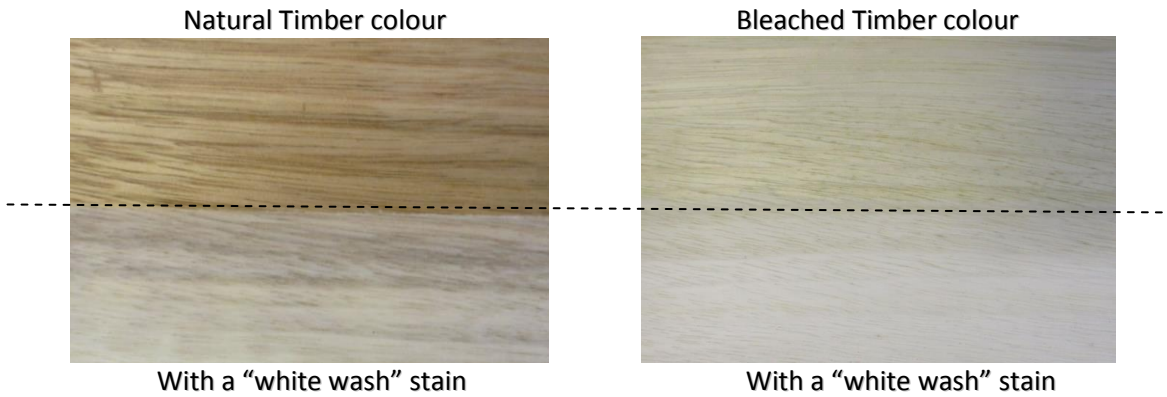
Even when the light-induced colour changes are minimised, there are still other mechanisms which can cause colour change and these are typically not affected by anything under a building occupiers control. In combination with protection provided by coatings, regularly moving furniture and rugs will allow changes to be spread over a larger area without sharp changes being visible as contrast lines in the floor.

Section 9.0

Timber Bleaching

Timber Bleaching

Bleaching allows you to drastically change the colour of the timber and also makes the “white wash” look much easier to get, as well as getting a different look with coloured stains.



Used to bleach the colour of bare timber giving a much lighter bleacher colour appearance and can also be used to help stain “take up” when colouring the timber to a different shade.

We looked at and tested a brand called **Rustins Wood Bleach** which is imported through **GMR Imports** in Invercargill www.gmrimports.co.nz



Timber Bleaching

Top of each timber sample
Unbleached

a = single bleaching step

b = second bleaching step

*aka Tasmanian Oak / Victorian Ash

Easy to use

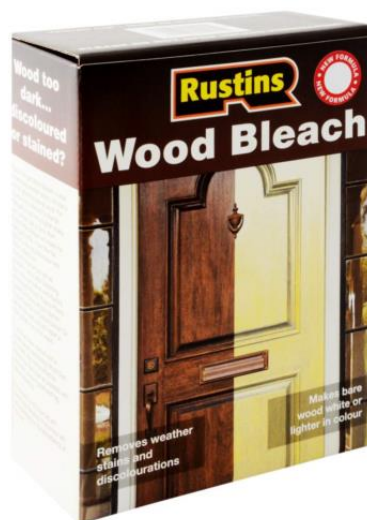
1. Apply 'A' solution liberally. Leave for no less than 10 minutes.



2. Apply 'B' solution liberally. Leave for 2 hours, then wash thoroughly as directed.



3. Apply one of the recommended Rustins finishes to the lightened wood.



Bleaching Solution Data Sheet Information

Product

Wood Bleach

Type

Two pack bleaching kit for wood based on stabilised Hydrogen Peroxide.

Intended Use

For use on bare wood to make it white or lighter in colour.

Special Features

Removes weather stains and discolourations.

Preparation

Will only work on bare wood. All varnish, lacquer or polish must be removed before applying the solutions. Old finishes are best removed with Rustin's Strypit Paint and Varnish Stripper. Remove as much of the old finish as possible with a scraper, then damp the surface again with Strypit and rub with the grain with NO 1 or 2 steel wool. Wipe surface with clean rag and allow to dry.

Application

Apply solution "A" to clean, dry wood with a brush and leave for 10-20 minutes before applying the "B" solution. Some woods will darken when "A" solution is applied. The actual bleaching takes place after application of "B" solution.

Coats

One coat of "A" solution followed by a coat of "B" solution.

Drying Time

After application of "B" solution leave for a minimum of 2 hours. If the product dries out it can form crystals which can be very difficult to remove so ensure sufficient solution is applied to prevent drying out.

Re-coating Time

If the wood is very dark or badly stained, repeat application of both solutions after 2 hours.

Application Temp.

Do not use in extreme temperatures.

Coverage

One Bleaching Kit(500 ml x 2) will bleach approx. 11 sq metres depending on absorbency of wood.

Maintenance

N/A

Compatibility

Resene ProSelect has been tested and is compatible with this bleaching system. We recommend a very light sand prior to coating as this helps achieve two things.

1. Helps to remove any grain raise and also remove deposits that could occur on high density timbers.
2. Helps remove any residual yellow stain that may have migrated to the surface during drying

Shelf-life/Storage

Store in a cool dark place, away from sunlight.

Hazards

Solution "A"; Irritant. Solution "B"; Corrosive, Oxidising. Wear suitable eye/face protection. A full Health and Safety Data Sheet is available on request or on www.rustins.co.uk

Clean-Up

Clean all equipment with water.

Section 10.0

Timber Staining

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 provide some protection and white scatters 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 (ProSelect Sun Block for example) in coatings 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 ProSelect Stain Colour Concentrates and the ProSelect Stain Base, colours can be mixed and matched to achieve a large range of colour tones and effects.



Resene ProSelect Stain Base

Developed specifically for professional flooring contractors, Resene ProSelect Stain Base is a waterborne tint base designed to be coloured using the ProSelect Colour Concentrates. It is supplied in concentrated form and then thinned before use.

Physical properties

Material type:	Oil modified urethane
Solvent:	Water
Finish:	Natural finish after thinning
Usual no. of coats:	1
VOC:	70 g/L
Volume Solids:	26 %
Cleanup:	Water or Soapy water

Typical uses

- To stain / colour bare, properly prepared timber
 - Hardwoods
 - Veneers
 - Cork

Mixing

For use by experienced professional applicators only.

Add ProSelect Colour Concentrate to achieve desired colour strength. Up to 10% Colour Concentrate is typical (do not add more than 20%). Shake or stir well until colour is even.

Dilute with an equal volume of water immediately before application and mix thoroughly.

Application

Suitable for application by various methods such as brush, wipe, rag and mop. Apply a thin even coat and for best results work into the timber following the grain. Remove any excess before it dries. Drying time is dependent upon application conditions and porosity of the timber. Do not flood the timber surface.

Mix regularly while applying to ensure a uniform colour is maintained. Thinned product must be used the same day it is mixed.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. **IF IN DOUBT DO NOT USE THIS PRODUCT.**

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Resene ProSelect Colour Concentrate

Developed specifically for professional flooring contractors, Resene ProSelect Colour Concentrates use durable coloured pigments (not dyes) and are designed to be added to the Resene ProSelect Stain Base. Combinations of different colour concentrates allows a vast colour range to be achieved putting the control back into the flooring professionals hands.

Physical properties

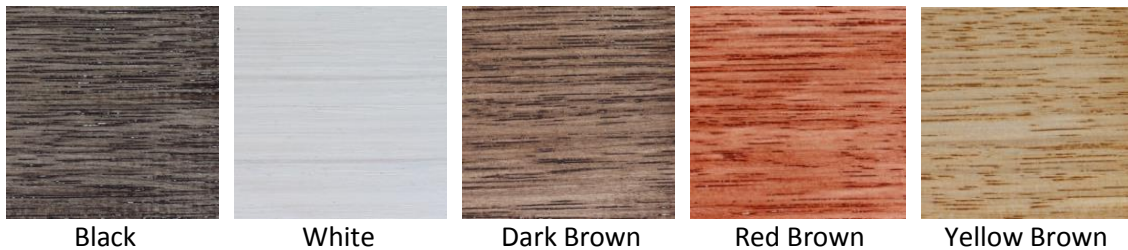
Material type:	Durable pigment concentrate with binder
Solvent:	Water
Dose Rate:	Up to 20% (by volume) into ProSelect Stain Base
Colours:	Black / White / Dark Brown / Red Brown / Yellow Brown
Cleanup:	Water or Soapy water

Typical uses

- To colour ProSelect Stain Base

	VOC (g/L)
Dark Brown	29
Red Brown	46
Yellow Brown	54
Black	52
White	42

Colour Concentrate samples mixed, diluted and applied to Bleached Australian Oak (Oak (aka Victorian Ash / Tasmanian Oak)



Mixing

For use by experienced professional applicators only.

Shake well before use.

Add ProSelect Colour Concentrate to achieve desired colour strength. Shake or stir well until colour is even. Best used within 48 hours of adding colour concentrate to the ProSelect Stain Base.

Dose Rate

Typically 10% (by volume) is suitable for most timbers. Up to 20% (by volume) can be added to achieve a stronger colour effect.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

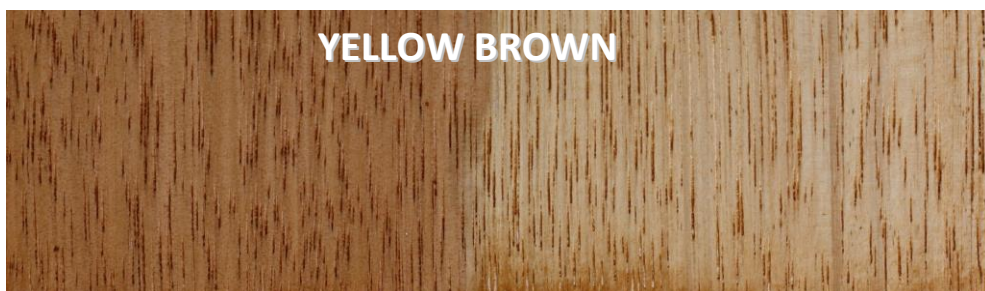
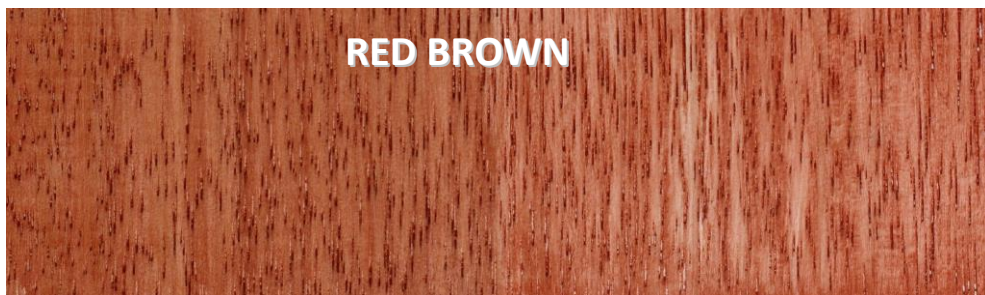
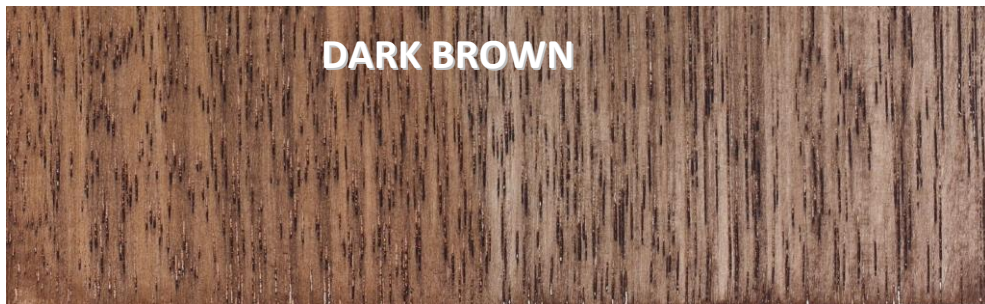
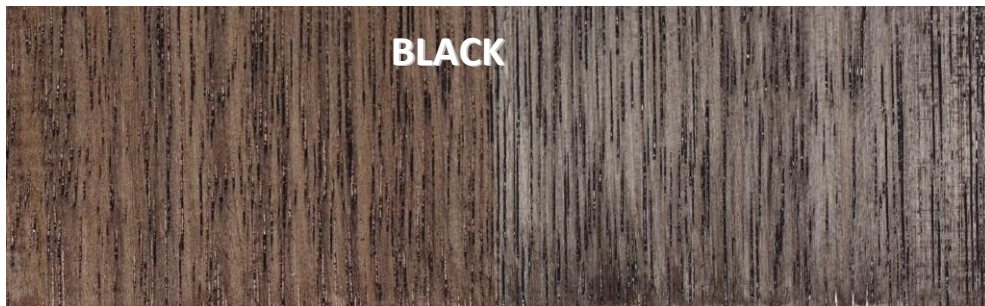
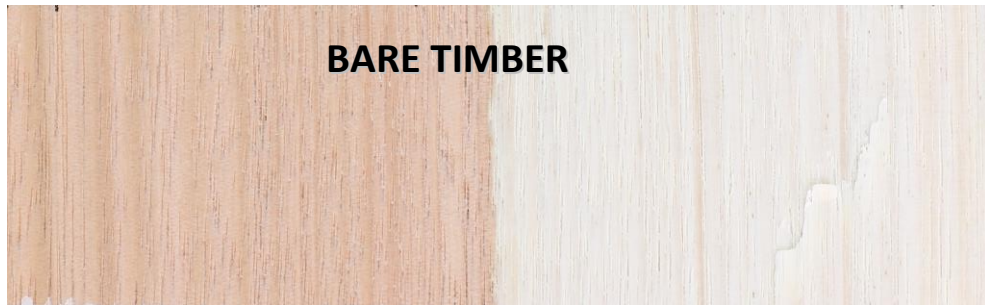
Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

ProSelect Stain – Colour Concentrates

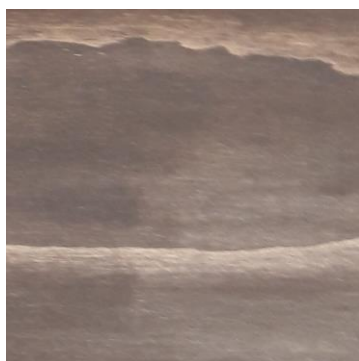
The below ProSelect Stain samples have been applied to sanded Australian Oak (aka Victorian Ash / Tasmanian Oak) by the rag wipe method. The left hand side is bare natural and the right hand side has been bleached before staining.



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.

Section 11.0

Sports Court Line Marking

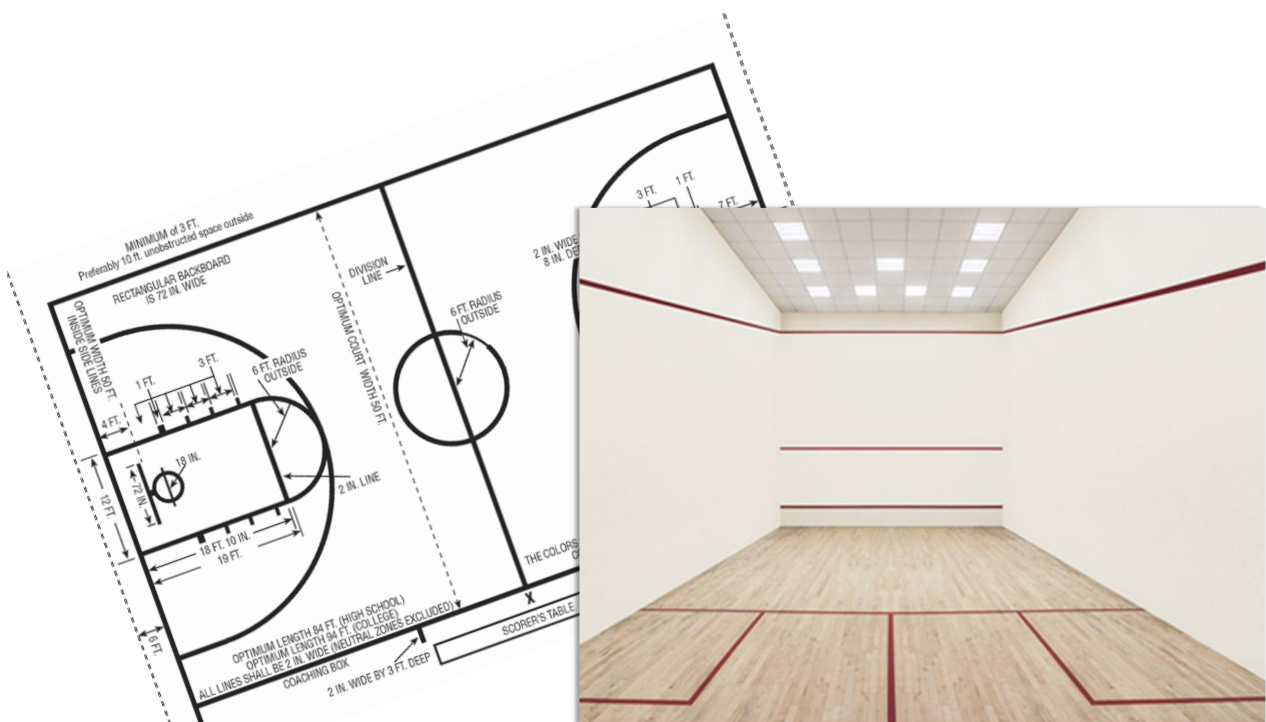
Line Marking

Line marking is simple to do with a vast range of colours to choose from. The system we use is as follows.

1. Prepare the floor and apply the first coat of ProSelect in your desired finish.
2. Mask out the lines using a thin tape to help contour the surface and reduce potential of “under creep”. Resene recommends Washi tape. Ensure you rub it down in the direction of the grain.
3. Using Resene Lumbersider (a low sheen acrylic available in 1000’s of colours) paint the line area. Use a high quality fine brush or roller and apply enough paint to achieve total coverage in one coat. Lay off quickly to reduce any tearing or drag marks.
4. Remove the tape while the paint is still wet to reduce stepped edges on the line.
5. Allow to thoroughly dry overnight and then apply top coats of the ProSelect in the gloss level of your choice.



Samples made on Australian Oak (aka Victorian Ash / Tasmanian Oak) sealed with ProSelect Gloss and line colours in Resene Lumbersider Black and Guardsman Red followed by one coat ProSelect Gloss and finished in ProSelect Semigloss.



Section 12.0

Applied Static Pressure Limits

Applied Static Pressure Limits

When placing furniture on ProSelect Floors, consider the pressure exerted to determine appropriate floor-protector pad size. Appropriate sizes for 4 contact points over a range of furniture weights is shown.

Load Table

Applied Weight		25	50	75	100	125	150	kg
Temporary loading	Gloss/Semigloss/Satin	0.8	1.2	1.4	1.6	1.8	2.0	cm Ø
	Velvet to Ultramatt	0.7	1.0	1.3	1.5	1.6	1.8	cm Ø
Permanent Loading	Gloss/Semigloss/Satin	1.3	1.8	2.2	2.5	2.8	3.1	cm Ø
	Velvet to Ultramatt	1.1	1.6	1.9	2.2	2.5	2.7	cm Ø
Applied Weight		200	250	300	350	400	kg	
Temporary loading	Gloss/Semigloss/Satin	2.3	2.6	2.8	3.0	3.3	cm Ø	
	Velvet to Ultramatt	2.1	2.3	2.5	2.7	2.9	cm Ø	
Permanent Loading	Gloss/Semigloss/Satin	3.6	4.0	4.4	4.7	5.0	cm Ø	
	Velvet to Ultramatt	3.1	3.5	3.8	4.1	4.4	cm Ø	

Ø = diameter



Examples of the many different felt protectors available



p (static Load Limit - kPa)

Temporary

Permanent

○	ProSelect Gloss/Semi/Satin	1200	500
○	ProSelect Velvet – Ultra Matt	1500	650

This simple calculation can be used to determine the minimum surface area of protective pads to protect a ProSelect surface from deforming under static loads. Four pads of the calculated size spaced to evenly distribute weight is required.

$$\text{size (cm dia)} = \sqrt{\left(\frac{w \text{ (kg)}}{\pi \times p \text{ (kPa)}} \times 100\right)}$$

Use of formula:

- 1) Determine weight of the items to be placed on the floor (include weight of people on frequently used furniture) - this will be **w** in the calculation
- 2) Look up static load limit for your coating in the table - this will be **p** in the calculation
- 3) Calculate diameter of furniture protector pads required in cm - this is the size required for 4 different load bearing points, all load bearing points should have floor protectors.

If square or rectangular protectors are being used then the calculated size should be the shortest length

If there are fewer than 4 load bearing points then the equivalent size protection should be distributed as evenly as possible across available load points.

Section 13.0

Caring For Your Floor

Caring for your floor

Please refer to the **ATFA Caring for Your Timber Floor** brochure available from the Australasian Timber Flooring Association.

DO NOT use Steam mops, wet mops, hard head vacuum cleaners, worn brushes/brooms, abrasive cleaners, silicone sprays, steel wool or abrasive pads, wear high heels or work footwear on your coated wooden floor. This information and additional information is available in the above mentioned brochure.

Please contact www.atfa.com.au to order copies of the brochure below and ensure you hand these out to your clients on completion of each job.



www.atfa.com.au

ProSelect Clean

ProSelect Clean is a low VOC, environmentally friendly and biodegradable cleaner for use on ProSelect coated floors. Safe to use and leaves a streak free finish. Specifically designed to be used with a micro-fibre spray mop. Available as a ready-to-use cleaner or in a concentrate form requiring dilution.

Pictured is a Browns Take 5 – 400mm Micro-fibre Spray Mop and uses a replaceable micro-fibre pad.



Mixing

Mix 1 part ProSelect Clean Concentrate to 10 parts water (by volume). For particularly dirty floors mix a stronger solution at 1 part Clean Concentrate to 5 parts water.

Application

Simply vacuum or dry mop the floor to remove excess dirt, grit and dust.

Using a micro-fibre spray mop, spray/mist a small area of the floor and wipe in the direction of the grain. Allow to dry before walking on the clean surface. DO NOT wet mop the floor. For particularly stubborn dirty marks, spray directly onto the affected area and allow the cleaner to work several minutes before wiping off with a micro-fibre cleaning pad.



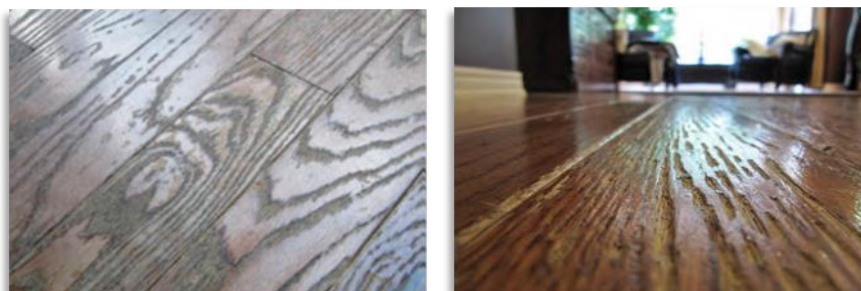
Maintenance and Rules for the client

These guidelines apply to any Timber floor. Following them will help your floor look good for longer between recoating and re-sanding:

- Anti-static mop, sweep and/or vacuum (soft head) the floor as often as possible.
- Never, ever wet-mop a floor.
- Only use cleaners that are recommended by timber floor coating manufacturers or timber floor manufacturers.
- DON'T use: ammonia-based cleaners, wax-based products (unless coating is oil or wax), detergents, bleach, polishes, abrasive cleaning soaps, steel wool or abrasive cloths, turps or kerosene.
- Use walk off, walk on mats and area rugs at all doorways (keep door mats clean).
- Put floor protectors on the bottom of all furniture and anything else that is hard and will make contact and might rub on the timber floor. (Lift and do not slide chairs.)
- Wipe up all spills immediately. Many beverages will stain most finishes if left on the floor.
- Keep pet nails trimmed. Know that dogs running through the house will scratch any finish.
- Consider using carpet runners/area rugs in high-traffic areas.
- Keep your home at normal living conditions for your area—no extremes of humidity or temperature.
- Protect your floor from direct sunlight. Prolonged exposure to sunlight can soften the tone of different species of timber to varying degrees and accelerate the darkening from oxidation and aging of timber and the coating.
- DON'T wear shoes with stiletto heels on your timber floor. Remove shoes at the door to avoid potentially dragging in sharp objects in your shoe treads.
- Rearrange your rugs and furniture periodically to allow the flooring colour to age evenly.

Steam mops

Everyone has seen the TV commercials showing steam cleaners magically sanitising, disinfecting, deodorising, and cleaning a timber floor. The manufacturers even advertise for use on timber floors, but that doesn't mean that timber flooring manufacturers or finish manufacturers think steam mops are appropriate for a timber floor; in fact, some have begun to specifically mention steam mops in their list of 'don'ts'. Steam mops can cause peeling of finish, whitening of the finish and a cloudy finish.



A prefinished timber floor damaged by repeated use of a steam mop cleaner

Resene ProSelect Clean

ProSelect Clean is a low VOC, environmentally friendly and biodegradable cleaner for use on ProSelect coated floors. Safe to use and leaves a streak free finish. Specifically designed to be used with a micro-fibre spray mop. Available as ready to use or in a concentrate form.

Physical properties

Active material:	Biodegradable non-ionic surfactant and degreaser
Diluent:	Water
Dose Rate:	Mix 1 part Concentrate to 10 parts water (by volume)
VOC:	Concentrate: 25 g/L Ready to Use: 2 g/L

Typical uses

- Cleaning polyurethane coated floors
 - Specifically designed for use on ProSelect coated floors.
 - For best results use with a micro-fibre spray mop.

Mixing

Mix 1 part ProSelect Clean Concentrate to 10 parts water (by volume). For particularly dirty floors mix a stronger solution at 1 part Clean Concentrate to 5 parts water.

Note: Diluted product should not be stored in large quantities for extended periods as it is more prone to bio-contamination once diluted. Mix amount required for job at hand.

Application

Simply vacuum or dry mop the floor to remove excess dirt, grit and dust.

Using a micro-fibre spray mop, spray/mist a small area of the floor and wipe in the direction of the grain. Allow to dry before walking on the clean surface. DO NOT wet mop the floor. For particularly stubborn dirty marks, spray directly onto the affected area and allow the cleaner to work several minutes before wiping off with a micro-fibre cleaning pad.

Precautions

Consult the Safety Data Sheet and can labels for this product prior to use. Users should ensure that they are familiar with all aspects concerning safe use of the product. IF IN DOUBT DO NOT USE THIS PRODUCT.

Storage / Transport

Do not allow to freeze. Temperature during transport and or storage is required to be >5°C and <25°C

Refer to www.resene.co.nz/proselect or the ProSelect Technical Data Booklet for more detailed information.

Section 14.0

Your Notes

My Notes

My Notes

My Notes

My Notes

My Notes

Disclaimer

The previous information is not a specification and all of the information is given in good faith. Since conditions of use are beyond the control of the manufacturer, information herein is without warranty, implied or otherwise, and final determination of the suitability of any information or material for the use contemplated, the manner of use is the sole responsibility of the user. The manufacturer does not assume any liability in connection with the use of the product relative to coverage, performance or injury.