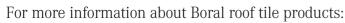


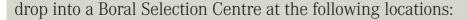
## Boral roof tiles

possibilities



call us on 1300 363 072;

visit our website at www.boral.com.au/roofinginsights; or





#### Fyshwick

16 Whyalla Street Fyshwick ACT 2609

#### **NEW SOUTH WALES**

653 Dean Street Albury NSW 2640

#### Alexandria

Home Ideas Centre 61-63 O'Riordan Street Alexandria NSW 2015

#### **Badgerys Creek**

Badgerys Creek NSW 2170 Castle Hill

#### Boral Select 6 Hoyle Avenue

Castle Hill NSW 2154 Coffs Harbour

Cnr Hi-Tech Drive and Craft Close Toormina NSW 2452

#### Dubbo

55 Wheelers Lane Dubbo NSW 2830

#### Kempsey

Kempsey NSW 2440

#### Newcastle

21 Pendlebury Road Cardiff NSW 2285

#### Port Macquarie 209 Lake Road

Port Macquarie NSW 2444

Hiland Building Centre 7 The River Road Revesby NSW 2212

#### **Shell Cove**

Boral Ideas Centre Cnr Southern Cross Blvd and Hinchinbrook Drive Shell Cove NSW 2529

#### Tamworth

Boral Selection Centre 49 Gunnedah Road Tamworth NSW 2340

#### Wagga Wagga

385 Edward Street Wagga Wagga NSW 2650

#### Wyong

Boral Select 154 Pacific Highway Wyong NSW 2259

#### QUEENSLAND

Harcourt Road Darra QLD 4076

#### **Gold Coast**

Cnr Nerang Southport and Ashmore Roads Ashmore QLD 4214

Lawnton Pocket Road Lawnton QLD 4501

#### **Sunshine Coast**

494 Maroochydore Road (turn at Pike Street) Kunda Park QLD 4556

#### **VICTORIA**

1 Industrial Court (Cnr Wiltshire Lane) Ballarat VIC 3350

Hume & Iser Building Centre 35-37 Charleston Place Bendigo VIC 3550

1037 Western Highway Caroline Springs VIC 3023

#### **Dingley Village**

66-78 Tootal Road Dingley Village VIC 3172

Rich River Brick & Tile 31 Murray Valley Highway Echuca VIC 3564

#### Leongatha

Shield Master South Gippsland Highway Leongatha VIC 3953

O'Sullivan Bricks & Windows 8 Mercury Drive Shepparton VIC 3630

#### **South Geelong**

West Coast Roofing Unit 2/12 Crown Street South Geelong VIC 3220

#### **Thomastown**

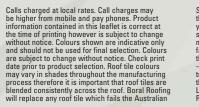
2 Trawalla Avenue Thomastown VIC 3074

#### Wantima South

191 George Street Wantirna South VIC 3152

### Warrnambool

South West Roofing 17 Dickson Street Warrnambool VIC 3280



Standard 2049 roof tiles. Please ask for a copy of the Boral Roofing 50 year guarantee before making your purchase. During transportation and installation small blemishes such as scuffing and chip marks may occur. These are not considered a production fault and will not detract from the performance of the roof tile. © copyright Boral Montoro Pty Limited — all rights reserved 2008. \*\*M Terracotta Shingle is a trademark of Boral Montoro Pty Limited. \*\*M Imagine the possibilities is a trade mark of Boral Montoro Pty Limited. Boral Montoro Pty Limited. Boral Montoro Pty Limited is trading as Boral Roofing ABN 34 002 944 694. Print date February 2008.







## roofing insights

a guide to selecting Boral roof tiles





## Boral roof tiles



# Imagine TM possibilities

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## Introduction

Are you building your dream home from scratch, or extending? Perhaps it's time to re-roof and you want it to perfectly complement your existing home style.

From its function to protect against the elements to taking centre stage as a home's defining feature, the roof is an opportunity to top off your most important asset.

Planning its design and look however can sometimes take a back seat when there are so many things to think about during building or renovating.

That's why we've put together this guide, to introduce some basic information and take the guess work out of making decisions about your roof.

The roof is usually the single largest surface area of a house, so it deserves careful thought to ensure the material selected provides the best performance and visual effect for your home.

The location and aspect of your home will determine how important it is to keep out the harsh sun, or conversely the sound of the driving rain. And of increasing importance are sustainable building practices and solar design considerations.

Of course with more than 30 years in the business, when it comes to roofing at Boral, we're talking about tiles. As architectural styles and materials come and go, the roof tile has endured the test of time and we believe best reflects the integrity of a home.

Boral has an extensive range of terracotta and concrete roof tiles guaranteed to last. Our tiles are manufactured in Australia for Australian conditions and we offer roofing solutions to suit almost any style of home.

So whether building a new home, extending or re-roofing, read this guide and choose with confidence the roof that's right for you.

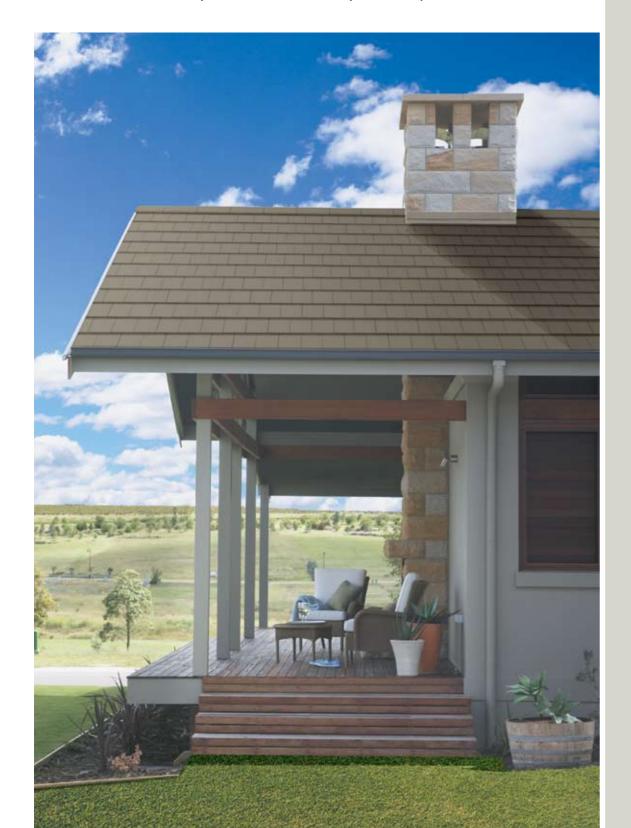
## Why roof tiles?







It's easy to see why you should choose roof tiles for unsurpassed style, versatility and performance.





Durability & strength

Made to Australian Standards, Boral terracotta and concrete tiles are manufactured to withstand harsh climatic conditions and marine environments. All Boral roof tiles are salt-safe and frost resistant, making them suitable for any location, including coastal areas.



Design flexibility

The extensive range and unique design of individual tile profiles mean enhanced flexibility in roof design to complement a wide range of architectural styles and specifications.



Acoustic performance

The density of tiles helps reduce external sound, such as aircraft and road noise and particularly rain and hail. A tiled roof has a sound reduction potential of 30 decibels compared to only 12 decibels for steel sheeting. Further, there is none of the creaking that comes with the expansion and contraction of steel.



Thermal insulation

Roof tiles can help you enjoy more comfortable living in summer and winter. Thermal lag in tiles results in advantageous insulation properties to help manage heat transmission, in addition to considerations such as sarking, tile colour and overall solar design.



Fire resistance

Terracotta and concrete roof tiles are non-combustible materials and proven performers in the face of fire, providing superior protection against radiant heat from bushfires.



Wind loadings

The weight of your roofing material will contribute to its performance in high wind areas. Terracotta and concrete roof tiles outperform in this regard by offering more resistance to wind suction than lighter weight materials such as steel sheeting.



Rainwater & tank safety

Have peace of mind in collecting water from tiled roofs, as it will be compliant with World Health Organisation standards for drinking. Water collected on Boral roof tiles is non-toxic and safe to reuse.



Low maintenance

Once tiles are installed there is little or no maintenance. Should a section of the roof ever be damaged, there is the added advantage of individual tile replacement over large steel sheets. The use of a flexible pointing material to fix ridge capping enhances security in high winds.



Long lasting

With a 50-year performance guarantee, Boral roof tiles are built to last. The Australian experience indicates that the performance of Boral tiles will continue for periods in excess of this.

## Types of roof tiles



Tiles remain the most popular form of roofing material in developed countries today, and with good reason. Natural properties together with technological advances underpin the enduring success of Australia's two main varieties: terracotta and concrete.



## Terracotta

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Meaning 'baked earth' in Italian, terracotta, as the name suggests is a natural clay product that has been used throughout the ages for protection against the elements.

Boral terracotta tiles are manufactured using select clays that are kiln-fired to temperatures of 1100°C, resulting in a strong yet lightweight roofing material of exceptional quality.

Integrity is maintained with enhanced colour performance, and a vitreous coating that makes these tiles impervious to harsh UV exposure and pollutants.

## Natural beauty of terracotta



#### High quality premium finish

Made from natural clay with a choice of glazed, semi-glazed or unglazed finishes, terracotta tiles exude character and quality that cannot be replicated.

#### Superior colour-fast properties

The ceramic colour is applied to each tile, which is then individually kiln-fired for outstanding colour performance and negligible maintenance.

#### **Design flexibility**

Terracotta roof tiles offer three distinct profiles for greater design flexibility to achieve a wide range of house designs. The Boral Terracotta Shingle is the only flat terracotta tile to achieve a low 15 degree pitch.

### Concrete

Modern concrete tiles, made from cement, sand and pigments, can replicate the appearance of a broad array of distinctive tile designs. As such they offer the widest selection of profiles and colours, while remaining relatively cost-effective.

Boral concrete tiles are manufactured using an extrusion process resulting in the utmost strength and density. Following moulding and colouring we apply a sealant finish that protects against efflorescence, a salty white deposit that can form on masonry and concrete products.

Concrete tiles are made from graded sands and cement to ensure the body of the tile conforms to the Australian Standard of water absorption of less than 10 per cent.

Numerous accessories are available to enhance the overall appearance of a concrete tiled roof, including seamless ridge-capping for the ultimate clean-line look.

## Enhanced versatility of concrete



#### Outstanding value

With proven performance and an attractive appearance, concrete tiles are Australia's most popular choice for value for money.

#### **Enduring strength**

Our concrete tiles are manufactured from durable concrete made to strict strength specifications, with their strength actually improving with age.

#### **Extensive colour range**

Whether it's the vibrancy of our colour-on surface finishes or the longevity of colourthrough options, there is a concrete tile to complement any colour scheme.

## Choosing a roof tile

Follow these five simple steps to choosing the right Boral roof tile for your home.







- 01. Material
- 02. Profile
- 03. Colour & Finish
- 04. Accessories
- 05. Installation

Choose from the natural beauty of terracotta or the enhanced versatility of concrete, knowing that both are built to last, with 50-year performance guarantees.

In addition to the features and benefits of these materials on pages 6 and 7, terracotta and concrete tiles also differ in size and shape. This means there will be differences in the number of tiles to a square metre, as well as in the system of aligning the tiles on the roof next to each other (called the bond).

Terracotta tiles are slightly smaller in size, with on average 13 tiles needed per square metre, although this will vary with the complexity of the roof design. They are designed to interlock at both the head and the sides and can be laid in either a cross bond or straight bond fashion, depending on the profile.

There are approximately 10 concrete tiles to a square metre. These are designed to interlock at the sides only but can also be laid either cross bond or straight bond, depending on profile.

All Boral roof tiles are salt-safe and frost resistant, making them suitable for any location, including coastal areas.





14). In the wet, the steeper the roof pitch, the faster the rainwater will run off it. The channels in shaped profile tiles also act as a natural

watercourse for rain. If you prefer a more streamlined contemporary

look, try our flat profiles. These deliver the flat clean appearance becoming so popular across metropolitan and rural house styles.

♦ Windsor available in QLD only

- ◆ Uno available in VIC only
- Slimline available in NSW and VIC only
- X Contour available in NSW and VIC only

## Choosing a roof tile

O3 Colour & Finish

Next. it's colour, one of the most fundamental influences on the style, character and essence of your home.

In terracotta, there is a large assortment of colours available across the collection. These are applied in four different finishes: full glazed (in either high gloss or matt); semi-glazed, for a traditional mottled appearance; or unglazed for the look of natural clay.

In concrete, there are two options for the application of an extensive range of colours: Colour-On and Colour-Through. As the name suggests, Colour-On is a coating applied to the surface of each wet extruded tile, whereas in our Colour-Through tiles, the oxides are mixed through the concrete mix for a smooth surface finish of longer lasting colour. We apply to both options a tinted acrylic sealer that further enhances and protects.

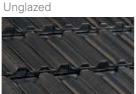


**TIP** Lighter colours are more energy efficient in Australia's hot climate.





Semi-glazed





Full glazed - gloss

Full glazed - matt





Colour-On

Colour-Through











#### COLOUR SELECTION

When it comes to colour, it's easy to feel overwhelmed by the sheer number of options available. But by planning well in advance and following a few simple guidelines, you can create a look you will admire for years to come:

- A good place to start is by collecting reference material – photos you've taken yourself or from magazines and brochures of inspiring colour schemes.
- The architectural style of your home and its environment (including surrounding homes) is a major factor. Now's not necessarily a good time to unleash that desire to be original!



- Currently, we are seeing a move toward lighter colours that blend with the natural environment. For a more substantial appearance, roof colour should be darker than walls.
- Trust your instincts and choose what's right for you, not your friends or family.



Finally, it's time to accessorise your roof - and when it comes to roofing, it's not merely a case of optional extras.

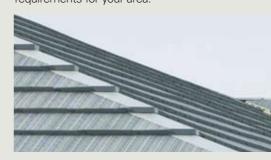
Some accessories, such as sarking, have become the new essential item to enhance functional performance. Others are designed for their aesthetic qualities and like everything else in your home, the right accompaniments can turn generic into standout.

### Boral's roofing accessories include:

#### CONCRETE RANGE

## Seamless Ridge Capping

Our innovative ridge capping system was developed to accompany the Flat Concrete range of tiles for an even sleeker finish that is truly impressive. The patented CSIRO-tested system is perfectly colour matched and consists of individual low-profile capping pieces for each course of tiles. Check with Boral Roofing for colour availability and technical requirements for your area.



#### TERRACOTTA RANGE

### Accent<sup>™</sup> Ridging

Accent<sup>™</sup> Ridging, a low-line ridge system to enhance terracotta tiles. Whether flat or shaped in tile profile, Accent<sup>™</sup> Ridging seamlessly align ridge capping end-to-end in one smooth line without steps.







### Sarking

This reflective foil insulation is recommended for all tiled roofs to enhance energy efficiency and weather-proofing (see page 17 for more details). It must be installed at the time of building.











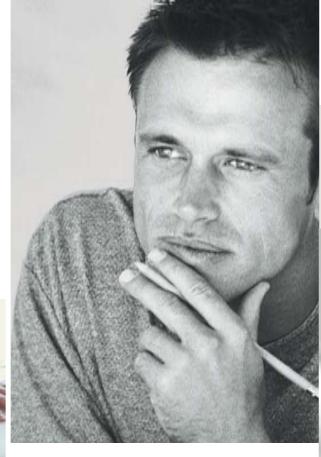
Apex Finial Gable Finial

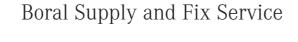
## 05 Installation

Getting a great roof is also dependent on a good installation from a qualified installer. To be sure your roof is installed to Boral specifications, we recommend our own supply and fix service, or an established independent installer from the Boral preferred installer network.

Boral's supply and fix service means peace of mind from the start, when we can come to your site to prepare an obligation-free quote, to services such as pre-handover roof inspections. For renovations, extensions and re-roofing, just call us for a referral to a Boral preferred installer near you.









Boral site supervisors

Work Cover compliant

Technical support

Fixing and product warranty

Product estimates and quotations

Trade qualified roof tilers

Guard rail installation

Pre-handover roof inspections available

## Planning construction

Whether you're building a new home or giving yours a facelift, make sure you do some constructive planning before your project starts.

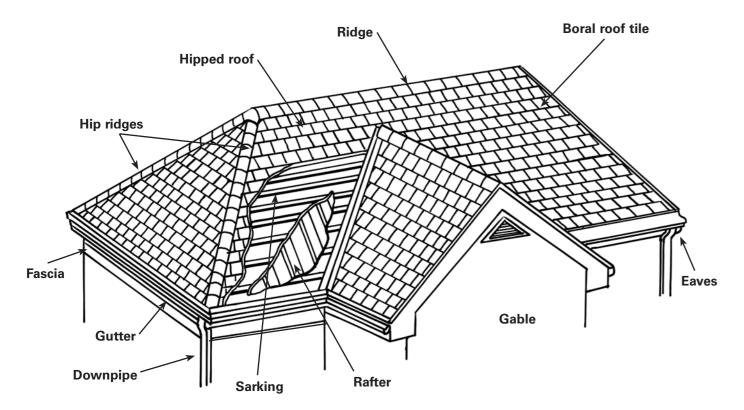


- Before anything else, find out from your local council what regulations govern alterations or additions in your area. There may be restrictions such as height limits that you need to be aware of from the outset.
- Check your state's energy efficiency requirements and look at how your project can work to reduce energy and water consumption. Energy-efficient living is not an add-on, but is easy to achieve by integrating some simple principles now.
- 3. If you're planning major work, an architect or building designer can turn your dream into reality. Personal referrals can be ideal but it's good to do your own research to find someone who is best suited to your exact needs. Useful resources are the Royal Australian Institute of Architect's home advisory service, Archicentre, www.archicentre.com.au or
  - the Building Designer's Association of Australia, www.bdaa.com.au.
- 4. Getting a good roof is also dependent on finding a qualified contractor along with selecting the right materials. Consider a builder who is familiar with your area and who may have had experience dealing with the local council. For registered builders, go to the Housing Institute of Australia, www.buildingonline.com.au, or the Master Builder's Association, www.masterbuilders.com.au.
- 5. Come to a Boral Selection Centre and discuss the various details of your roof construction while it's still at the design stage. Bring your ideas or plans for inspiration as well as technical information and details on our extensive service.

## Roof structure

The design of a roof is expressed through two key elements: the supporting structure and its covering material (or cladding). Get these right and you could add enormously to the value of your home.

Let's start with the basics to get you on your way with structural considerations.



How your roof will look and perform warrants careful consideration. The number one priority is the right level of protection for your home, so think firstly about the climatic conditions of your home's location, followed by its architectural style and any local council requirements.

One of the main determinants of overall roof design is its pitch, or slope. Measured in degrees as a ratio of roof height to span, this is expressed by its angle of inclination to the horizon.

In terms of weather performance, the steeper the roof pitch the faster the rainwater will run off it, thanks to the pull of gravity. This is an important consideration in wet and windy areas so as to prevent a build up of water on the roof.







The weight of the roofing material itself also impacts performance in high wind areas. Terracotta and concrete tiles offer an advantage by offering more resistance to wind suction than lighter-weight materials such as steel sheeting.

Manufacturers of roof materials will specify the most suitable pitch for their products. As a general rule, the roof pitch will govern the length of the framework rafters, so decide on these two components at the design stage.

The minimum angle under Australian Standards for a tiled roof pitch is 15 degrees and Boral has developed products to meet a demand for these more contemporary flatter roof styles

### Minimum roof pitch - degrees

	1		0		
Profile		Minimum pitch without sarking		Minimum pitch with sarking	
TERRACOTTA	NSW/QLD	VIC	NSW/QLD	VIC	
Shingle	20	20	15	15	
French	20	20	15	15	
Swiss	20	20	15	15	
CONCRETE	NSW/QLD	VIC	NSW/QLD	VIC	
Contour	20	20	15	15	
Macquarie	20	20	15	15	
Windsor	20	n/a	15	n/a	
Slimline	20	20	15	15	
Striata	20	20	20	20	
Linea	n/a	20	20	20	
Uno	n/a	n/a	n/a	20	

Boral Roofing recommends that roofs with rafter lengths in excess of 4.5 metres be installed with an increased roof pitch of 2 degrees for each additional metre.



TIP In the face of height restrictions, consider a flatter roof pitch to maximise internal height and provide a more spacious living environment.

## Roof Styles

combination on the one house





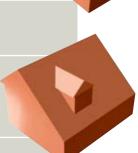












## Living energy-wise



**TIP** Design features such as extended eaves have a big impact on the temperature of a home and how comfortable its occupants will be.



Awareness of the impact of our energy and water consumption on the environment has today reached new heights. So too has the many ways our homes can more efficiently manage these resources.

An energy-wise home will use the best combination of sustainable building considerations such as site orientation, wall and ceiling insulation, ventilation and materials to reduce overall energy consumption.

Legislative change is turning this knowledge into action through minimum standards for new houses that will provide big savings in energy, and by default, energy bills.

House Energy Rating Schemes (HERS) to measure thermal performance are being implemented nationally, with the aim of integrating sustainability into design development from the outset.

New homes built anywhere in NSW now require a BASIX (Building Sustainability Index) certificate stating that the design will meet specific energy and water mains reduction targets. In Victoria all new homes must achieve a 5-star energy rating, made up of a combination of energy-efficient elements.



Two tools are used to assess the thermal rating of homes in Queensland: the Building Energy Rating System (BERS) and the Nationwide House Energy Scheme (NatHERS).

The principles are surprisingly simple, but the end result is year-round more comfortable homes, benefiting both the environment and your wallet. So even if you're renovating, now is the perfect opportunity to save money over the long-term and increase your home's value by thinking energy-wise.

### Energy efficient roof systems

The position of a house relative to the sun will drive considerations to best utilise its natural energy for cool summers and warm winters indoors. This is called 'passive solar design'.

Thermal mass, or the ability of a material to absorb heat, is an important aspect in most Australian climates where there is a need to average out temperatures. High density materials such as clay and concrete have a high thermal mass because a lot of energy is required to change their temperature. An eight to ten hour delay in energy flow can effectively produce a warmer house at night and a cooler house during the day.

With the goal of northerly living areas (where exposure to the sun is best controlled), features like extended eaves and skillion roofs are popular solar design attributes that provide desirable shading in summer, while still letting in the low winter sun.

In terms of collecting tank water, a roof's span will clearly affect the volume of rain collected, so ensure a guttering and downpipe system of adequate size. Tiled roofs of greater pitch will more efficiently deliver rainwater to this system, particularly if the profile is shaped.

There are three additional factors crucial to the thermal performance of tiled roofs: colour, ventilation and sarking:



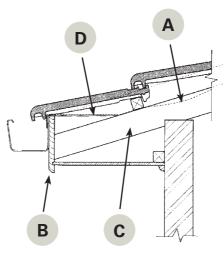
#### Colour

More and more, home builders are recognising the opportunity to improve energy efficiency simply by selecting a lighter colour for the exposed roof surface. Research shows that light coloured roof tiles can lower the air temperature in the roof space by up to 9 degrees compared to dark tiles. You can view Boral tile BASIX colour ratings online at www.boral.com. au/roofinginsights or call us on 1300 363 072 to order a Colour Ratings Fact Sheet



#### Ventilation

Cross-ventilation, with at least two openings in each room, allows breezes to circulate for a cooler home. This is of high importance in the roof space, so radiant heat building up from the hot summer sun can escape. Ideally, vents should be installed in the roof to help regulate air flow all year round.



### Sarking

Insulating walls and ceilings is one of the best ways to efficiently regulate temperature. Now recognised as of equal importance is the reflective foil insulation, called sarking, which sits between the rafters and roof tile battens.

Aside from the tiles themselves, sarking is your front line protection against the elements. This thin blue membrane is non-flammable, forms an effective dust barrier, and reflects up to 95 per cent of radiant heat from the roof space. This dramatically reduces the temperature in the roof on hot days, allowing conventional insulation like fibreglass batts to work more effectively – especially vital if you choose darker coloured tiles. In winter it works in the reverse by reducing heat loss through the roof.

In the wet, the waterproof benefits of sarking cannot be underestimated and it provides an extra level of security against unpredictable storms. Sarking should always be used in low pitched roofs to protect against wind-blown spray and condensation, and is mandatory in bush fire zones and high wind areas. We recommend its use for all tiled roofs to maximise the energy efficiency of your home and to ensure your roof remains watertight.

- A. Sarking
- B. Fascia Board
- C. Rafter
- **D.** Anti-ponding Board

# Frequently asked questions

#### How do I best maintain my roof?

Maintaining tiles requires minimal effort. However if your roof is old or you'd like to get it checked after storm damage, we recommend contacting a roof maintenance specialist who understands the correct safety procedures to inspect your roof.

#### What is lichen?

Lichen or moss can start to grow on tiles after long periods but does not in any way indicate deterioration or affect the performance of tiles. It can be easily removed with a high pressure cleaner by a professional cleaning contractor.

#### Can you respray tiled roofs?

Depending on the material and method used it is completely acceptable to spray concrete roof tiles. However never spray terracotta as it would interfere with the natural quality of the clay and over time will peel away from the glazed surface.

#### How expensive is it to re-roof?

Bring your plans into a Boral Selection Centre or contact us on 1300 363 072 and we can provide an accurate cost estimate. There may be surprisingly little difference between the cost of respraying and installing new roof tiles.

## Why is concrete not as colour-fast as terracotta?

Concrete tiles are not glazed so like all exterior building materials they are subject to UV radiation and atmospheric pollutants. As a result they will weather with age to a matt finish and will lose some colour over time. Terracotta tiles are kiln-fired with a vitreous coating that makes these tiles resistant to harsh UV exposure and pollutants.

## What are the white streaks apparent on some roofs?

Sometimes the natural mineral salts in concrete can migrate to the surface in the form of a whitish grey discolouration called efflorescence. This is not harmful, has no impact on the performance of the tile and will weather away over time.

#### What is BASIX?

The Building Sustainability Index (BASIX) is a NSW Government planning tool that requires every new house, villa, townhouse or block of units in the state to meet specific energy and water reduction targets.

#### What is the 5 Star Standard?

This is the Victorian standard for all new homes and apartments from July 2005. Collaboratively established by the Building Commission, Sustainable Energy Authority and Plumbing Industry Commission, it requires that all new houses and apartments meet a 5 Star energy efficiency rating plus either have a rainwater tank for toilet flushing or a solar hot water system.

#### What is NatHERS or BERS?

The Nationwide Housing Energy Scheme (NatHERS) and Building Energy Rating Scheme (BERS) are energy simulation computer programs that provide thermal ratings for homes. They are employed during the design stage to enhance the energy efficiency of a new development.

#### How long will it take to fix my roof?

The average roof is around 210 square metres, which takes approximately two days to install and fix. Allow another day for every additional 100 square metres.













## Build better with Boral

Boral Limited is Australia's largest building and construction materials supplier.

As well as roof tiles and accessories, we make bricks, pavers, windows, plasterboard, timber flooring, retaining walls and more.

All to help you capture the style and character that makes your home yours.

