Product and technical manual

Coverland

Adhering to the use of good roofing practice

Part of BMI

bmigroup.com/za

Company profile

Coverland's history dates back to 1949 and has since evolved to become the largest concrete roof tile manufacturer in Southern Africa.

Boasting a national footprint of 5 manufacturing sites as well as 3 depots, we offer a comprehensive range of locally produced concrete roof tiles, as well as complimentary roof components and systems designed to cover a variety of functional aspects of roof construction.

OUR HISTORY

BMI South Africa's history dates back to 1949 when the founding company, Vereeniging Tiles Ltd (a division of Redland) installed the first double action line production tile machine in Vereeniging. Business developed well over the years which led to a merger in 1976 with three other major tile manufacturers to form Coverland Roof Tiles, specialising in concrete roof tile production. Another key acquisition in 2007, of the Kulu Group, made us the leading concrete tile producer in South Africa. By 2017, as part of the Braas Monier Building Group, the business was acquired by Standard Industries, and combined with Icopal to form BMI Group.

ABOUT BMI GROUP

BMI Group was formed in 2017 in order to better serve customers expecting roofing and waterproofing expertise from one partner. Bringing together some of the industry's most trusted brands and is Europe's largest manufacturer in the combined pitched and flat roofing market in Europe, with a significant presence in parts of Asia and Africa. BMI Group's industrial heritage dates back to 1740 and offers over 200 years of experience and innovation to its clients.

As a **Standard Industries** company, BMI Group, headquartered in the UK, has the support, reach and resources of a global enterprise. With 116 production facilities across Europe, Africa and Asia, and almost 10,000 employees worldwide, the business is well positioned to provide an unparalleled level of service to homeowners, architects, specifiers, contractors, installers, property owners and developers. Find out more at **www.bmigroup.com**

OUR PROMISE

We help build communities by providing shelter, protection and peace of mind through effective and innovative roofing and waterproofing solutions, designed to transform the way people live and work. We care about our people, our partners and those we serve. Together, we are leading our industry in new, efficient, safe and sustainable ways.

Our values guide us to be a business where every employee is empowered to be the best version of themselves; where both employees and customers are constantly inspired by what we do; where we never stop evolving our products, systems and solutions, and where we're fully connected as one team.

Coverland also offers an Accredited Architect CPD (Category One) activity, audited and approved by the South African Institute of Architects. We offer practical training on our roofing products to our customers to ensure top quality workmanship. Our mission is to continue to deliver high quality roofing solutions, pioneering innovations and world-class service. We aim to drive progress, improve quality of life and give peace of mind for architects, contractors, building- and home-owners alike. Because at Coverland we believe it's never just a roof.

COVERLAND ACADEMY

75 YEARS
ESTABLISHED 1949

Plants

LIMPOPO

1 **Polokwane**
2 Beril Street, Magna Via
T 015 495 0070

NORTH WEST

2 **Brits**
27 Piet Rautenbach Street
Brits Industrial Area
T 010 492 8800 | F 012 250 2218

KWAZULU-NATAL

3 **Durban North**
58 Lark Avenue, Kwa Mashu Road, Avoca
T 031 565 3260 | F 031 565 1312

EASTERN CAPE

4 **Gqeberha/Port Elizabeth**
6 Kurland Road, Perseverance
T 041 463 1155 | F 041 463 2629

WESTERN CAPE

5 **Cape Town**
22 Moorsom Avenue, Epping Industria 2
Goodwood
T 021 492 2230 | F 021 534 7851

Depots

GAUTENG

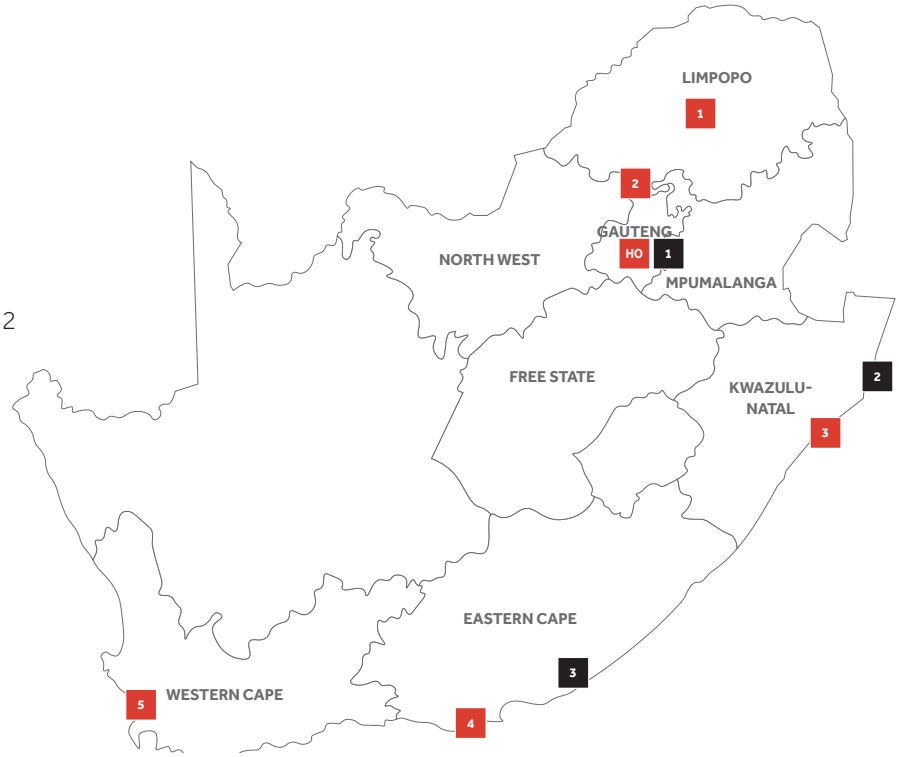
1 **Germiston**
1 Setchell Road, Roodekop
T 010 492 8780 | F 011 866 2941

KWAZULU-NATAL

2 **Richards Bay**
14 Geleiergang, Alton
T 035 797 2160 | F 035 797 4096

EASTERN CAPE

3 **East London**
18 Mercury Road, Woodbrook
T 043 492 0040 | F 043 743 2191



Setting standards

As a part of BMI Group, roofing materials are first tested at the BMI Technical Center in Germany before innovations are released for sale. BMI has a dedicated in-house team of product designers, engineers and materials scientists who work closely with equipment manufacturers and external specialists to develop new and improved products. Advanced techniques such as Computer Aided Design or 3D printing are used for detailed design and visualisation of products. These resources are applied to the development of concrete tiles, clay tiles, fittings and accessories as well as functional and aesthetic coatings. Manufacturing of a new product is only the last step of an extensive programme of development, engineering, trials and testing before the implementation is carried out.

Excellent performance and ease of use on the roof are vital to the success of our roofing systems. Our test facilities allow us to analyse the performance of our products under all climatic conditions – a clear requirement given the variety of our local markets.

INTENSE PRODUCT TESTING

Setting standards with our product testing methods we expose our products to sunlight simulation and UV radiation, acid rain, freeze-thaw resistance and thermal shock testing. We test the ease of laying and use of our products internally. BMI weathering stations in eight countries worldwide additionally help us to simulate and predict the durability of our products many years into the future in all types of climate conditions.

Our roofing products are tested in a wind tunnel unique to the industry. The wind tunnel can simulate wind and rain conditions found in a wide range of climate zones worldwide. The simulations even include situations which typically arise only every 50 years. Only when the new roofing materials have passed the wind tunnel trials as well as several other hardness tests and long-term ageing tests, does BMI release its innovations for sale.

Wind Tunnel testing at our BMI Technical Centre in Germany

EXPERTS AT WORK

The technical experts at BMI drive the sharing of product and production know-how through people networks, training courses and in-house consulting in many industrial and product related fields. Learnings made in one of the plants are facilitated by the technical teams and spread across the Group to improve overall performance and efficiency of our plants for better quality products. Our technical centre and our business units have more than 50 years of experience in roofing. We devote more resources to roofing development, and have more know-how than any other roofing company in the world.

Last but not least, experts of the technical centre are actively involved in the development of national and international industry standards in several boards, associations and organisations to make sure that our high product standards make it into norms and standards for the benefit of the customer.

Index

This document explains the importance of concrete roof tilers adhering to the use of good roofing practices. The document is based on existing SANS Building Codes of Practice and the extensive experience gained by Coverland – which has been manufacturing concrete roof tiles in South Africa for more than half a century.

The primary function of the roof is to protect a building from a variety of weather conditions pertaining to a specific area. The more elaborate or complicated the roof, the more it will call for delicate details in order to ensure optimum performance from the roof covering. Please call your nearest Coverland office for further information.

The whole roof is key

Modern roofs do not only offer protection from the elements, but also provide a variety of functions for the home.

The advantages of individual components add up to a more extensive benefit. High-performance insulating radiant barriers offer high energy-saving potential. The right tiles in combination with matching fixings and safety components resist even the harshest of weather conditions. Integrated cooling and ventilation systems play an increasingly important role in modern buildings.

Eave filler / comb

Radenshield™ aluminium membrane

Undertile membrane

3

Concrete tiles

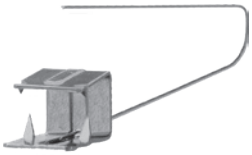
4

Clear/translucent tile

5

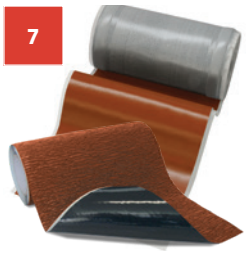
Storm clip & nails

6



Kro clip

7



EasyFlash® and Wakaflex®

8

Ridge tree

9

Dry ridge rolls

10

Roof tile fittings

11

Ridge clip

12

Dry vent monoridge

Concrete Roof Tile Collection

A modern building material

Concrete tiles are made from sand, water, cement and pigments, and are not fired like clay tiles, but cured at temperatures of approximately 60 degrees Celsius. The curing process makes them sturdy enough to be transported within 7 days after manufacture, and they get stronger over time. The energy-efficient production process and long product life cycle mean that concrete tiles have one of the best environmental footprints of all roofing materials. Our concrete tiles are available in a variety of designs, perfectly suited to different architecture: With high or low profiles, classic or premium surface finishes for UV-resistance.

A lot can change in 30 years, but your roof doesn't have to. With a track record of just over 75 years and the backing of BMI Technical Centre, we are proud to introduce our **30 Year Roof Tile Guarantee**.

Your roof is your protection from the elements, your shelter and with our guarantee, your peace of mind. Our concrete range is guaranteed against the event of damage to the weather resistance of the product resulting from a manufacturing defect. In the unlikely event that damage occurs, Coverland will repair the affected product for the lifetime of the guarantee. **#itsneverjustaroof**

ROOF TILE 30 YEARS GUARANTEE TERMS AND CONDITIONS APPLY

SABS APPROVED

AGRÉMENT SOUTH AFRICA innovative construction product assessments

TIPSA THERMAL INSULATION PRODUCTS & SYSTEMS ASSOCIATION SA GOLD MEMBER

DISCLAIMER: Some profiles and colours shown in this brochure, may be region specific. Contact us for availability in your area. The colour of the tiles displayed in these pages may vary due to the printing process. Coverland recommends that you view an actual tile sample before reaching a purchase decision. Customised colours are available on request. **30 year functional guarantee:** T's & C's apply. For more information please contact your sales representative or email us at **info.sa@bmigroup.com**

Today concrete is an indispensable building material for the construction of modern buildings and a firm part of the appearance of our cities. Concrete tiles provide protection against wind and weather, and is an ecologically sound solution offering excellent value for money.

Perspective Farmhouse® White

Concrete tile finishes

VIBRANT

Our technologically advanced Vibrant coating ensures deep, rich colours , and colour uniformity across the roof. It also ensure no efflorescence appears after installation.


Slate Grey


Red


Terracotta


Brown

FARMHOUSE®

The through colour tile is accentuated by a second colour, sporadically applied to give it a natural rustic appearance.


Slate Grey


Red


Terracotta


Brown

THROUGH COLOUR

A single-shaded base colour throughout the roof tile displays a distinct roof surface.


Slate Grey


Red


Terracotta


Brown

ROOF TILE 30 YEARS GUARANTEE TERMS AND CONDITIONS APPLY

DISCLAIMER: Tile colours displayed may vary due to the printing process. Please view an actual tile sample before reaching a purchase decision. Other colours are available on request and minimum order quantities apply. For more information please contact your sales representative or email us at **info.sa@bmigroup.com**

Benefits of concrete tile

- Durable and gets stronger with age
- 30 year roof tile guarantee for peace of mind
- Good thermal properties with a r-value of 0,2 m²K/W (please refer to page 32 on RadenShield™ guidelines)
- Good soundproofing properties
- Easy to install and to replace/repair
- Available in a wide range of natural colours
- Enhances and increases the value of your home
- With the correct installation it provides a safe and secure home
- A very cost effective roofing solution when you include your roof timber/trusses and installation costs

Cost Effective*

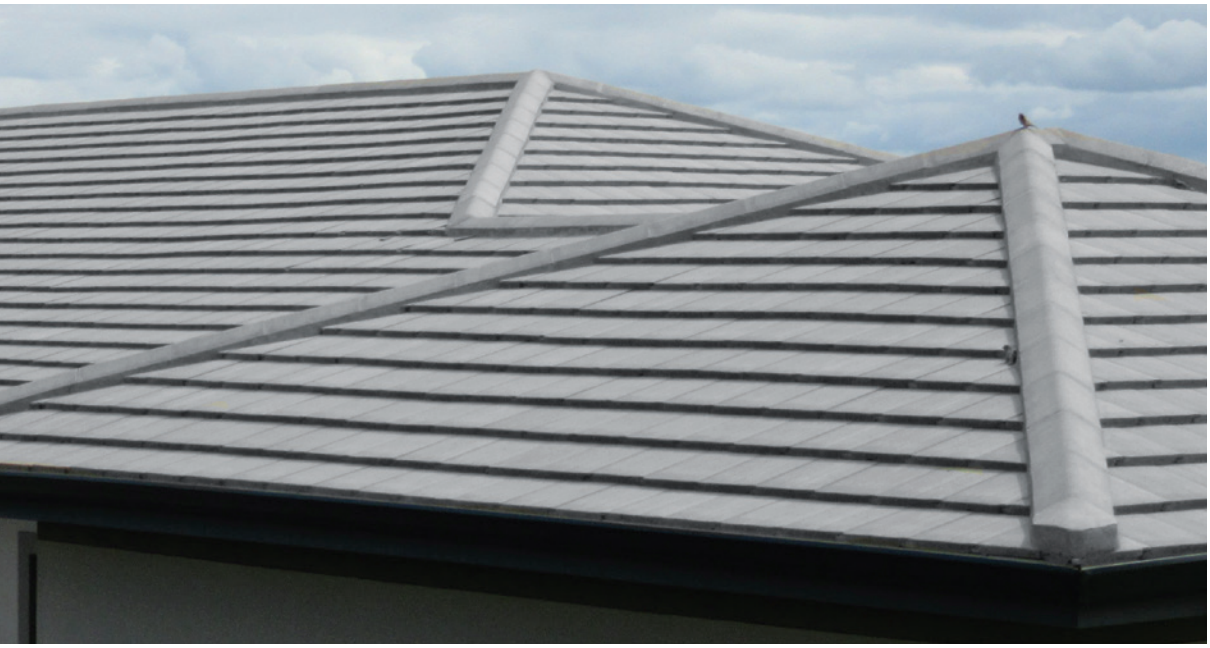

Durable

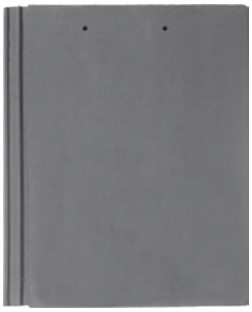

Aesthetics

*Based on comparative research done on roof tiles vs metal roof installations.
For more information please contact your sales representative or email us at **info.sa@bmigroup.com**

Elite

Our Elite roof tile has a flat structured outline epitomising a flawless modern roof.





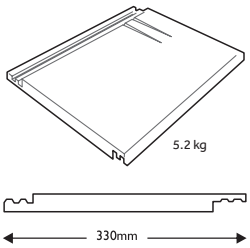
Through Colour
Slate Grey

G EC CT K P

Through Colour
Slate Grey

TECHNICAL DATA

Overall size of tile (mm)	420 x 330
Approx mass per tile (kg)	5.2
Linear cover per tile (mm)	295



STRUCTURAL DATA

The roof structure specifications should comply with the regulations in your area.

Minimum pitch requirements	17° to 25°	26° and over
Rafter Centres (mm)	Up to 760 38 x 38 batten	Up to 950 38 x 50 batten on edge
Headlap (mm)	100	75
Batten Centres (mm)	320	345
Batten per m² (m)	3.13**	2.9**
Number of tiles per m²	10.6	9.8
Approx mass of tile m² (kg)	55	50
Laying Application	Broken Bond	Broken Bond
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Mandatory

** No allowance for wastage.

Our profiles are region specific.

G Gauteng EC Port Elizabeth East London CT Cape Town K Kwa-Zulu Natal P Polokwane

Cupola

Our Cupola roof tile denotes an unmistakable Mediterranean character with its deep rolls and bold tile curves.

Through Colour
Terracotta

G P

Through Colour
Slate Grey

G P

Farmhouse
Kalahari

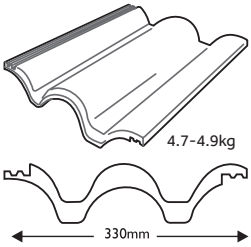
EC

Farmhouse
Terracotta

EC

TECHNICAL DATA

Overall size of tile (mm)	420 x 330
Approx mass per tile (kg)	4.7-4.9
Linear cover per tile (mm)	300

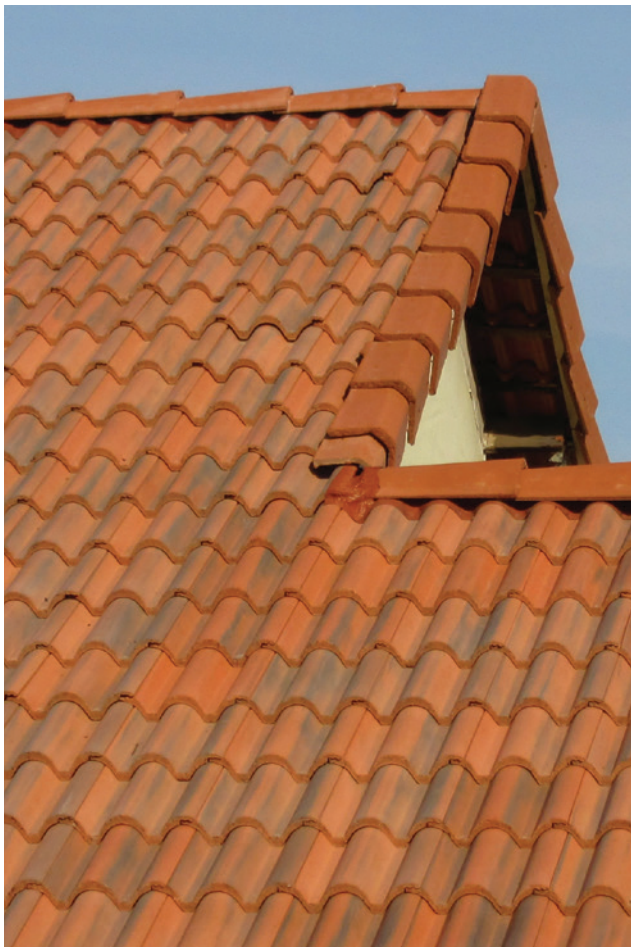


STRUCTURAL DATA

The roof structure specifications should comply with the regulations in your area.

Minimum pitch requirements	17° to 25°	26° and over
Rafter Centres (mm)	Up to 760 38 x 38 batten	Up to 950 38 x 50 batten on edge
Headlap (mm)	100	75
Batten Centres (mm)	320	345
Batten per m² (m)	3.13**	2.9**
Number of tiles per m²	10.42	9.66
Approx mass of tile m² (kg)	±51	±47
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Recommended

** No allowance for wastage.

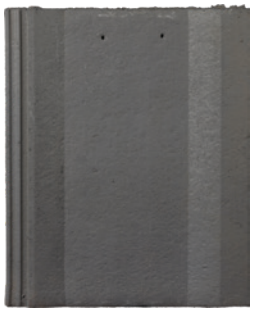


Farmhouse Terracotta

Efflorescence, often referred to as "lime bloom", is a natural phenomenon and is found in products containing cement. It is a white deposit which appears on the surface of all concrete based products. Efflorescence is a temporary condition, and does not affect the functional properties of the product. Wind and rain will gradually remove the deposit and the true colour of the tile will be restored.

Perspective

Our Perspective roof tile is ultra-modern with an undulating contour giving a smooth aesthetic with solid functionality.



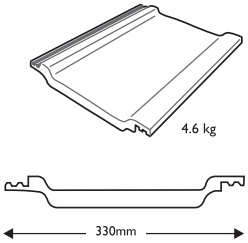
Through Colour
Slate Grey

G CT K P

Through Colour Slate Grey

TECHNICAL DATA

Overall size of tile (mm)	420 x 330
Approx mass per tile (kg)	4.6
Linear cover per tile (mm)	300



STRUCTURAL DATA

The roof structure specifications should comply with the regulations in your area.

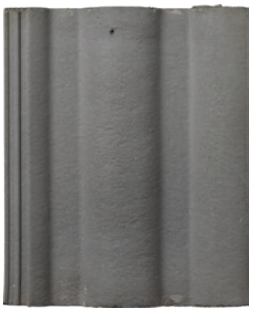
Minimum pitch requirements	17° to 25°	26° and over
Rafter Centres (mm)	Up to 760 38 x 38 batten	Up to 950 38 x 50 batten on edge
Headlap (mm)	100	75
Batten Centres (mm)	320	345
Batten per m² (m)	3.13**	2.9**
Number of tiles per m²	10.42	9.66
Approx mass of tile m² (kg)	52	44
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Mandatory

** No allowance for wastage.

Efflorescence, often referred to as "lime bloom", is a natural phenomenon and is found in products containing cement. It is a white deposit which appears on the surface of all concrete based products. Efflorescence is a temporary condition, and does not affect the functional properties of the product. Wind and rain will gradually remove the deposit and the true colour of the tile will be restored.

Taunus

Our Taunus roof tile, though conventionally shaped, is striking and bold and adds charm to timeless and modern designs.



Through Colour
Slate Grey

G **EC** **CT** **K** **P**

Through Colour
Kalahari

G **EC** **CT**

Through Colour
Terracotta

G **EC** **CT** **K**

Through Colour
Brown

G **K**

Through Colour
Red

G **CT** **K** **P**

Through Colour
Victorian Grey

G

Farmhouse
Kalahari

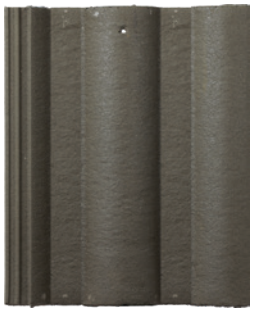
G **EC** **CT**

Farmhouse
Terracotta

G **CT**

Farmhouse
Victorian Grey

EC

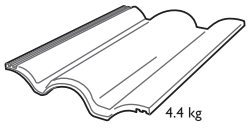


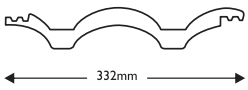
Vibrant
Slate Grey

CT

TECHNICAL DATA

Overall size of tile (mm)	420 x 330
Approx mass per tile (kg)	4.4
Linear cover per tile (mm)	300





STRUCTURAL DATA

The roof structure specifications should comply with the regulations in your area.

Minimum pitch requirements	17° to 25°	26° and over
Rafter Centres (mm)	Up to 760 38 x 38 batten	Up to 950 38 x 50 batten on edge
Headlap (mm)	100	75
Batten Centres (mm)	320	345
Batten per m² (m)	3.13**	2.9**
Number of tiles per m²	10.42	9.66
Approx mass of tile m² (kg)	46	43
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Recommended

** No allowance for wastage.

Through Colour Terracotta

Double Roman

Our Double Roman roof tile is a classic for the subtle and timeless design.

Through Colour
Slate Grey

G EC CT K P

Through Colour
Red

G EC CT K P

Through Colour
Kalahari

G EC K P

Through Colour
Brown

G CT K P

Through Colour
Terracotta

G EC CT K P

Through Colour
Victorian Grey

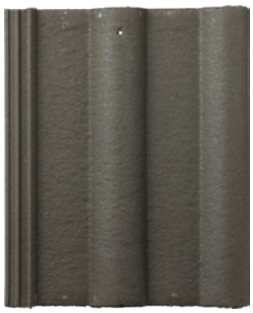
CT P

Classic
Green

EC K

Farmhouse
Kalahari

EC



Vibrant
Slate Grey

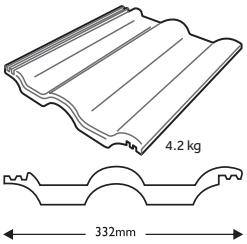
G CT K P

Vibrant
Red

G CT K P

TECHNICAL DATA

Overall size of tile (mm)	420 x 332
Approx mass per tile (kg)	4.2
Linear cover per tile (mm)	300



STRUCTURAL DATA

The roof structure specifications should comply with the regulations in your area

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Headlap (mm)	100	75
Batten Centres (mm)	320	345
Batten per m² (m)	3.13**	2.9**
Number of tiles per m²	10.42	9.66
Approx mass of tile m² (kg)	46	41
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Recommended

** No allowance for wastage.

Farmhouse Brown

Renown

Our Renown roof tile is a low-profile, unobtrusively design with a more contemporary feel and square edged profile.

Through Colour
Brown

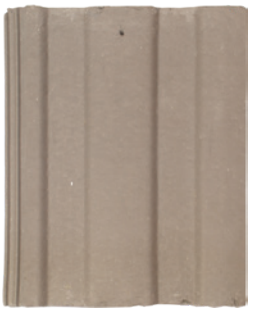
CT

Through Colour
Red

CT

Through Colour
Slate Grey

CT EC



Through Colour
Victorian Grey

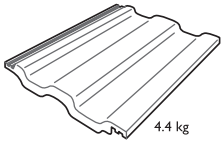
CT

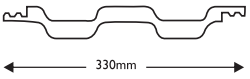
Through Colour
Terracotta

CT

TECHNICAL DATA

Overall size of tile (mm)	420 x 330
Approx mass per tile (kg)	4.4
Linear cover per tile (mm)	300





STRUCTURAL DATA

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Approx mass of tile m² (kg)	46	43
Undertile Membrane/ Radenshield™ recommended at all pitches	Mandatory	Recommended

** No allowance for wastage.

Through Colour Slate Grey

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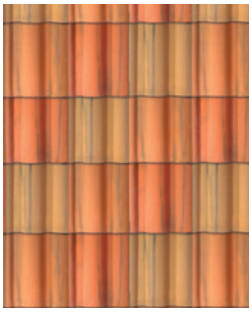
Our profiles are region specific.

G Gauteng
EC Port Elizabeth East London
CT Cape Town
K Kwa-Zulu Natal
P Polokwane

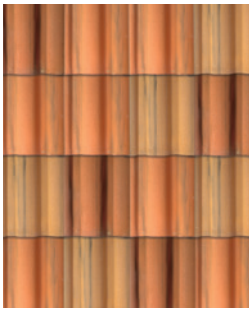
A quiet statement in superiority, status and appearance.

The Arkitone Range is a Mediterranean concept of randomly laid concrete roof tiles of different colours creating an artistic style in roofing. This range is available in Taunus and Cupola.

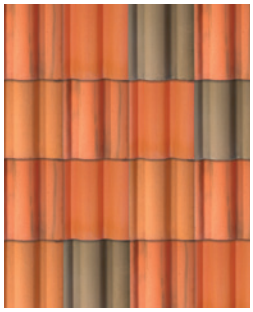


Classic Autumn

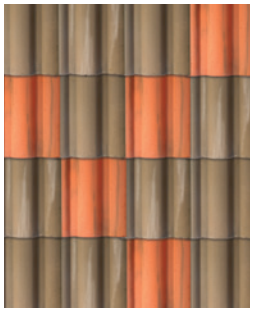
Classic Sunset



Classic Tuscan

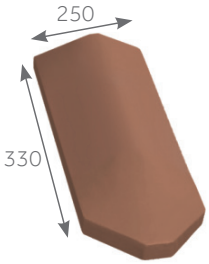


Classic Harvester

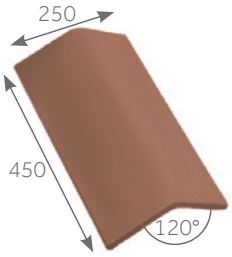


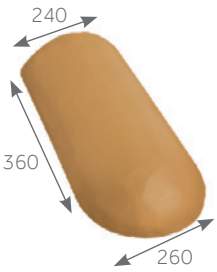
Classic Dusk

Concrete roof tile fittings

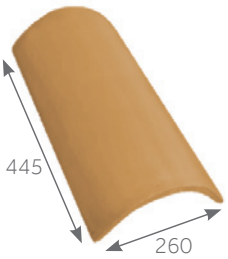


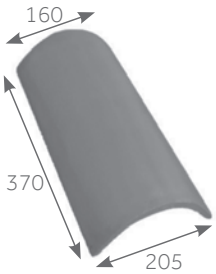
V-RIDGE	Hip Starter	Tile
No. per Hip	One	± 2.2 tiles
Thickness (mm)	14-16	12-14
Fixing	Bed in mortar. Dry Ridge System recommended.	Bed in mortar. Dry Ridge System recommended.
Laying	Open end butts next tile	Butt jointed
Mass (kg)	± 4.4	± 4.0 (Standard)



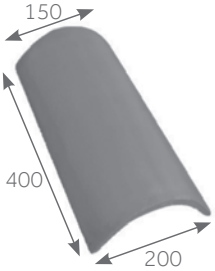


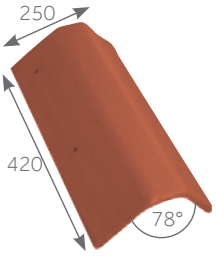
TAPERED	Hip Starter	Ridge
No. per Hip	One	± 2.5 tiles
Thickness (mm)	13-16	13-16
Fixing	Bed in mortar. Dry Ridge System recommended.	Bed in mortar. Dry Ridge System recommended.
Laying	Overlapping	Overlapping
Mass (kg)	± 4.4	± 5.0



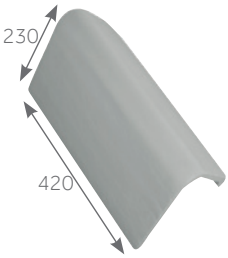


GABLE ROLL	370*	400*
No. per LM	± 3.2 tiles	± 3 tiles
Thickness (mm)	13-16	12-14
Fixing	Two non-corrodible screws or nails	Two non-corrodible screws or nails
Laying	Overlapping	Overlapping
Mass (kg)	± 3.3 (Standard)	± 3.2 (Standard)





RAKE VERGE	
No. per Verge	One per tile course + one
Thickness (mm)	14-16
Fixing	Two non-corrodible screws or nails
Laying	Overlapping
Mass (kg)	± 5.4 (Standard)



MONO RIDGE	
No. per Hip	± 2.2 tiles
Thickness (mm)	14-16
Fixing	Bed in mortar. Dry Ridge System recommended.
Laying	Butt jointed
Mass (kg)	± 5 (Standard)

*Fittings not available Inland

Roofing Systems and Components

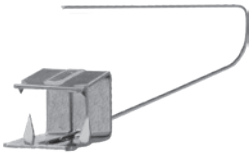
The whole roof is key

We are one of the few manufacturers to offer both a comprehensive range of concrete and clay tiles for pitched roofs and complementary roofing components designed to cover various functional aspects of roof construction.

DRY RIDGE SYSTEM

Ridge rolls

Ridge tree



Kro clip

Ridge clip

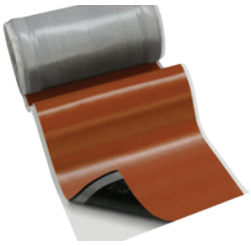
UNDERLAYS

Radenshield™ Aluminium radiant barrier

Undertile membrane

ROOF FLASHING

Easyflash®



Wakaflex®

Connection Strip

ROOFING ACCESSORIES

Eave filler / comb

Storm clip, nails & oxides

Clear/translucent tile

Energy efficiency, innovative insulation and healthy house ventilation while saving costs is not a contradiction, but a natural consequence when it comes to the environmental quality of our roofing systems.

Dry Ridge System

Dry ridge roofing refers to the easy roll and clip mechanical installation of ridge and hip tiles without the use of traditional mortar.

The Coverland Dry Ridge System offers a leak-proof, maintenance-free solution for your roof ridge and hip-lines. It comprises of the Ridge Tree which aligns the topmost ridge or hip batten, an easy to install dry-fix ridge roll that is secured onto the batten and Ridge/Hip Clips to secure the ridge tiles. The result is a storm-proof and maintenance-free ridge and hip-line giving your roof a superior aesthetic finish.

VENTILATING DRY RIDGE SYSTEM

The Coverland Ventilated Dry Ridge System replaces mortar bedding with a breathable ridge roll — FigaRoll Plus or FigaRoll Plus S — that allows the air to circulate from the eave via the underlay to the roof ridge and away from the wooden roof structure. The result is a healthier indoor environment because the humidity and stagnant air, produced in the interior of the building, escapes through the roof. The roof construction can then dry out preventing mould and dry rotting. It is a secure weatherproof system that allows optimum ventilation for a healthier indoor climate. It also has the added advantage of an aesthetically pleasing ridge line, free from messy mortar that cracks and causes leaks.

APPLICATION

The application is time efficient and less labour intensive – an estimated 2.5 hours to fix a 10m Coverland Dry Ridge roof compared to 6 hours for a 10m mortar application. Follow the fixing instruction on page 29 or visit our website for the short video tutorial.

BENEFITS

Time-saving

- No unusual skills and minimal tools required for the roll and stick mechanism.
- Easy roll and stick application, no messy mortar or the inconvenience of mixing and carrying mortar.
- Approximately 2.5 hours/10m roof versus mortar approximately 6 hours/10m roof.
- Light-weight and less mess.

Maintenance-free

- Ensures no cracks or leaks normally attributed to mortar applications.
- Ventilating Ridge Roll allows for expansion and contraction of the roof, resulting in a maintenance-free ridge and hip-line.
- The Ridge Roll assists in preventing mould and damp that rots the timber and damages the roof structures.

Storm and weather-proof

- The components to the system ensures that the tiles are securely fastened for maximum protection against the elements.
- Offers better resistance to wind uplift and water penetration.

Cost-effective

- No long-term maintenance associated with mortar bedding.

Universal design

- High quality design that is aesthetically pleasing.
- Suits most concrete roof tile profiles.

DRY RIDGE INSTALLATION

DRY RIDGE SYSTEM 5 YEARS GUARANTEE TERMS AND CONDITIONS APPLY

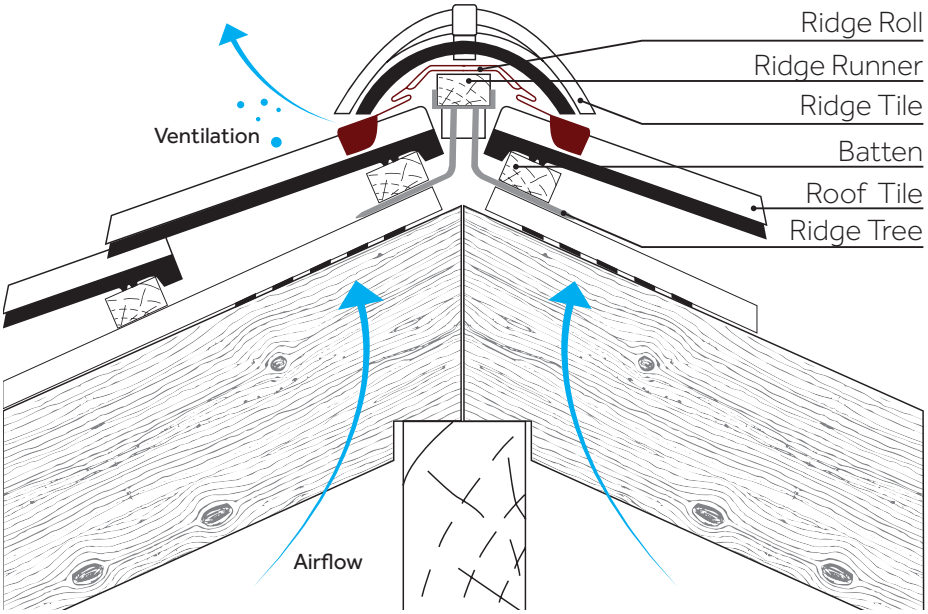
WHY DRY RIDGE?

Mortar hardens therefore it does not expand and contract with varying weather conditions or daily temperature variations. Hairline cracks form which eventually increase in size.

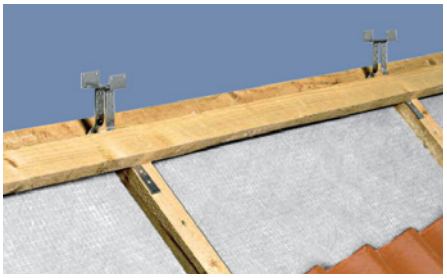
Rain then penetrates the ridge and hip line through these cracks and cause damage to the interior of the roof. Ongoing rain damage can cause trusses to rot which pose a serious health risk to the occupants of the property.

Often maintenance to the ridge and hip-lines use the same mortar method. An over coat of waterproofing is applied on top. This looks unattractive and inevitably leads to future maintenance costs.

COMPONENTS OF THE DRY RIDGE SYSTEM



Ventilating ridge rolls
Figaroll® Plus and Figaroll Plus S are progressive dry-fix ridge and hip rolls with an innovative double ventilation channel system having adjusted holes for ideal roof ventilation and resistance against driving rain and snow.



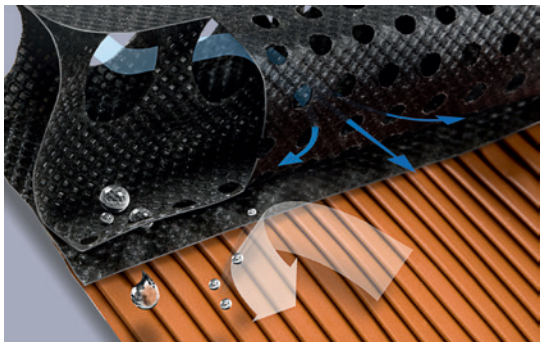
Ridge Tree
A solid device that acts as a guide for optimal alignment for the fixing of ridge and hip runners, which aesthetically enhances the ridge and hip-line. The steel is strong yet pliable for easy fixing with screws.

Kro Clips
Corrosion-resistant stainless spring clips that fix tiles to the valleys and hips.

Ridge Clip / V-Seal Clip
Stove enamelled aluminium clips facilitate easy and rapid fixing of ridge tiles on tapered ridges. Replace the Ridge Clip with V-Sealing clips for V-Ridge System.

DRY RIDGE ROLLS

A high-performance dry ventilation solution, allowing ventilation on the ridge line with the new double-duct "labyrinth ventilation technique". It protects the roof infrastructure against humidity to create a comfortable indoor ambiance. Its high UV-resistance provides a highly durable and long lasting solution.

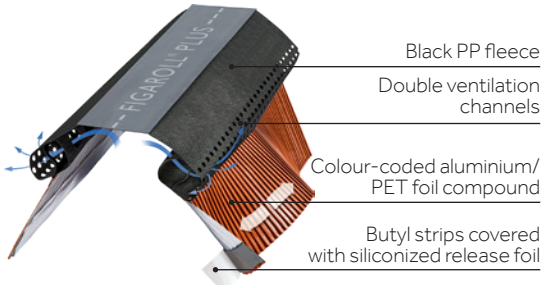


FigaRoll Plus

Best suited for roofs with rolled tile profile e.g. Cupola

PRODUCT DATA

Material	PP Fleece & Coated Aluminium/PET composite foil
Ventilation Cross-section (cm²/m)	150
Stretch factor of side strip	Approx. 20%
Surface Colours	Red / Black/ Brown
Length of Roll (m)	5
Width of Roll (mm)	350
Weight (kg per roll)	2.2
Fire rating	Class E

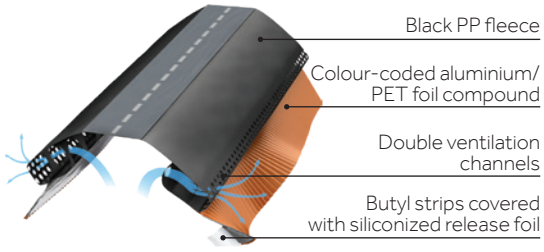


FigaRoll Plus S

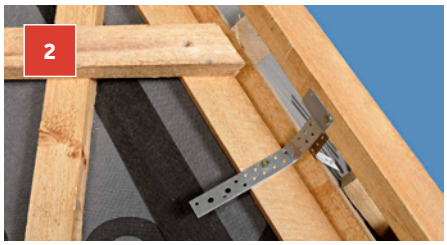
Figaroll Plus S has been designed especially for roofs with flat tiles (e.g. Elite, Lógica Plano), with a smaller side strip that is less visible when covered by the ridge tile.

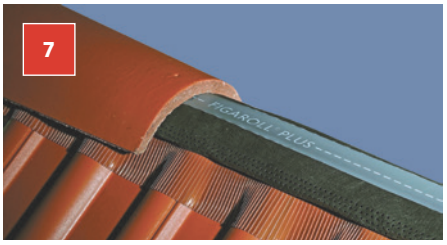
PRODUCT DATA

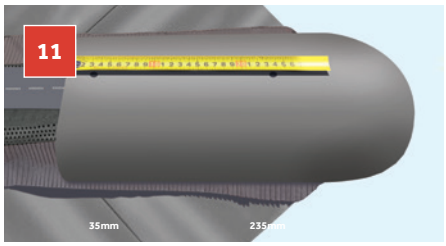
Material	Aluminium, Polyisobutylene and fleece
Agrément Certification	2008/343
Ventilation Cross-section (cm²/m)	150
Stretch factor of side strip	Approx. 20%
Surface Colours	Red / Black
Length of Roll (m)	5
Width of Roll (mm)	210
Weight (kg per roll)	1.1
Fire rating	Class E



DRY RIDGE INSTALLATION







PLEASE NOTE: Surfaces must be clean and dry before installing

1. Measure the pitch at the ends and in the middle of the ridge. Bend Ridge Tree in relation to the angle of the ridge, taking into account the size of the ridge battens (38mm x 50mm).
2. Attach the Ridge and Hip Tree to counter batten/ rafter (for that you need to lift the topmost battens on both sides). Align and fix the remaining Ridge Trees around 600mm of a bow-taut lace. Thereafter the topmost roof battens must be attached again.
3. Cut tiles are fixed durably to the hip structures with Kro Clips without drilling. Only nails and hammer needed. Kro Clips are supplied with 30cm length corrosion-resistant binding wire fixed from the Kro Clip to the hip batten/rafter.
4. Ensure a clean, dust-free, dry surface within area of the adhesive edge. Roll out and align Ridge Roll onto the ridge or hip batten (Butyl strip down). Staple the middle along the ridge batten following the white line.
5. Pull off the adhesive strips, one side at a time, to expose the CH bond special Butyl glue. Press the adhesive edge firmly and securely by systematically working, for example, from the left side towards the right side. Stick butyl onto all high points of the tiles before moulding into the tile recesses. In the same way as on the ridge-line, Ridge Roll can also be applied on the hip-line.
6. Where ridges and hips intersect, lay Ridge Roll onto the ridge/hip end ensuring sufficient overlap. At the beginning of the new roll of Ridge Roll overlap the product for at least 5cm.
7. Complete the ridge and/or hip with Coverland ridge tile fittings using 4.5mm diameter wood screws.
8. Fix the ridge tiles together with the Ridge Clips using 4.5mm diameter wood screws until ridge/hip is complete. Replace tapered Ridge Clips with V-Sealing Clips in a V-Ridge system.
9. Finish of with a hip starter tile.
10. Secure a block on the edge of the batten to lift the hip starter at the head to be level with the ridges.
11. Measure holes at 35mm and 235mm. The first hole for the alignment of the ridge. The second hole for securing the hip starter in place to avoid movement side ways and prevent wind uplift.
12. Secure ridge with bonded washer and screws.

Cool Roof System

The Coverland Cool Roof System is a self-sustaining system that offers a solution to reduce the flow of heat transfer through the roof. It optimises the roof's thermal performance with a combination of heat reflection, ventilation and insulation components to minimise the radiant heat and reduce the heat transmitted into the roof. An integral part of the Cool Roof solution is RadenShield™– a highly reflective, low-emissivity underlay that functions as an optimum radiant barrier, resulting in less air conditioning, and less electricity usage.

HOW IT WORKS

The Cool Roof system functions through interdependent products that keep a building's interior cool and comfortable. The Dry Ridge system uses convection to circulate cool air, which enters through the eaves, heats up and escapes through the ventilated ridges. A dry-ridge roll seals the ridge and allows heat to escape from the top of the roof while the Ridge Tree aligns the ridge battens for better airflow. At the eaves, the Filler Comb further promotes natural ventilation flow and RadenShield™ reflects radiant heat and also insulates against rain and dust.

ENERGY-SAVING, COST-SAVING

As a passive system, the Cool Roof system runs the entire day. When the house is cooler, airier and fresher, you use less air-conditioning, which saves on your electricity bills. Since the interior environment of the building is cool and comfortable, there is less need – if any – for devices, such as air conditioners and/or fans. Fridges will also use less energy to keep cool. Using the Cool Roof system saves on energy consumption and since it can be applied to all types and styles of housing; it saves energy at all levels. What's more, the Cool Roof system doesn't require any mechanical installation or ventilation. It is a simple, self-sustaining system that delivers lasting and sustainable benefits. Browse to page 36 for more tips on project savings that comply with SANS 204 Energy Efficiency in Buildings.

BENEFITS

Comfort

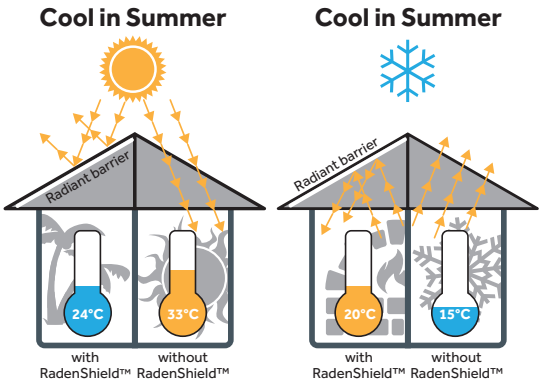
- RadenShield™ reflects 97% of radiant heat.
- Cool and comfortable interior – up to 10°C cooler*.

Energy-saving

- Saves on energy consumption – save up to 30% on electricity usage*.

Protection

- RadenShield™helps prevent dust, sand, pollen and insects accumulating in the roof cavity and penetrating the interior of the home.
- RadenShield™reduces pressure variances, decreasing the risk of tile or roof sheeting from taking off in windy conditions.
- RadenShield™reduces water suction caused by windy conditions and pressure variance.

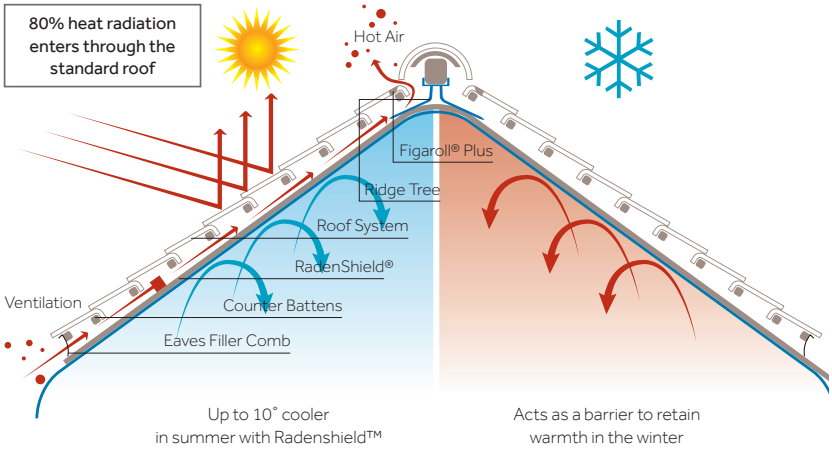


The benefits of the Dry Ridge system are applicable since it forms part of the Cool Roof system

UNDERLAY INSTALLATION

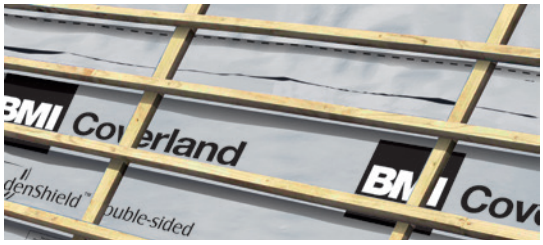
* Scientifically tested by BMI Technical Centre based on 90m² room with a regulated temperature of 22°C and used in conjunction with the Cool Roof components.

COMPONENTS OF THE COOL ROOF SYSTEM



RadenShield™

Refer to the RadenShield™ product pages for more information on the product specifications.



Counter Battens

Creates a passage of airflow underneath the tiling battens. Supplied by your roof truss manufacturer.

Eaves Filler

Prevents the access of birds and mice, and facilitates airflow for the Cool Roof System.

Ridge Tree

A solid device that acts as a guide for optimal alignment for the fixing of ridge and hip runners. See the Dry Ridge System for more information.

FigaRoll Plus

Ridge and hip rolls for roof ventilation and resistance against driving rain and snow.

Kro Clips

Corrosion-resistant stainless spring clips that fix tiles to the valleys and hips.

Ridge Clip

Stove enamelled aluminium clips facilitate easy and rapid fixing of ridge tiles.

Underlays

TiPSA THERMAL INSULATION PRODUCTS & SYSTEMS ASSOCIATION SA
GOLD MEMBER

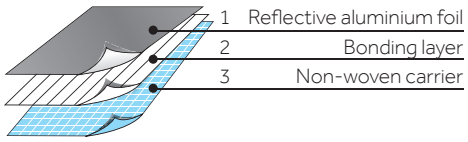
Residential RadenShield™

RadenShield™ radiant barriers are a range of aluminium roofing membranes that provide the added benefit of a reflective insulation material. The highly effective physical properties add indoor comfort and reduced energy consumption. RadenShield™ is a waterproof barrier and is vapour impermeable. The material composition diagrams and tables illustrate unique attributes of the RadenShield™ products.

RADENSHIELD™ SINGLE-SIDED

Material	PP A1 Single aluminium side
Agrément Certification	2009/366
Size (linear metres)	30 x 1.5
Roll Coverage (m²)	45
Effective Coverage (m²)	40.5
Weight (g/m²)	126
Mass (kg)	5.7
Thickness (mm)	0.31-0.35
Tensile Strength	MD 180 N/50 mm; CD 180 N/50 mm; EN12311-1
Average Nail Tear Strength	MD 120 N; CD 120 N; EN12310-1
Fire Rating	B/B3/3/H
R-value (m²K/W)	1.05
Rsys-value (m²K/W)	1.4*

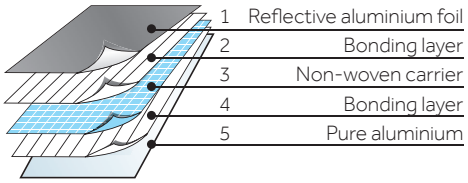
RadenShield™ SINGLE-SIDED Aluminium Radiant Barrier



RADENSHIELD™ DOUBLE-SIDED

Material	PP A1 Double aluminium sides
Agrément Certification	2009/369
Size (linear metres)	30 x 1.5
Roll Coverage (m²)	45
Effective Coverage (m²)	40.5
Weight (g/m²)	172
Mass (kg)	7.8
Thickness (mm)	0.29-0.31
Tensile Strength	MD 200 N/50 mm; CD 180 N/50 mm; EN12311-1
Average Nail Tear Strength	MD 150 N; CD 150 N; EN12310-1
Fire Rating	B/B1/2/H
R-value (m²K/W)	1.59
Rsys-value (m²K/W)	1.94*

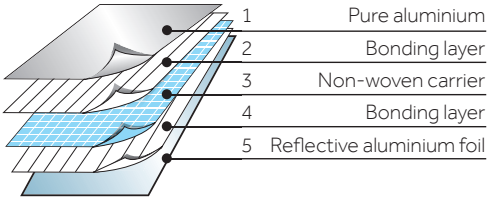
RadenShield™ DOUBLE-SIDED Aluminium Radiant Barrier
with greater thermal resistance



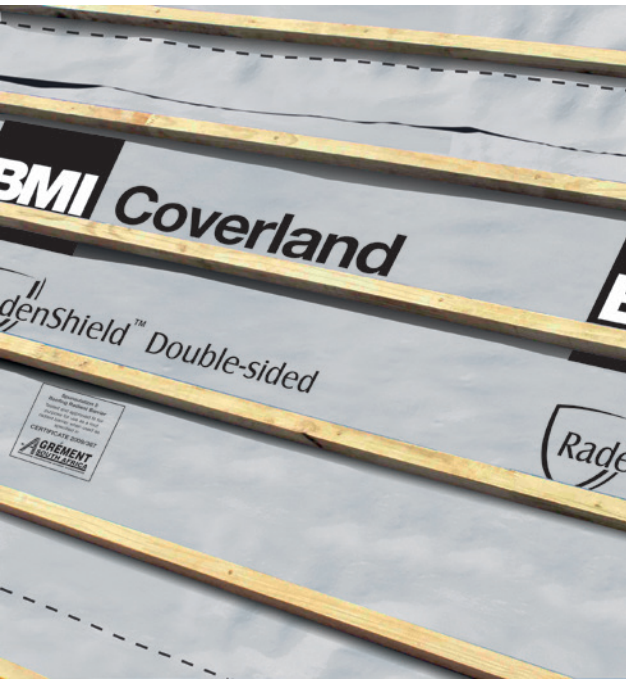
RADENSHIELD™ ECOSENTIAL

Material	PP A1 Double aluminium sides
Agrément Certification	2020/605
Size (linear metres)	30 x 1.5
Roll Coverage (m²)	45
Effective Coverage (m²)	40.5
Weight (g/m²)	127
Mass (kg)	6.3
Thickness (mm)	0.2-0.24
Tensile Strength	MD N/50 mm; CD N/50 mm; EN12311-1
Average Nail Tear Strength	MD 250 N; CD 270 N; EN12310-1
Fire Rating	SANS 428 – B/B1/2H (SP & USP)
R-value (m²K/W)	1.52
Rsys-value (m²K/W)	1.87*

RadenShield™ ECOSENTIAL Aluminium Radiant Barrier



PLEASE NOTE: R-Values are subject to change due to ongoing testing. *System R (Rsys)-value = product r-value + 0.35 where 0.35 m2K/W represents the roof tiles and standard plasterboard with 40mm gap above the foil and 60mm gap below. The Rsys-value is a guide and should be professionally verified based on the actual roof application process.



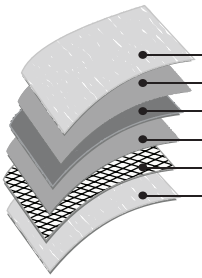
Industrial RadenShield™

High performance aluminium radiant barriers for buildings with galvanised sheet cladding or tiled-roof building. RadenShield™ Industrial and Illumina can be installed in buildings with galvanised sheet cladding or tile-roof buildings. It is especially suited for the use in large scale open-roof application.

RADENSHIELD™ INDUSTRIAL

Material	PP A1 Double aluminium sides
Agrément Certification	2009/367
Size (linear metres)	33.33 x 1.5
Roll Coverage (m²)	50
Effective Coverage (m²)	45
Weight (g/m²)	220
Mass (kg)	11
Thickness (mm)	0.42-0.46
Tensile Strength	MD 300 N/50 mm; CD 240 N/50 mm; EN12311-1
Average Nail Tear Strength	MD 250 N; CD 270 N; EN12310-1
Fire Rating	SANS 428 – B/B1/2/H&V (SP & USP)
R-value (m²K/W)	1.57
Rsys-value (m²K/W)	1.92*

RadenShield™
INDUSTRIAL
Aluminium Radiant Barrier
with thicker grammage and extra reinforced scrim layer for extra tear-strength

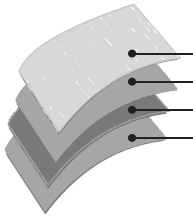


1 Reflective aluminium foil
2 Bonding layer
3 Non-woven carrier
4 Bonding layer
5 Reinforcing scrim
6 Reflective aluminium foil

RADENSHIELD™ ILLUMINA

Material	PP A1 Single aluminium sides
Agrément Certification	2012/425
Size (linear metres)	33.33 x 1.5
Roll Coverage (m²)	50
Effective Coverage (m²)	45
Weight (g/m²)	182
Mass (kg)	9.1
Thickness (mm)	0.46-0.5
Tensile Strength	MD 300 N/50 mm; CD 240 N/50 mm; EN12311-1
Average Nail Tear Strength	MD 250 N; CD 270 N; EN12310-1
Fire Rating	SANS 428 – B/B1/2/H&V only (SP)
R-value (m²K/W)	1.05
Rsys-value (m²K/W)	1.4*

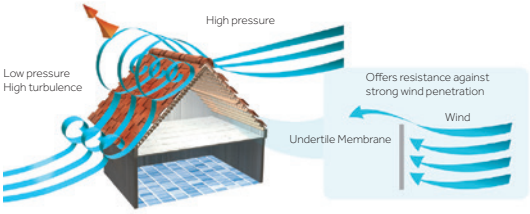
RadenShield™
ILLUMINA
Aluminium Radiant Barrier
Single-sided Industrial radiant barrier

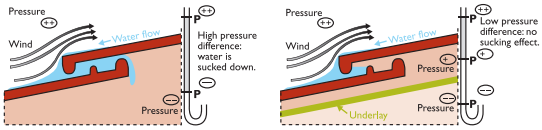


1 Reflective aluminium foil
2 Bonding layer
3 Spunbond
4 Coating

Undertile Membrane

Coverland Undertile Membrane is a fundamental element of a roof structure and is a reliable alternative to plastic underlays. It provides superior wind uplift strength which prevents the uplift of roof coverings during strong wind gusts. It offers protection against water ingression and dust invasion. When a roof structure is tiled according to the required specifications and suitably fitted with Coverland Undertile Membrane, it performs as a weather-tight roof.





Without underlay **With underlay**

BENEFITS

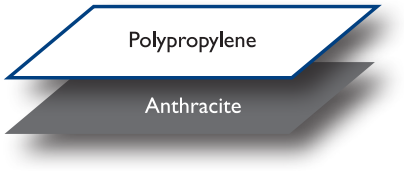
Superior wind uplift strength

- During short wind gusts, pressure difference occur between the roof space and the outside roof tiles. The result is a wind force that causes total or partial removal of the roof tiles allowing further damage by natural elements.
- Coverland Undertile Membrane fitted underneath the tiles, assist in equalising pressure differences, it thereby offers resistance against strong wind penetration.

Increased water-tightness

- Water can enter the roof space and damage the roof interior in the following ways:
  - In windy conditions, a high pressure difference between the roof space and outside the roof tiles causes water suction. Without the Coverland Undertile Membrane as a barrier, water is sucked down into the lower pressure roof space.
  - In the event of damage to the tile or other roof covering.
  - Hailstones that melt in valleys, or concealed gutters can leak into the roof space.
- Coverland Undertile Membrane is water impermeable and does not allow water through.

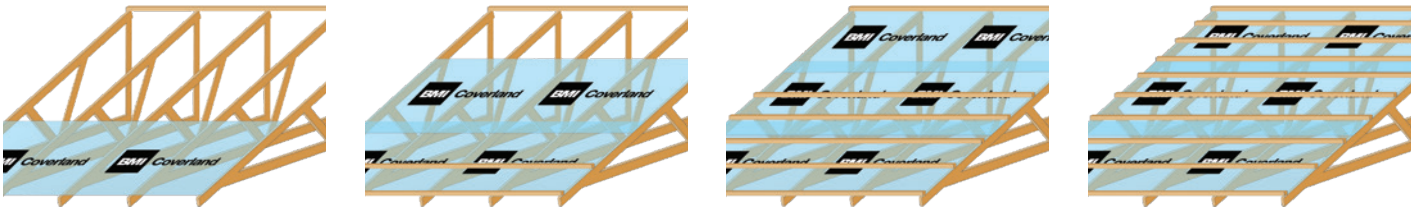
undertile membrane
moisture and dust barrier



2-PLY

Material	2-ply laminate and polypropylene	
Agrément Certification	2018/572, NHBRC approved	
Roll dimensions (m)	30 (L) x 1.5 (W)	45 (L) x 1.5 (W)
Mass (kg per roll)	4.5	4.5
Coverage (m²) Effective with 150 mm overlap	40.5	60.75
Tensile Strength	180 Newtons	
Average Nail Tear Strength	80 Newtons	
Fire rating	B/B1	
Water Resistance	Waterproof barrier and vapour impermeable	

INSTALLATION FOR DOMESTIC / COMMERCIAL / LIGHT INDUSTRIAL ROOFING



1. Unroll underlay and install horizontally, from left to right, across the rafters and starting at the eaves. Work towards the ridge of the roof (1a). The upper side of the underlay is marked with the Coverland logo and a dotted line indicating the minimum overlap between layers of 150mm.
2. Ensure each horizontal layer is placed across the rafters in such a way as to avoid sagging, creases and/or gaps. Tack-nail into position and secure using through-nail horizontal battens. Avoid unnecessary tears/penetrations through the underlay.
3. Minimum recommended width of horizontal overlap is 150mm (1b). Horizontal overlaps should be secured under a batten. Ensure vertical joints overlap by a minimum of 150mm and that they are secured to a rafter (2a). Corrosion-resistant staples or EP clout nails are recommended. If the building is in a high wind area, it is recommended that the underlay is nailed to the underside of the tiling battens.
4. The underlay between the trusses must be sufficiently taut, while allowing a shallow through to facilitate run-off beyond the wall or into the gutter, should rain water penetrate the tiles (2b).
5. Layers of underlay that run over a hip should overlap by a minimum of 150mm. Each layer should overlap the layers of underlay on the adjacent elevation of the roof.
6. Ensure that a layer of damp-proof course is applied over the underlay at roof ridges, hips and at the roof's apex.
7. Ensure that a layer of underlay at least 600mm wide is laid in the roof's valleys before the final layers of underlay are laid. Secure these strips beneath valley battens, ensuring that the final underlay layer is laid over these battens.
8. Where holes need to be cut for ventilation and soil pipes use the following procedure:
9. Underlay must be star-cut carefully to prevent tears, ensuring the tabs face downward and that the pipes fit closely through the holes.
10. Fit a proprietary collar over the pipe to protect the underlay.

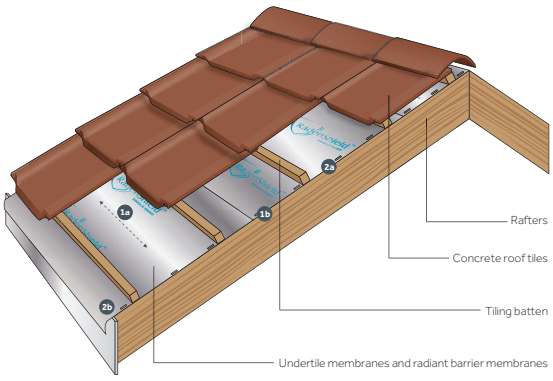


Diagram illustrating steps to laying undertile membranes and radiant barrier membranes over the roof truss under the tiles

INSTALLATION UNDER ROOF SHEETING

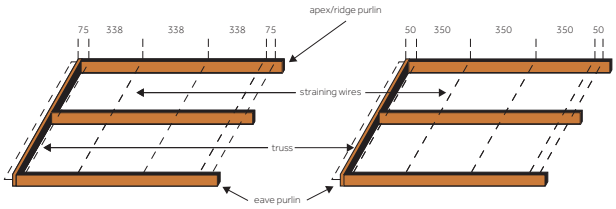


Fig 4.1: Diagram A – 150mm sidelap joint. Straining wire central to overlapping.

Fig 4.2: Diagram B – 100mm sidelap joint. Straining wire central to overlapping

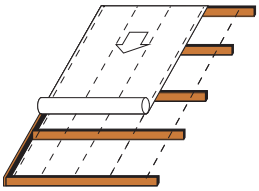


Fig 4.3: Diagram C – Laying over the straining wire and fixing to the apex

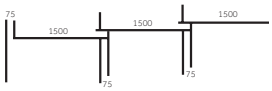


Fig 4.4: Diagram D – Laying

1. Refer to diagrams A, B, C and D. Polyvinyl chloride (PVC) coated straining wires are secured from the top apex purlin, over intermediate purlins to the bottom eave purlin at 338mm centres (1b).
2. The first straining wire is secured 75mm away from the gable end. All wires are evenly tensioned ensuring that cut ends face downwards.
3. Note: All other applications to comply with the National building regulations and codes of practice.
4. RadenShield™ is laid over the straining wires (2a) ensuring that it is squared off to the underlay and is secured to the apex purlin using double-sided tape (2b). The underlay is evenly tensioned and secured to the eaves purlin again using double sided tape.
5. All subsequent layers of RadenShield™ are to be fixed as above with a not less than 100mm overlap over the previous sheet. Straining wires must be positioned at the centre of the overlaps and not less than 50mm from the sheet edges.

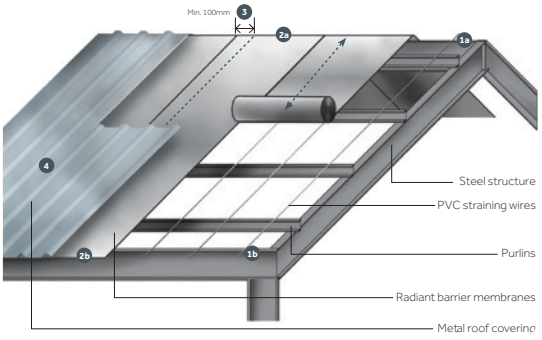


Diagram of laying RadenShield™ on straining wires

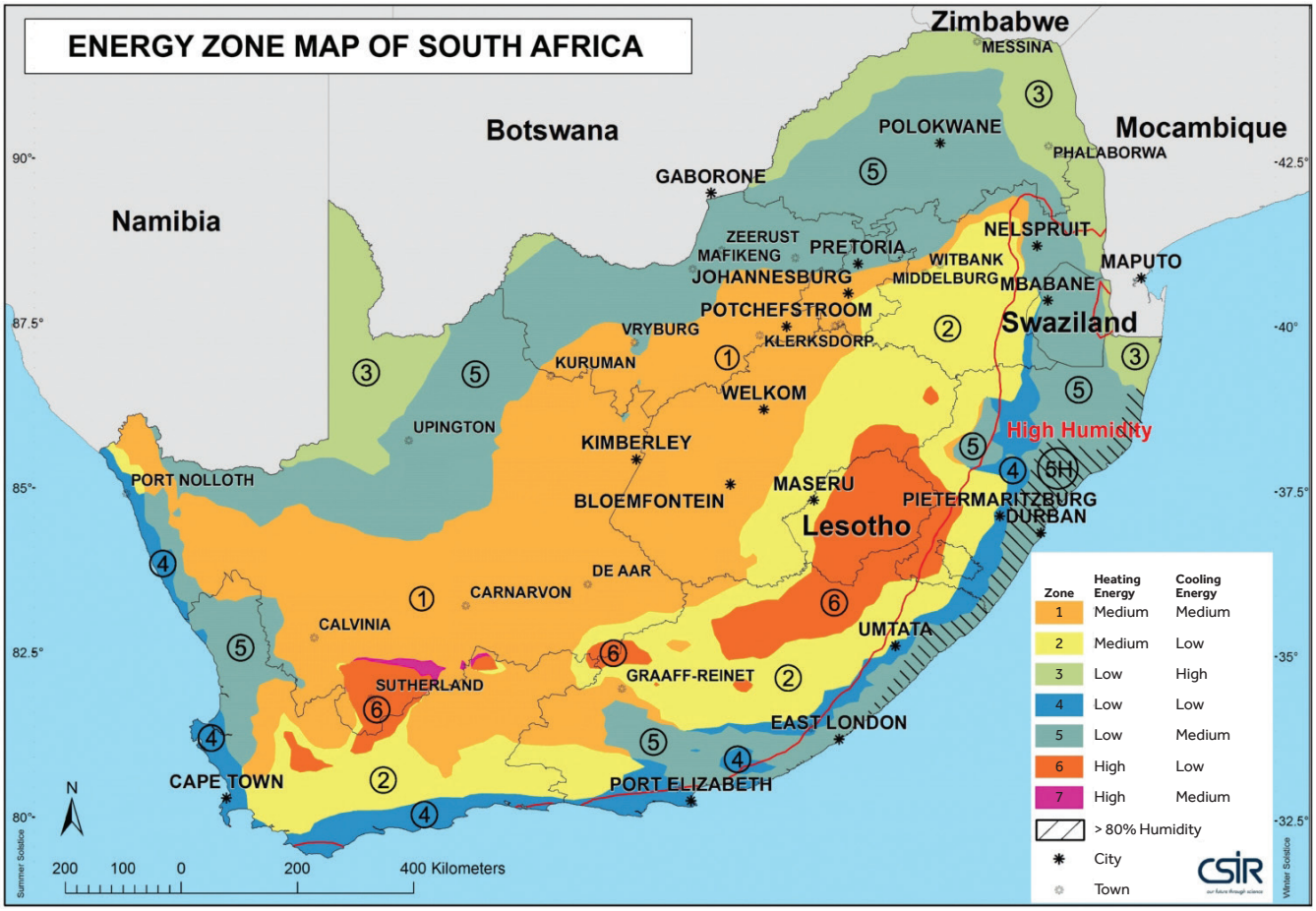
Please note that when Radenshield is installed directly under roof sheeting the product r-value needs to be discounted by 40% for energy efficiency calculation purposes

RadenShield™ guideline for SANS 10400-XA: 2021 Energy Efficiency

November 2021 saw the release of the updated application of the National Building Regulations SANS 10400-XA: 2021 Ed 2 Energy usage in buildings, This follows on the original regulations promulgated in November 2011. It is mandatory since 2011 to specify thermal insulation in certain building occupancy classes as stated in Regulations XA1 and XA3.

ENERGY ZONES

The original climate zones from the original regulations have been replaced with energy zones. There are 7 energy zones across South Africa and these where determined by the heating and cooling energy required to regulate the internal comfort levels of buildings. The explanation of each energy zone can be identified using the legend on the map:



Zone 5H – >80% humidity area

R-VALUE REQUIREMENTS

Energy zones	1,2,3,4,5,6 & 7	5H
Minimum Thermal Resistance required – Total R-value m²K/W	3.7	2.7
Total R-value of roof & ceiling materials / other materials	0.35	0.35
Minimum added R-value required m²K/W	3.35	2.31

Below find the calculation of the R-value contribution for a roof construction using our RadenShieldTM product range. This allows for less bulk insulation required resulting in a cost saving for the roof insulation required to achieve the relevant R-value.

R-VALUE (M²K/W)	Single Sided	Ecosential	Double Sided
Concrete roof tile (any colour) & standard plasterboard	0.35	0.35	0.35
Rsys-value of RadenShield™ with 40mm airgap to tile and 60mm below foil	1.05	1.52	1.59
Total Rsys-value (m²K/W)	**1.40**	**1.87**	**1.94**

Abutment Waterproofing

Easyflash® and Wakaflex® are simple, effective waterproofing solutions for roof tile-wall junctions, e.g. chimneys.

These watertight dry-fix solutions are specially designed to replace traditional metal flashing for wall-roof junctions. Its highly stretchable coated aluminium (up to 50% in roll direction) ensures neat and all-weather sealing of junctions between walls and roof tiles, It has a full self-adhesive butyl backing allowing for self-fixing onto dust free surfaces, sealing off corners and joints with a standing seam technique.

BENEFITS

Maintenance-free

- All weather durability.
- Up to 15 years when sealed with Connection Strip.

Cost saving

- In a cost-comparison over 15 years, it costs a third less than traditional methods.

Simple to install

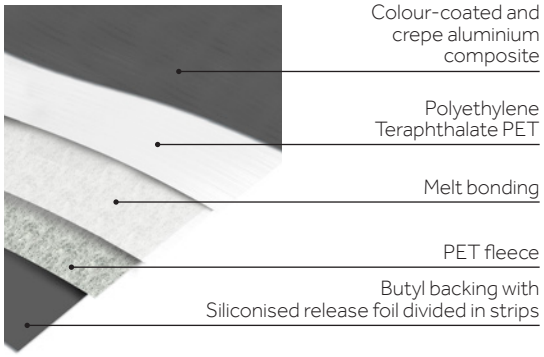
- Easy roll and stick mechanism.
- Easy installation saves time.

Universal design

- UV-resistant.
- Available choice of colours for selection and matching.

Easyflash®

EasyFlash® is extremely durable with its crêped, aluminium surface, providing long life durability for up to 15 years in all weather conditions and is maintenance-free with Connection Strip applied.

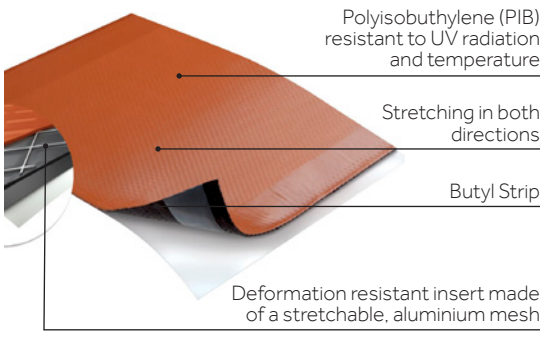


PRODUCT DATA

Material	Coated aluminium composite with self-adhesive butyl
Roll dimensions (m)	5 (L) x 0.25 (W)
Stretch factor	up to 50%
Thickness (mm)	2.7
Surface Colours	Terracotta, brown and black

Wakaflex®

Wakaflex® is the approved universal product for professional abutments. Its surface is dirt-repelling and smooth, adding to the aesthetic value of the roof, whilst the self-welding effect saves up to 30% time during installation compared with other products.

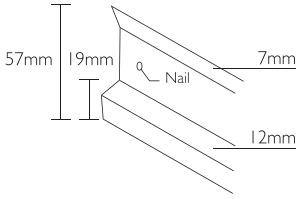


PRODUCT DATA

Material	Polyisobuthylene (PIB) with aluminium grid and butyl strip
Roll dimensions (m)	0.28 (W) x 5 (L)
Stretch factor	approx. 50% (lengthswise) approx. 15% (crosswise)
Weight (kg/m²)	approx. 3,24
Fire resistance	Class E
Min. roof pitch	10°
Surface Colours	Terracotta, brown and black

Connection Strip

Connection Strip is used for the mechanical fixing of EasyFlash® and Wakaflex®. It is an reversible product which is easy to fix due to its prefabricated punched holes.



PRODUCT DATA

Material	Clean colourbond steel
Dimensions (m)	2.4 (L) x 0,6 (W)
Colour	Double-sided brown and terracotta
Hole distribution (mm)	400

APPLICATION

For the treatment of side and horizontal wall connections, dormers and chimneys. Ensure the tile surface is dry, free from dirt and dust. Plastered walls must first be primed and painted.

Not suitable for metal chimney applications due to rising temperatures of above 80'C and no surface area to apply Connection Strip.

Using ordinary tools, measure the appropriate width required to seal the abutment.

Release the butyl strip against the wall first ensuring a straight line along the wall.

Then release the butyl strip on the tile side and mould onto the clean tile surface.

Where the corners intersect ensure sufficient overlap.

Apply a Connection Strip securely with non-corrosive screws to the upper edge of the flashing.

Seal off with Coverfill between the wall and Connection Strip.

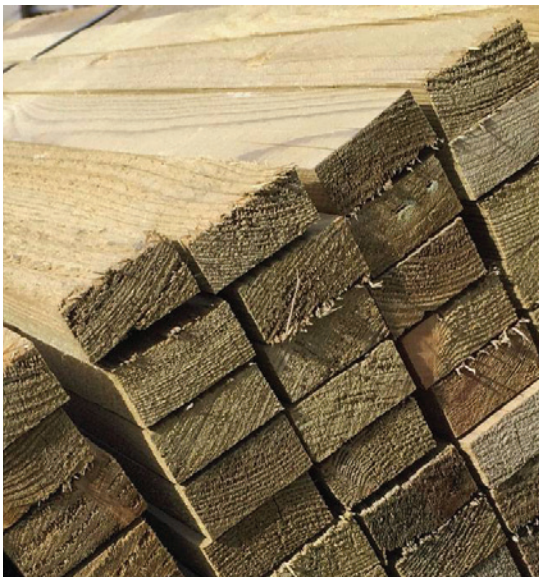
WAKAFLEX INSTALLATION

Rafters and trusses

As per structural requirements. To comply with SANS 563 Softwood structural timber and engineer's specifications.

Battens and nails

Battens to comply with SANS 653 Softwood battens and brandering. Non-corrodible nails 3.35mm used, need to be long enough to penetrate the rafter to a depth of 55mm.



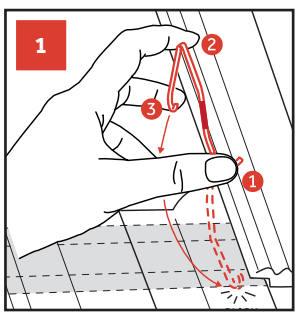
Roofing Accessories

A modern roof needs to do more than just keep water out and a full roof system is more than a sum of its parts. With the appropriate roofing accessories, our roofs transform into complete roof systems, adding functionality, quality, security and an attractive appearance to the roof.

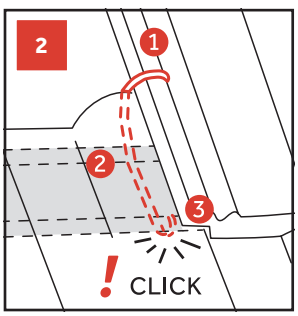
Innofix

Innofix Clip is the revolutionary new tool-free tile clip. It's simple to fix, with less tile breakage and it's quicker than ever to install. It's our strongest clip yet, and suitable for all exposure zones. It is designed to work with 38 x 38mm tiling battens only.

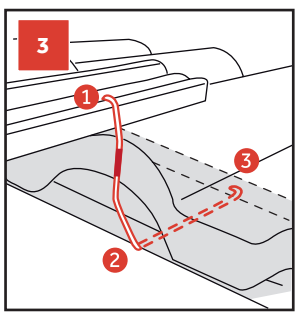
INSTALLATION



Innofix Clip is installed by hooking onto the Coverland tile interlock and then sliding beneath the 38 x 38mm roof batten where it is clipped into place with an audible click sound.



Push the bottom part of the hook down under the 38 x 38mm batten – and wait for the audible 'click'.



Innofix Clip is fixed in a click.

INNOFIX INSTALLATION

Stormclips, nails, screws and pigments

A range of fastening storm clips are available to match concrete tile profiles, including a universal storm clip. Storm clips ensure that tiles stay fixed in high winds and act as a barrier from criminals entering through the roof. Galvanised EP clout nails, smooth or serrated, are available in a range of lengths to meet all building requirements. Galvanised passive screws can be used to secure fittings within the Coverland Dry Ridge System and other forms of fitting requirements. High quality pigments ensure lasting mortar colour.

PRODUCT DATA

Galvanised EP clout nails (mm)	25, 32, 40, 50, 63, 75, 82, 100
Aluminium nails (mm)	40, 50, 63
Oxide	Pigments to match tile colours

Clear tile

The Clear Tile has been designed as a cost-effective means of illuminating rooms and is easy to install. It has the same dimensions as those of the standard profiles. It is produced to withstand the harshest elements for a prolonged period of time, is resistant to ultraviolet rays and will provide many years of trouble-free illumination. Available in Cupola, Double Roman, Perspective, Elite and Taunus.

PRODUCT DATA

Material	Transparent Polymethylmethacrilate PMMA

Technical Guidelines

More than 75 years of roofing experience

We have been making pitched roof products for almost a century, and our expertise, developed over this extended period of time, covers all steps of the roofing process.

HEALTH AND SAFETY INSTRUCTION

Many building products such as roof tiles are manufactured using raw materials. These raw materials contain a proportion of crystalline silica. Powered mechanical processing such as cutting or drilling of the products will release some quantities of respirable silica dust. Where exposure to this dust is high and prolonged over time, it can lead to lung disease (silicosis) and an increase risk of lung cancer where silicosis has been contracted.

The following control measures are required:

- An approved P3/FFP3 particulate respirator must be used during all cutting and drilling processes.
- In addition, engineering control such as wet cutting or dust extraction devices should be applied.
- For cutting and drilling, control measures are required. Wet cutting or dust extraction should be applied.

INSPECTING THE ROOF STRUCTURE

Before battening commences, the main contractor should make sure that the rafter/truss centres do not exceed those recommended for the batten size. The roof structure should also present no abnormality, thereby offering an even plane for battening and tiling. It is strongly recommended not to proceed until the structure is approved.

An important note regarding re-roofing

It is unlikely that a roof previously covered with other materials will have the correct structure to carry concrete tiles. A comprehensive assessment is therefore essential and proper adjustment and reinforcement of the structure must be done before laying concrete roof tiles. It is always advisable to contact your nearest Coverland outlet for expert advice when considering a re-roofing job.

USEFUL TIPS

- In order to avoid damage, ladders against or into eaves' gutters should be clear of the gutters and then securely anchored. It is dangerous to rest a ladder against a verge owing to the uneven line of support and its greater susceptibility to damage.
- Materials or tools required should be carried up and not drawn or dragged over the roof. Materials stacked on the roof should not overload the battens, undertile membrane or roof structure, and should preferably be placed on the rafter lines.
- Care should be taken when walking on the roof. It is bad practice to walk up the valleys and hips. When walking on the tiles always step on the bottom middle of the tile.

Ear protection

Eye protection

Respiratory protection
Dusk mask type P3/FFP3

ROOF STRUCTURE SPECIFICATION

Roof slope below 26 degrees ±100mm tile overlap minimum batten gauge 320mm

Rafter Length	Courses on Roof	Batten Centres
1.000	4	0.250
1.050	4	0.263
1.100	4	0.275
1.150	4	0.288
1.200	4	0.300
1.250	4	0.313
1.300	5	0.260
1.350	5	0.270
1.400	5	0.280
1.450	5	0.290
1.500	5	0.300
1.550	5	0.310
1.600	5	0.320
1.650	6	0.275
1.700	6	0.283
1.750	6	0.292
1.800	6	0.300
1.850	6	0.308
1.900	6	0.317
1.950	7	0.279
2.000	7	0.286
2.050	7	0.293
2.100	7	0.300
2.150	7	0.307
2.200	7	0.314
2.250	8	0.281
2.300	8	0.288
2.350	8	0.294
2.400	8	0.300
2.450	8	0.306
2.500	8	0.313
2.550	8	0.319
2.600	9	0.289
2.650	9	0.294
2.700	9	0.300
2.750	9	0.306
2.800	9	0.311
2.850	9	0.317
2.900	10	0.290
2.950	10	0.295
3.000	10	0.300
3.050	10	0.305
3.100	10	0.310
3.150	10	0.315
3.200	10	0.320
3.250	11	0.295
3.300	11	0.300
3.350	11	0.305
3.400	11	0.309
3.450	11	0.314
3.500	11	0.318
3.550	12	0.296
3.600	12	0.300
3.650	12	0.304
3.700	12	0.308
3.750	12	0.313
3.800	12	0.317
3.850	13	0.296
3.900	13	0.300
3.950	13	0.304
4.000	13	0.308
4.050	13	0.312
4.100	13	0.315
4.150	13	0.319
4.200	14	0.300
4.250	14	0.304
4.300	14	0.307
4.350	14	0.311
4.400	14	0.314
4.450	14	0.318
4.500	15	0.300
4.550	15	0.297
4.600	15	0.307
4.650	15	0.310
4.700	15	0.313
4.750	15	0.317
4.800	16	0.300
4.850	16	0.303
4.900	16	0.306
4.950	16	0.309
5.000	16	0.313
5.050	16	0.316
5.100	16	0.319
5.150	17	0.303
5.200	17	0.306
5.250	17	0.309
5.300	17	0.312
5.350	17	0.315
5.400	17	0.318
5.450	18	0.303
5.500	18	0.306
5.550	18	0.308
5.600	18	0.311
5.650	18	0.314
5.700	18	0.317
5.750	18	0.319
5.800	19	0.305
5.850	19	0.308
5.900	19	0.311
5.950	19	0.313
6.000	19	0.316
6.050	19	0.318
6.100	20	0.305
6.150	20	0.308
6.200	20	0.310
6.250	20	0.313
6.300	20	0.315
6.350	20	0.318
6.400	20	0.320
6.450	21	0.307
6.500	21	0.310
6.550	21	0.312
6.600	21	0.314
6.650	21	0.317
6.700	21	0.319
6.750	22	0.307
6.800	22	0.309
6.850	22	0.311
6.900	22	0.314
6.950	22	0.316
7.000	22	0.318
7.050	23	0.307
7.100	23	0.309
7.150	23	0.311
7.200	23	0.313
7.250	23	0.315
7.300	23	0.317
7.350	23	0.320
7.400	24	0.308
7.450	24	0.310
7.500	24	0.313
7.550	24	0.315
7.600	24	0.317
7.650	24	0.319
7.700	25	0.308
7.750	25	0.310
7.800	25	0.312
7.850	25	0.314
7.900	25	0.316
7.950	25	0.318
8.000	25	0.320
8.050	26	0.310
8.100	26	0.312
8.150	26	0.313
8.200	26	0.315
8.250	26	0.317
8.300	26	0.319
8.350	27	0.309
8.400	27	0.311
8.450	27	0.313
8.500	27	0.315
8.550	27	0.317
8.600	27	0.319
8.650	28	0.309
8.700	28	0.311
8.750	28	0.313
8.800	28	0.314
8.850	28	0.316
8.900	28	0.318
8.950	28	0.320
9.000	29	0.310
9.050	29	0.312
9.100	29	0.314
9.150	29	0.316
9.200	29	0.317
9.250	29	0.319
9.300	30	0.310
9.350	30	0.312
9.400	30	0.313
9.450	30	0.315

Rafter Length	Courses on Roof	Batten Centres
1.000	3	0.333
1.050	4	0.263
1.100	4	0.275
1.150	4	0.288
1.200	4	0.300
1.250	4	0.313
1.300	4	0.325
1.350	4	0.338
1.400	5	0.280
1.450	5	0.290
1.500	5	0.300
1.550	5	0.310
1.600	5	0.320
1.650	5	0.330
1.700	5	0.340
1.750	6	0.292
1.800	6	0.300
1.850	6	0.308
1.900	6	0.317
1.950	6	0.325
2.000	6	0.333
2.050	6	0.342
2.100	7	0.300
2.150	7	0.307
2.200	7	0.314
2.250	7	0.321
2.300	7	0.329
2.350	7	0.336
2.400	7	0.343
2.450	8	0.306
2.500	8	0.313
2.550	8	0.319
2.600	8	0.325
2.650	8	0.331
2.700	8	0.338
2.750	8	0.344
2.800	9	0.311
2.850	9	0.317
2.900	9	0.322
2.950	9	0.328
3.000	9	0.333
3.050	9	0.339
3.100	9	0.344
3.150	10	0.315
3.200	10	0.320
3.250	10	0.325
3.300	10	0.330
3.350	10	0.335
3.400	10	0.340
3.450	10	0.345
3.500	11	0.318
3.550	11	0.323
3.600	11	0.327
3.650	11	0.332
3.700	11	0.336
3.750	11	0.341
3.800	11	0.345
3.850	12	0.321
3.900	12	0.325
3.950	12	0.329
4.000	12	0.333
4.050	12	0.338
4.100	12	0.342
4.150	13	0.319
4.200	13	0.323
4.250	13	0.327
4.300	13	0.331
4.350	13	0.335
4.400	13	0.338
4.450	13	0.342
4.500	14	0.321
4.550	14	0.325
4.600	14	0.329
4.650	14	0.332
4.700	14	0.336
4.750	14	0.339
4.800	14	0.343
4.850	15	0.323
4.900	15	0.327
4.950	15	0.330
5.000	15	0.333
5.050	15	0.337
5.100	15	0.340
5.150	15	0.343
5.200	16	0.325
5.250	16	0.328
5.300	16	0.331
5.350	16	0.334
5.400	16	0.338
5.450	16	0.341
5.500	16	0.344
5.550	17	0.326
5.600	17	0.329
5.650	17	0.332
5.700	17	0.335
5.750	17	0.338
5.800	17	0.341
5.850	17	0.344
5.900	18	0.328
5.950	18	0.331
6.000	18	0.333
6.050	18	0.336
6.100	18	0.339
6.150	18	0.342
6.200	18	0.344
6.250	19	0.329
6.300	19	0.332
6.350	19	0.334
6.400	19	0.337
6.450	19	0.339
6.500	19	0.342
6.550	19	0.345
6.600	20	0.330
6.650	20	0.333
6.700	20	0.335
6.750	20	0.338
6.800	20	0.340
6.850	20	0.343
6.900	20	0.345
6.950	21	0.331
7.000	21	0.333
7.050	21	0.336
7.100	21	0.338
7.150	21	0.340
7.200	21	0.343
7.250	21	0.345
7.300	22	0.332
7.350	22	0.334
7.400	22	0.336
7.450	22	0.339
7.500	22	0.341
7.550	22	0.343
7.600	23	0.330
7.650	23	0.333
7.700	23	0.335
7.750	23	0.337
7.800	23	0.339
7.850	23	0.341
7.900	23	0.343
7.950	24	0.331
8.000	24	0.333
8.050	24	0.335
8.100	24	0.338
8.150	24	0.340
8.200	24	0.342
8.250	24	0.344
8.300	25	0.332
8.350	25	0.334
8.400	25	0.336
8.450	25	0.338
8.500	25	0.340
8.550	25	0.342
8.600	25	0.344
8.650	26	0.333
8.700	26	0.335
8.750	26	0.337
8.800	26	0.338
8.850	26	0.340
8.900	26	0.342
8.950	26	0.344
9.000	27	0.333
9.050	27	0.335
9.100	27	0.337
9.150	27	0.339
9.200	27	0.341
9.250	27	0.343
9.300	27	0.344
9.350	28	0.334
9.400	28	0.336
9.450	28	0.338

Batten centres

RIDGE AND MONO RIDGE

The undertile membrane should overlap the apex of a roof by at least 150mm. The ridge battens can then be permanently fixed.

VERGES

The battens should not be cut until the tile setting out procedure has been completed. Sufficient undertile membrane must be provided for water-proofing the verge detail.

ABUTMENTS

Sufficient undertile membrane must be provided as detailed in standard flashing requirements.

GUTTERS

Gutters should be installed after tiling commences.

GENERAL

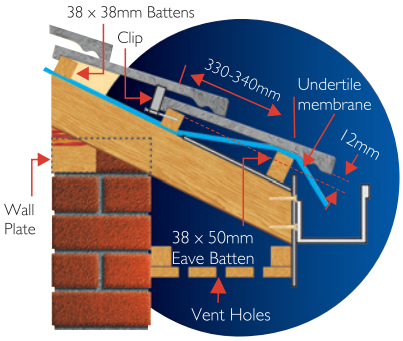
Before tiling work commences, fascia boards, beam filing, valley flashings, plastering and painting work, should be completed to avoid unnecessary traffic on the roof.

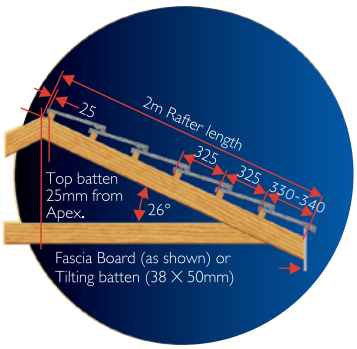
Steps for working out batten centres

When tiling a roof it is important to position the battens equidistantly from each other to prevent uneven courses. Braas Monier Building Group has produced a simple formula using the tables provided to assist you in this task. Follow these four easy steps to locate the batten centres of rafters ranging from 1 metre to 9.35 metres.

Working out batten centres are as follows:

1. Measure the complete rafter length from the apex of the roof to the end of the eave.
2. Position the first batten as per illustration.
3. Proceed to batten at centres obtained from the tables for the applicable pitch.
4. Always ensure that the top batten is 25mm from point of apex.





Tilting batten to be used to bring the first row of tiles in the same plane of those that follow.

Windloading and undertile membranes

The most important environment factor which affects the satisfactory performance of roofs is wind gusting. During short-term wind gusts, pressure differences occur between the roof space (loft) and the outside of the roof covering. The result is a wind force that causes the total or partial removal of the roof covering allowing further damage by natural elements. Roof pitches below 30° results in suction on both the windward and leeward sides of the roof. This suction or lifting force, particularly on a low pitched roof, is often the most severe wind load experienced by any part of a building. Under strong wind gusts the uplift on the roof covering may be far in excess of the dead mass of these coverings, requiring both the roof covering and the total roof structure to be securely fixed to prevent the roof and/or covering from being lifted and torn from the building.

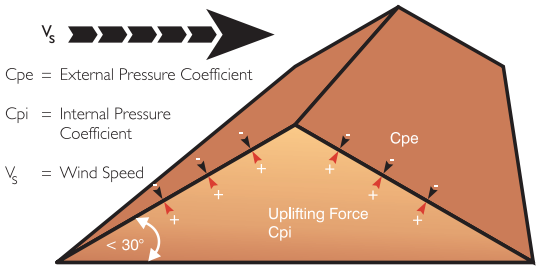


Figure A

Wind tunnel tests and practical evidence have shown that the satisfactory performance of a roof, and a tiled roof in particular, depends on the complementary function of the roof covering and the undertile membrane.

A roof with a pitch of less than 30° is experiencing a wind of velocity (Vs) metres per second horizontal and at right angles to the ridge line. The kinetic energy of the wind is transformed into a dynamic pressure q through the interaction of the roof as obstruction with the moving wind:
q (Newtons per m²) = $\rho \frac{V_s^2}{2}$
where ρ = Density of air.

A roofing undertile membrane (high tensile strength/tear resistance), performs a critical function in preventing roof coverings from being removed under high wind gusting and in some instances reduces the need for mechanical fixing. In areas of high driving rain, e.g. coastal regions, an undertile membrane will minimize the risk of rain penetration on all roof pitches that may occur as a result of the reversal of the internal/external pressure relationship caused by the other dominant roof openings. In order to withstand high wind loads it is necessary for all horizontal overlaps to be held down properly. One method is to use an additional batten over the overlap where necessary.

The working performance of the roofing undertile membrane substantially reduces the lifting forces on the roof covering. In addition the undertile membrane brings definite advantages to the building. In essence an undertile membrane is an essential component of a pitched roof and should be considered an investment and an insurance for a weather-tight roof. If a roof structure is fitted with an undertile membrane of suitable quality and is tiled according to the required specifications, it will withstand excessive wind speeds.

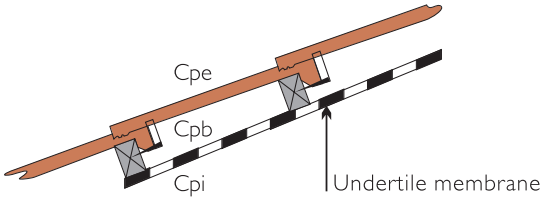


Figure B

A suitable roofing undertile membrane will afford:

a. An increase in thermal insulation resulting in energy savings during winter and summer.
b. Reduced dust contamination in the loft space, hence allowing it to be utilised as a storage area.
c. Minimised water ingress and damage resulting from hailstones melting in valleys, concealed gutters, etc.
d. Protection against roof leaks in the event of damage to the roof covering.

Fixing the underlay and battens

EAVES OVERHANG

Determine the specified eaves overhang and cut the rafters/trusses accordingly.

TILTING BATTEN

A tilting batten (or fascia board) must be used at the bottom end of the rafters, rising above the batten line to ensure that the first course of tiles will be on the same plane as the following courses. The average tilting dimension is plus-minus 14mm higher than the battening being used.

VALLEY UNDERLAY

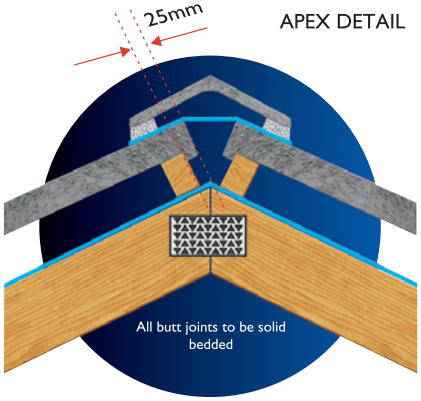
If the roof has valleys, start by fixing a strip of underlay at least 600mm wide, centred on the valley's full length, overlapping the ridge on the top and carrying it well into the gutter at the bottom. Secure the underlay on the edges with clout nails.

EAVES UNDERLAY

Lay the first horizontal strip over the rafters starting from the eaves, ensuring that it will carry over the fascia board. Secure this first strip to the rafters with clout nails in the upper half only, leaving the lower half free for draping over the tilting batten and well into the gutter. Care should be taken to ensure that the underlay does not form any troughs where water may be trapped. To achieve this the underlay must be taut or supported, if necessary, behind the fascia board/tilting batten. If the roof is to have open soffits, it is good practice to install a thin covering (fibre-reinforced cement or other weather-resistant sheet) on top of the rafters for the extent of the eaves or verges overhang before proceeding.

POSITIONING THE BOTTOM AND TOP BATTENS

Fix the batten, which is to carry the first course of tiles on top of the underlay. The distance of this batten from the fascia board should allow sufficient overhang of the tiles over the fascia board/tilting batten, enabling rainwater to discharge efficiently into the gutter (normally 350mm from the outside of the fascia board to the top of the first batten).
Fix the apex batten temporarily, but accurately, at a distance of 25mm from the apex of the rafters, which is adequate for most pitches.
Calculating the batten gauge
Determine the pitch of the roof and the appropriate batten gauge. Measure the full rafter length and read off the spacings on the table on the following pages. Set the tilting batten and first batten, then proceed to batten at the centres shown in the table. Make sure that the battens run parallel to each other at all times.



Distance between rafter apex and first batten

The underlay in all cases should be fixed between rafters and battens (except at the lower edge of a bottom course of tiles where it overlaps the tilting batten and/or fascia board into the gutter), and must overlap horizontally and vertically by at least 150mm at all joints (Work normally carried out by a qualified carpenter).

SPLIT APEX

A split apex is a design feature. When calculating the batten gauge, the higher apex should always be used. A short course can occur at the lower level apex.

ROOF UNDERLAY AND BATTENING

Proceed with fixing underlay horizontally with clout nails, observing the recommended overlaps. Batten up simultaneously to the apex ensuring that the batten joints are always located on a rafter. It is bad practice to join all the battens on the same rafter. Avoid walking or standing on the underlay as this might cause damage.

VALLEYS

At valleys, the horizontal strips of underlay shall overlap underlay previously fitted. Determine the width of the valley flashing to be used. Secure the valley counter battens along both sides of the valley to the rafters securing the underlay. Horizontal battens are now mitred and secured to the valley counter battens.

HIPS

At hips, the underlay may be cut close to the hip rafter, or may overlap one another on both sides of the hip rafter. A strip of 600mm wide underlay is then placed over the full hip length, overlapping the ridge at the apex and carrying down into the gutter at the bottom. The hip counter battens are secured to the rafters as close to one another as possible along the length of the hip, securing the underlay. Horizontal battens are now mitred and secured to the hip battens.

Rake verge

The Rake Verge system provides a neat maintenance-free finish to the verge of a tiled roof and eliminates the need for barge boards. Rake verge tiles are fixed using non-corrodible fasteners (90-180mm and 63mm).

BENEFITS

Easy installation

- The Rake Verge system has been designed to facilitate easy installation as it is a versatile product that can be used on variable batten gauges on both sides of the roof.

Compatible with all Coverland profiles

- The Rake Verge system is compatible with all Coverland profiles. Together, they provide a uniform, attractive overall finish to any pitched roof.

Cost-effectiveness

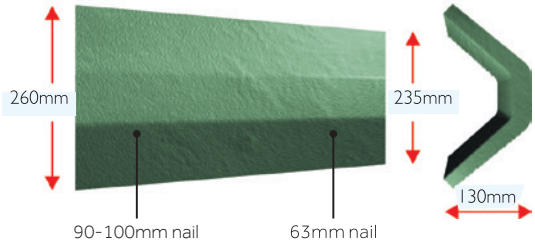
- The Rake Verge system is the most cost-effective system available today.

Aesthetically pleasing

- The Rake Verge system provides a beautiful finish to any pitched roof.

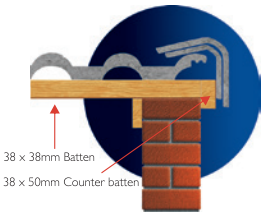
PRODUCT DATA

Length (m)	420
Linear coverage (mm)	±320 per unit depending on batten gauge
Mass	±5,4
Profiled tile	38 x 38mm Tiling batten = 38 x 50mm Verge counter batten
Flat tile	38 x 38mm Tiling batten = 38 x 76mm Verge counter batten



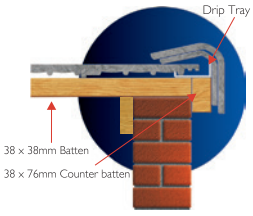
INSTALLATION PROCEDURE

A verge counter batten must be fixed as per the examples (in all cases ±30mm from the edge of the tile to the outer edge of the verge batten must be allowed):



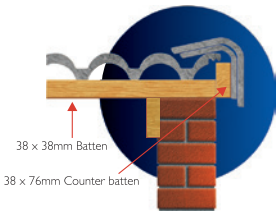
Example 1 – Double Roman & Taunus

Top of verge counter battens (38 x 50mm) to be positioned flush with the top of the tile battens.



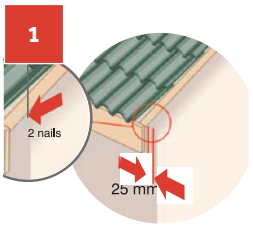
Example 2– Elite

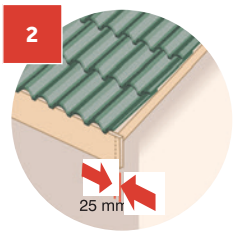
Top of verge counter battens to be positioned flush with the top of tile battens. A 38 x 76mm verge counter batten is to be used. A drip tray is needed on roofs with an overhanging gable and gables that are flush. This is to reduce drip on the batten and extend the life-span of the batten.

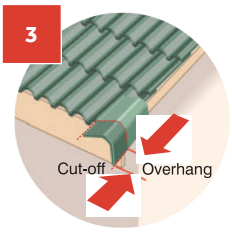


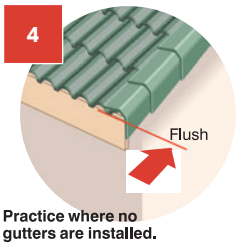
Example 3 – Cupola

Bottom of verge counter battens to be positioned flush with the bottom of tile battens. In cases where 38 x 50mm battens are used, a 38 x 76mm verge counter batten must be positioned flush with the bottom of the tiling batten.









Practice where no gutters are installed.

1. In order to obtain a straight line along the eave, the first rake verge tile needs a dummy spacing. This is obtained by driving two nails, one underneath the other, into the end batten as close to the edge as possible so that they protrude ±25mm. Where fascia boards are used, cut fascia to allow ±25mm protrusion beyond the batten to support the first rake verge.
2. Place the first rake verge on the first course of tiles and slide upwards, so that the tapered end of the verge tile butts up against the second course of tiles. Mark off the desired overhang on the front of the rake verge tile and cut off. Replace the verge tile and fix in position.
3. Now continue along the verge by placing each rake verge butting up against each course of tiles and overlapping each preceding verge tile until you reach the ridge line. Do the adjacent verge, finishing at the ridge.
4. At the apex of the roof the rake verges are mitred to form a neat junction with the ridge line. Both the top rakes are bedded in mortar as in the ridge line.

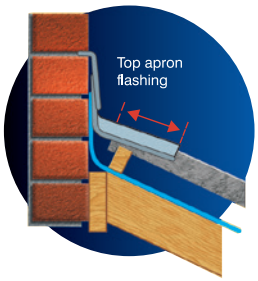
Note: Flat tiles require additional weather proofing. Consult your local branch for information and for other specialist products.

Abutments

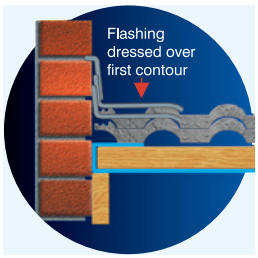
Abutments seal walls, chimneys and other rising structures and prevent rain and snow from entering the roof construction. Even under extreme weather conditions, like long-term high temperatures, heavy rain and high winds, our roof flashing rolls increase the durability of a roof, thanks to their outstanding weather resistance. Consult SANS 10062 for details.

TOP EDGE ABUTMENT

The flashing material, turned up and fixed to the wall, must be carried well over the first tile by at least 150mm, and finished with a cover flashing/ connection strip.



Top edge abutment



Back edge abutment

BACK EDGE ABUTMENT

The flashing material, turned up and fixed to the wall, must immediately be placed over the full tiles above the abutment and carried under the second row of tiles as far as necessary to ensure efficient waterproofing. It must also be extended on each side of the abutment, overlapping the side flashings by at least 150mm. This treatment at a back edge does not provide for the flow of water and debris, and is only acceptable for short distances (chimney, etc.)

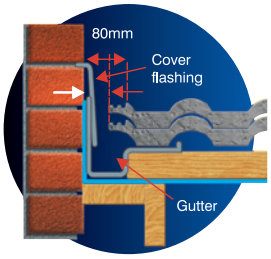
SIDE ABUTMENT

All tiles with a contoured profile can be treated in this manner at a side abutment. The flashing material, turned up and fixed to the wall, must be carried well over the nearest raised tile contour and finished with a cover flashing/connection strip.

For further information on installation, see page 35.

GUTTER METHOD

Concealed side gutter



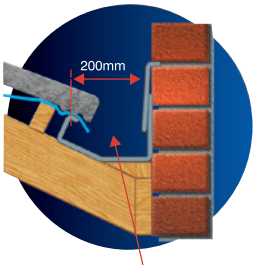
A preformed gutter located adjacent to the abutting face must be positioned below the tile level, supported by a timber insert. Make sure that the side welt on which the tiles are laid is not pressed flat. The abutting tiles should be laid (whole or cut) approximately 40mm away from the abutting face to allow the water channel to be cleaned.

Where a concealed gutter is not discharging water into an eaves gutter (e.g. around the chimney stack or other abutment) it is important to install it in such a manner that water will discharge freely onto the head of the immediate course of tiles below the abutment.

The whole gutter should be pitched at a slightly lower angle to lead onto the head of the tiles below, and a trough should not be allowed to form at the bottom of the gutter where the debris and water will dam up.

Care should also be taken to form the bottom lip of the gutter in such a way that the rain will not overflow into the roof. At this particular point the front flashing should be carried up under the side gutter and adjacent tile as far as necessary to ensure a waterproof junction. Where this type of gutter is discharging water directly into the eaves gutter (e.g. abutting wall), the same recommendations as for a valley will apply with regard to the fascia board. A tilting batten will be required to support the front of the tiles hanging into the concealed gutter.

Back Gutter



Gutter size to be in proportion with water flow

The size of a back gutter should be in accordance with the expected volume of water it is likely to carry. In constructing a back gutter, the bottom edge of the course of tiles immediately above the gutter shall be raised to maintain the same tile pitch as for courses (see Tilting Dimension). The tiles discharging rainwater into the back gutter should overhang it sufficiently to ensure an efficient discharge.

The back gutter should be so formed at each end as to allow a free flow of water into the concealed side gutters. All abutment flashings should be finished with a cover flashing (of the same material to avoid the possibility of electrolytic corrosion) either stepped or raked and chased into the brickwork.

Tiling

The following laying and fixing specifications for Coverland concrete roof tiles have been established in accordance with SANS 10062 (Code of Practice for fixing concrete roof tiles), SANS 10160-1 (Code of Practice for the general procedures and loadings to be adopted for the design of buildings), BS 5534 – Part 1/1978 (Code of Practice for slating and tiling and design), roofing technology data and extensive experience gained by BMI Group.

Roofs in exposed and coastal areas can experience severe wind lifting forces. In these situations special recommendations for additional mechanical fixings apply. The principal factors to be considered in deciding on the necessity for additional fixing are:

1. The exposure of the site.
2. The height above ground of the roof.
3. The pitch of the roof.
4. The higher wind loadings encountered at eaves and verges.
5. Environmental influences – Specific laying and fixing specifications for these locations must be considered for each situation.

LAYING SPECIFICATIONS

Headlap

The minimum headlap for Coverland concrete roof tiles is 100mm on 17°-25° and 75mm on pitches of 26° and above. All Coverland concrete roof tiles, with the exception of the Elite, should be laid straight-bond.

Mechanical fixing

Coastal regions (up to 30km inland) – Aluminium alloy/Non-corrodible serrated clouthead nails of the correct length to suit the profile.

Inland regions – Electroplated serrated clouthead nails of the correct length to suit the profile. Non-corrodible storm clips should always be used where specified. Ensure correct storm clip is used for specific profiles.

NAILS SPECIFICATIONS PER PROFILE

Cupola	100 mm long nail/clipped
Clay Tile	50 mm long nail/clipped
Double Roman	63 mm long nail/clipped
Elite	50 mm long nail/clipped
Taunus	75 mm long nail/clipped
Rake Verge	75 mm long nail
Tile Clips	50 mm long nail
Tile Clips for Elite	25 mm long nail

* Nails to be 2.8mm gauge serrated shank type.

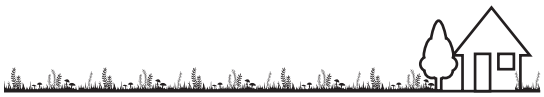
FIXING SPECIFICATIONS

The following fixing guide should provide a sound functional roof in each of the defined exposure categories. However, it cannot encompass all possible circumstances, or the unanticipated worse than the "once in 50 years" prediction. Special laying and fixing specifications must be considered for each situation where the roof pitch, height of the roof, exposure of the site and/or environmental influence are unknown, in doubt, or felt to be critical. Please refer to BMI Group for advice in these circumstances.

Assess the terrain in which the roofing is to be constructed as being of one of the following categories:

Terrain category 1 – exposed smooth terrain with virtually no obstructions

This category includes open sea coasts, lake shores and flat, treeless plains with little vegetation other than short grass.



Terrain category 2 – open terrain with widely spaced obstructions

This category includes large airfields, open parklands or farmlands and undeveloped outskirts of towns and suburbs, with few trees.

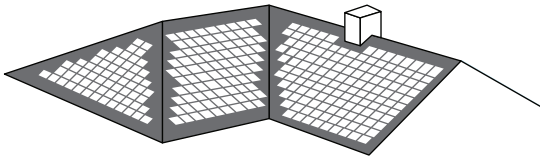
Terrain category 3 – terrain having numerous closely spaced obstructions

This category includes wooded areas and suburbs, towns and industrial areas, fully or substantially developed.

Terrain category 4 – terrain with numerous large, tall, closely spaced obstructions

This category includes large city centres.

Fixing method A

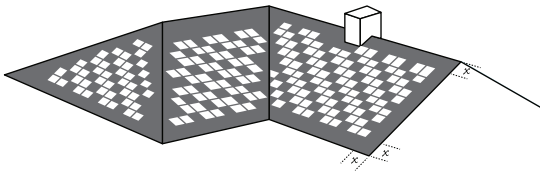


Mechanically fix two courses of tiles at eaves and verges, or fix the full overhang, whichever is greater, and fix two courses at ridges, and one full tile adjacent to valleys, hips and abutments. Nail cut tiles at valleys, hips and abutments.

Roof pitches

17° to < 26° – undertile membrane mandatory
26° to < 45° – undertile membrane recommended
45° to < 55° – undertile membrane recommended, each tile to be nailed
55° to vertical – undertile membrane mandatory, each tile to be nailed and clipped

Fixing method B

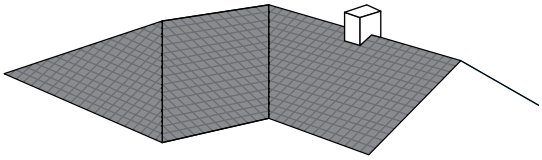


If the roof pitch is in the range 17,5° to 44°, mechanically fix a band of tiles of width x (where x is equal to a fifth of the number of courses on the rafter length) at eaves and verges (or fix the full overhang, whichever is greater) and at ridges and abutments. Also fix one full tile adjacent to hips and valleys, and fix every third tile on the rest of the roof. Nail cut tiles at hips, valleys and abutments. If the roof pitch exceeds 45°, nail and clip every tile. Also close soffits at all eaves and verge overhangs.

Roof pitches

17° to < 26° – undertile membrane mandatory
26° to < 45° – undertile membrane recommended (mandatory at the coast)
45° to vertical – undertile membrane mandatory, each tile to be nailed and clipped

Fixing method C



Mechanically fix every tile. Also close soffits at all eaves and verge overhangs.

Roof pitches

17° to < 26° – undertile membrane mandatory
26° to < 45° – undertile membrane mandatory
45° to vertical – undertile membrane mandatory

Exposure Category Assessment Table

Height to Ridge not exceeding (m)	Regional Basic Design Wind Speed ms-1		Exposure Category
	41 to 40	and below	A
5	41 to 49	inclusive	B
	41 to 50	and above	C
	44 to 43	and below	A
10	44 to 49	inclusive	B
	44 to 50	and above	C
	43 to 42	and below	A
15	43 to 47	inclusive	B
	43 to 48	and above	C

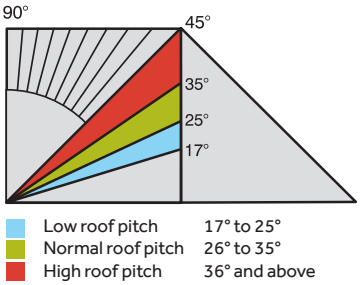
RAFTER PITCH

The angle of elevation between the horizontal plane and the angle of the rafter. Roof pitch = rafter pitch

Tile pitch

The angle of elevation between horizontal and the tile when laid. Note: The tile pitch has a lower angle of elevation than the rafter pitch.

Low roof pitch
17° to 25°
Normal roof pitch
26° to 35°
High roof pitch
36° and above



STARTING TILING

Tile to the lines from the right-hand side, working towards the left, and moving upwards. Simultaneously secure the tiles as required, and install eave fillers where necessary. All Coverland tiles should be laid straight-bond except for the Elite which must be laid broken-bond. Full tiles are marked to facilitate ease of laying to the lines.

Cutting tiles

Purpose-made cut tiles for use at hips and valleys are not manufactured because the position of the cut varies from tile to tile. Cutting of tiles is done on-site, either traditionally by hand or mechanically. **CAUTION!** Sand, which is used as an aggregate in making concrete, contains silica which is released in dust when mechanical dry cutting of tiles is performed. Inhalation over a long period of time could cause silicosis. It is recommended that a dust mask to a protection level of FFP3 and eye protection be worn as a safety precaution. **It is advisable that tiles should not be cut on the roof especially on coated products.**

Hips

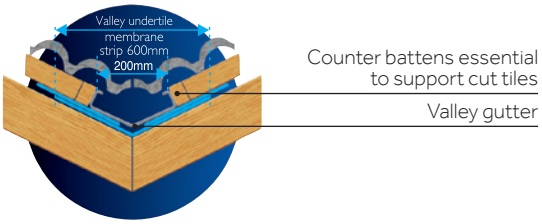
The tiles from the two adjacent slopes should be cut closely and secured on the hip rafter to provide adequate support for the bedding of ridge tiles. Hip anchors should be used at the bottom edge of each hip rafter on steep pitches. It is essential to fix all cut tiles carefully at hips and valleys to retain them in position. This can be achieved by using a kro clip or by using an adhesive such as Coverfill.

Valleys

Extra care should be taken with the valley construction because of its lower pitch in relation to the rest of the roof and the fact that it drains water away from the slopes. The small tile sections should be secured to the valley battens to keep the valley clear and unobstructed and prevent water from overflowing into the roof space.

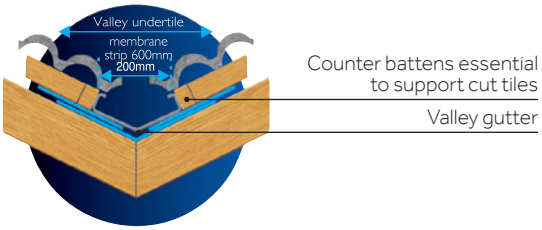
Closed valley

Proceed as indicated, with the exception that the tile should be cut in order to form a neat butt joint in the centre of the valley. Best achieved by cutting one side completely, using a straight edge before starting the other side.



Open valley

Once the valley battens have been positioned, a gutter is then formed in the valley using a suitable non-corrodible material. The fascia board is cut away so that no part of the valley gutter is raised above the fascia board when laid. The tiles on each side of the valley should be neatly cut to alignment and laid in such a way that they project over the side welt by at least 50mm. A gap of at least 50mm should be provided in the centre of the valley between the cut edges of the tiles.



INSPECTION AFTER TILING

- Roof level across the plain. No sagging visible (especially at eaves tiles).
- Roof pitch, truss spacing and batten spacing according to specifications.
- Fixing of tiles carried out in accordance with recommendations in the Concrete Manufacturers Association "Technical and Detailed Manual of Concrete roof tile".
- Underlay properly installed (especially at closed eaves).
- Ridge and hip tiles properly bedded in mortar or installed using Coverland's Dry Ridge System. Hip iron installed when required.
- Tiles in valley neatly cut and properly secured.
- Verge tiles secured to verge counter batten.
- Roof left perfect and watertight on completion. All gutters and valleys cleaned out.
- All cracked tiles are replaced.
- All tiles to be in straight course horizontally and vertically.

Roof tile estimating

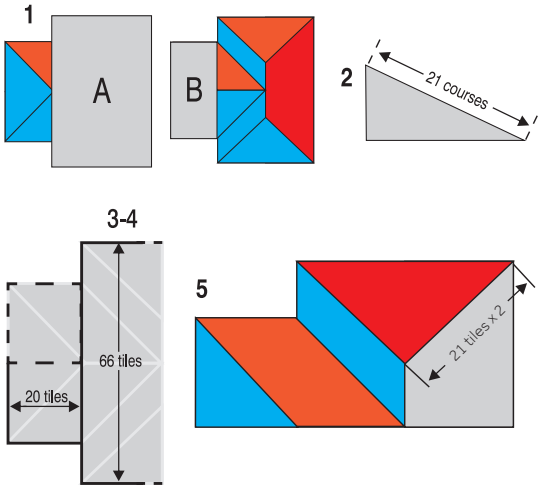
RAFTER/EAVES LENGTH ESTIMATING METHOD

This method is recommended as it indicates the quantity of tiles that will be used in practice to comply with the minimum laying and fixing specifications. It takes into consideration the extra courses and rows of tiles that will be necessitated by rafter and eaves lengths that are not an exact multiple of the required rafter gauge or tile linear cover respectively (Refer to Estimating tables).

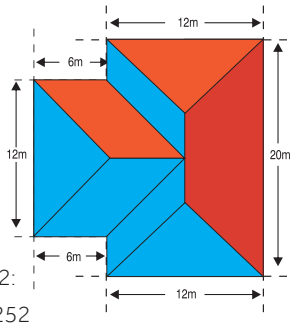
Example – Coverland Taunus tiles at 22.5° roof pitch

1. Divide the roof plan into regular sections, i.e. Rectangles A and B.
2. In each section measure the rafter length from the elevation of that section (roof apex to outside edge of fascia board.) Using the estimating tables, note the number of courses for that rafter length, i.e. Table 1 (100mm headlap at 320mm batten centres.)

3. Read off the eaves length (including the verge overhangs from the plan) in each section and using the estimating tables, note the number of tiles required for this length, i.e. Table 2 (300mm linear cover).
   Section A – 20m = 66 tiles
   Section B – 6m = 20 tiles



4. Multiply the number of courses obtained in 2 by the number of tiles along the eaves obtained in 3 to obtain the nett quantity of tiles for that side of the roof. Multiply by two to obtain the nett quantity for both sides of each section, i.e
   Section A = 21 x 66 x 2 = 2 772
   Section B = 21 x 20 x 2 = 840
5. Calculate the extra tiles at hips and valleys by multiplying each hip and/or valley by the number of courses involved on the rafter length, then by 2:



   6 Hips = 6 x 21 x 2 = 252
   2 Valleys = 2 x 21 x 2 = 84
   Nett quantity of tiles = 2 772 + 840 + 252 + 84 = 3 948

TECHNICAL DATA

- Batten centre = 320mm
- Linear cover per tile = 300mm
- Tiles per m2 = 10.42

In general three methods are in use to estimate roof tile quantities from a plan:

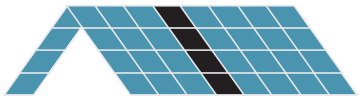
a) Rafter/eaves length estimating method
b) Trigonometrical method
c) Roof area method

ESTIMATING TABLES

This table indicates the number of courses which must be allowed per given rafter length to ensure that the minimum headlap of 75mm or 100mm is obtained. Rafter lengths from roof apex to outside edge of fascia are assumed. All figures are nett. Wastage must be added.

This table indicates the number of tiles which must be allowed per given eaves length, assuming that the tiles are laid to the nominal linear cover of 300mm per tile. All figures are nett. Wastage must be added.

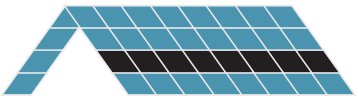
Number of tiles per rafter length



At meter	320 mm batten centres	345 mm batten centres
2,000	7	6
2,200	7	7
2,300	8	7
2,400	8	7
2,500	8	8
2,600	9	8
2,700	9	8
2,800	9	9
2,900	9	9
3,000	10	9
3,100	10	9
3,200	10	10
3,300	11	10
3,400	11	10
3,500	11	11
3,600	12	11
3,700	12	11
3,800	12	11
3,900	13	12
4,000	13	12
4,100	13	12
4,200	13	13
4,300	14	13
4,400	14	13
4,500	14	13
4,600	15	14
4,700	15	14
4,800	15	14
4,900	16	15
5,000	16	15

At meter	320 mm batten centres	345 mm batten centres
5,100	17	15
5,200	17	15
5,300	17	16
5,400	17	16
5,500	18	16
5,600	18	17
5,700	18	17
5,900	19	17
6,000	19	18
6,100	19	18
6,200	20	18
6,300	20	19
6,400	20	19
6,500	21	19
6,600	21	19
6,700	21	20
6,800	22	20
6,900	22	20
7,000	22	21
7,100	22	21
7,200	23	21
7,300	23	21
7,400	23	22
7,500	24	22
7,600	24	22
7,700	24	23
7,800	25	23
7,900	25	23
8,000	25	23

Number of tiles per eaves length



At meter	Linear cover
1,830	6
2,130	7
2,430	8
2,730	9
3,030	10
3,330	11
3,630	12
3,930	13
4,230	14
4,530	15
4,830	16
5,130	17
5,430	18
5,730	19
6,030	20
6,330	21
6,630	22
6,930	23
7,230	24
7,530	25
7,830	26
8,130	27
8,430	28
8,730	29
9,030	30
9,330	31
9,630	32
9,930	33
10,230	34
10,530	35
10,830	36
11,130	37
11,430	38
11,730	39
12,030	40

At meter	Linear cover
12,330	41
12,630	42
12,930	43
13,230	44
13,530	45
13,830	46
14,130	47
14,430	48
14,730	49
15,030	50
15,330	51
15,630	52
15,930	53
16,230	54
16,530	55
16,830	56
17,130	57
17,430	58
17,730	59
18,030	60
18,330	61
18,630	62
18,930	63
19,230	64
19,530	65
19,830	66
20,130	67
20,430	68
20,730	69
21,030	70
21,330	71
21,630	72
21,930	73
22,230	74
22,530	75

Note

a. The only dimension which has to be measured and scaled is the rafter length.

b. The estimating tables (rafter length) include for a 3mm per course tolerance in the gauge.

c. The estimating tables (eaves length) include for a full tile with a left hand lock on the left hand verge (330mm). These tables assume the tile being laid at the mid lock shuffle position.

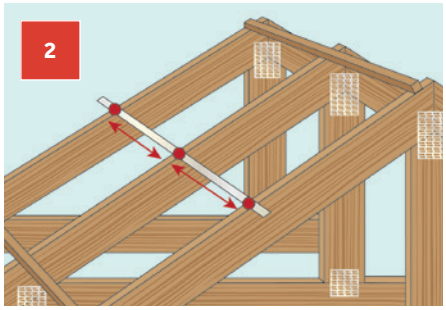
d. No allowance has been made for wastage. A 3% wastage factor is the building industry norm.

10 Easy Steps To Tiling A Roof

All specifications detailed are for a single storey domestic building – consult your nearest outlet for other applications.

TOOLS REQUIRED

1. Saw
2. Chalk line
3. Tape measure
4. Pointing trowel
5. Hammer
6. Brush
7. Nail bag



TRUSS CENTRES

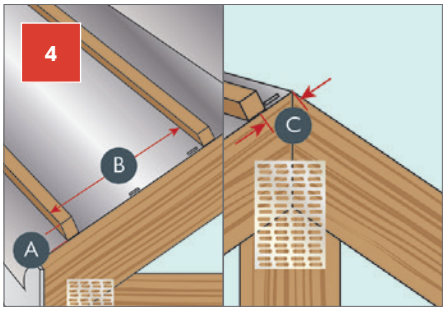
Max 760mm – 38 x 38mm Batten
Max 900mm – 38 x 50mm Batten (on edge)
Elite 950mm – 38 x 50mm Batten (on edge)

Always consult your timber merchant for truss design and timber sizes.

- Truss centres must be equal and correct distances apart
- Apex – Truss heights must be level

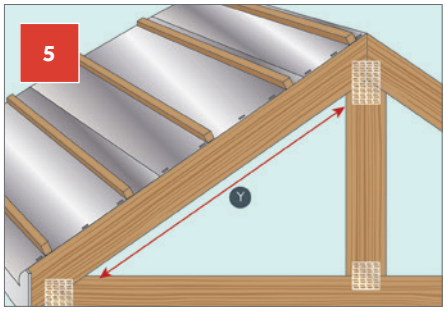
UNDERTILE MEMBRANE

a. Coastal areas – mandatory at all pitches
b. Other areas – 17°-25° mandatory; 26°-45° optional (recommended)
c. Lay undertile membrane on top of trusses & under battens
d. Elite profile – undertile membrane mandatory at all pitches



EAVES & APEX

- The tilting fillet must always be ±12mm thicker than the tile battens.
- From the outside of the tilting fillet/ fascia to the top of the first batten 350mm.
- The top of the apex batten must be 25mm from the top of the truss.



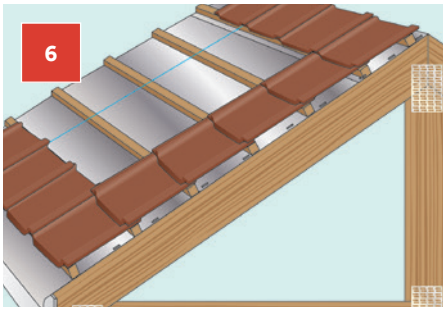
BATTEN CENTRES

Roof Pitches

17°-25° – 320mm maximum
26°-45° – 345mm maximum

Centres should never be below 300mm.

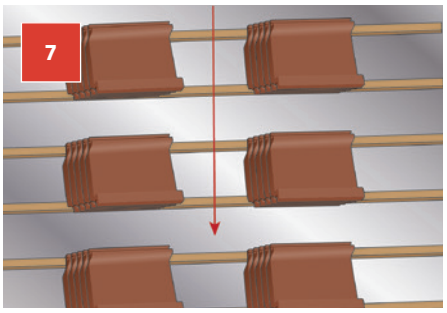
- Obtain measurement Y and divide either by 320mm or 345mm dependent on pitch.
- The figure obtained is rounded e.g. measurement Y = 4.325m ÷ 320mm = 13.51 (rounded = 14).
- The rounded figure (14) is then divided into Y, this will then give exact batten centre e.g. 4.325m ÷ 14 = 309mm centres.
- Now batten roof at 309mm centres. Always join battens on alternating trusses i.e. not all joints must be on the same truss.



MARKING YOUR ROOF OUT

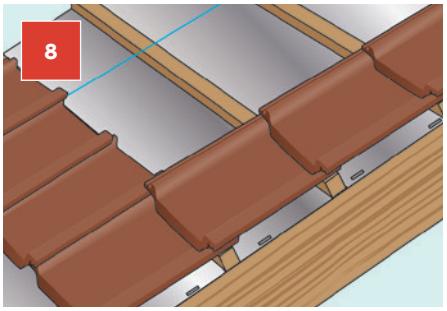
a. Always mark your roof out.

- Gable overhang not to exceed more than one tile.
- Lay a course out at the eaves, shuffle this to get desired overhang (each tile has 1.5mm shuffle).
- Ensure tiles are seated properly, corner break can occur if this is not done.
- Run one row of tiles up right hand gable, keeping square to bottom row.
- Run a course of tiles along apex of roof. Tiles must be laid loose and not tight against each other to allow for thermal movement.
- Mark outside edge of underlock of every fourth tile and shoot chalk line to corresponding tiles top and bottom.



LOADING OF ROOF

The roof can now be loaded. Commence by stacking in bundles of seven tiles working from apex of roof down towards eaves. The bundles of seven tiles must be stacked on top of the rafters on alternate battens. Both sides of the roof to be equally loaded.



LAYING OF TILES

- Proceed to lay tiles from right to left keeping to chalk lines, lay three rows at a time.
- When walking on tiles always step on the bottom middle of the tile.

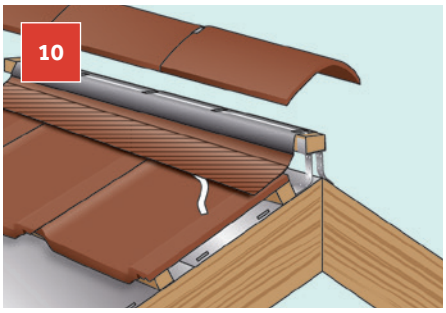
FIXING EXPOSED AREAS

Coastal – aluminium alloy or non-corrodible serrated clouthead nails of the correct length to suit the profile.

Inland – electroplated serrated clouthead nails.

- Coastal regions – all tiles to be mechanically fixed. Eaves to be closed.
- Unexposed areas – all exposed eaves to be nailed/clipped, all tiles in ridge course to be nailed/clipped, thereafter every third tile in every row to be nailed/clipped.
- Always ensure at least one row in from exposed areas is nailed/clipped.

Contact your nearest outlet for details, regarding mechanically fixing requirements.



FINISHING OF RIDGES/HIPS

- Roll out and align Compact Roll onto the ridge or hip batten (butyl strip down).
- Staple the middle along the hip batten following the white line.
- Pull off the adhesive strips, one side at a time, to expose the CH bond special butyl glue (for example, starting with the left side then the right side).
- Stick butyl onto all high points of the tiles before moulding into the tile recesses.
- Repeat steps c & d for the other side.
- In the same way as on the hip-line, Compact Roll can also be applied on the ridge-line (just roll and stick).
- Where ridges and hips intersect, lay Compact Roll onto the hip/ridge end ensuring sufficient overlap.
- Complete the ridge and / or hip with Coverland ridge tile fittings.
- Clip on the hip and/or ridge fittings with Coverland ridge clips.

General support information

Coverland has a dedicated in-house team of product designers, engineers and materials scientists who work closely with equipment manufacturers and external specialists to develop new and improved products.

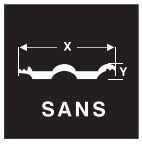
PHYSICAL AND CHEMICAL PROPERTIES

Strength
Coverland concrete roof tiles comply with the strength requirements of SANS 542.

Ultraviolet radiation
Coverland concrete roof tiles are unaffected by intense ultraviolet radiation.

Impact strength
Coverland concrete roof tiles can withstand the impact of a 45mm hailstone.

Fire resistant
Coverland concrete roof tiles are non-combustible when tested to BS 476 Part 4:1984. Classified SAA when tested in accordance with BS 476 Part 3 1975 with respect to fire penetration and spread of flame.



Dimensional tolerances
Coverland concrete roof tiles comply with the dimensional tolerances of SANS 542.

Water impermeability
Stringent continuous testing (totally immersed in water for 24 hours), shows a low level of absorption (max 5% of tile mass). These test conditions exceed actual roof conditions where the tiles receive water on one side only.

Insulation
Coverland concrete roof tiles have excellent insulation properties with a r-value of 0.2 m²K/W, retarding heat penetration in summer and retaining warmth in winter. Coverland concrete roof tiles are also highly effective sound insulators.

Thermal properties
Thermal conductivity – 1,4 W m-1 K-1. Thermal transmission U value: downward heat flow = 4,116 W m-2 K-1

Durability
Coverland concrete roof tiles will provide a weather fast roof for many years when laid according to the BMI Group and SANS Tiling Standards.

Frost
Coverland concrete roof tiles are unaffected by frost.

Maintenance
Coverland concrete roof tiles are maintenance-free.

Hailstones

Hail, as a destructive force of nature, has plagued man, his crops and his property since the beginning of civilization. The vast majority of hailstorms contain hailstones that are relatively small. These small stones can damage crops, but not roofs.

It is known that thunderstorms and hailstorms are closely related and various meteorological phenomena related to thunderstorms and hailstorms e.g. dew point, cloud thickness temperature of cloud base and temperature lapse rate, all reach maxima during the summer period. The maximum frequency occurs in the months of November and December when the temperature lapse rate and the surface temperatures are at their highest.

RESEARCH AND TESTING

Figure A (Pretoria) indicates that hailstorms are almost entirely confined to the hours between midday and 22h00 with a maximum occurring around 17h00 to 18h00.

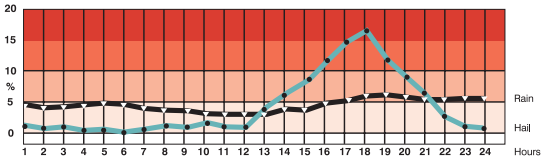


Figure A
Daily variation of frequency of hail and rain over a period of 20 years

Figure B indicates the average number of hailstorm days per annum. It is clear that hailstorm frequency is closely related to height above sea level. Gauteng can expect 4-5 hail days per year whereas the coastal areas of KwaZulu-Natal can expect virtually none.

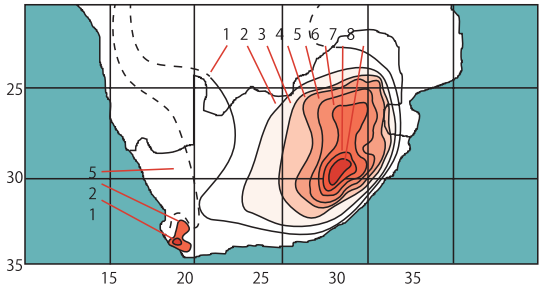
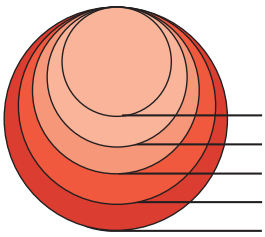


Figure B Hail frequency
Average number of days per annum with hail

The ability of a hailstone to cause damage is directly proportional to its energy on impact and this in turn increases with the diameter of the hailstone. In brief a large hailstone is potentially a greater hazard than a small hailstone. The majority of hailstones studied have a density of 910 kg/m3 indicating virtually clear ice. The shapes of hailstones are varied and although these have a limited effect on the damage potential it is negligible compared with the overall effect of the hailstone diameter, i.e. terminal velocity versus impact energy.

Figure C indicates the relationship between hailstone diameter, terminal velocity and impact energy. These calculations assume a spherical model. Independent hail impact tests conducted by the SANS have indicated that a hailstone diameter of between 40-50mm and larger is necessary to damage standard Coverland concrete roof tiles.



	Terminal velocity	Impact energy (Joules)
25mm	22,3m s^{-1}	1,36 J
32mm	25,0m s^{-1}	5,42 J
38mm	27,4m s^{-1}	10,85 J
45mm	29,6m s^{-1}	18,96 J
51 mm	32,0m s^{-1}	29,80 J

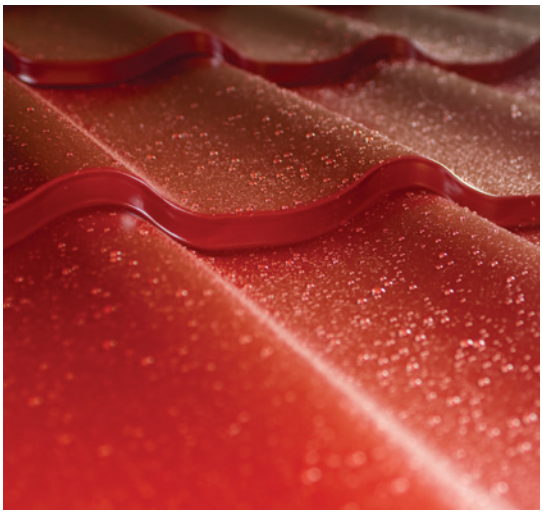
These facts have been confirmed by actual observations during hailstorms.

Figure C Hailstone diameter, terminal velocity and impact energy

Hailstorm statistics show that only 3% of all reports indicate hailstone diameters in excess of 30mm and only 0,6% indicate hailstone diameters in excess of 45mm. It is noted that these figures probably reflect upper limits as there is a natural tendency to ignore very light hailstorms. The risk of a hailstorm containing hailstones of 45mm or larger, i.e. the critical size that is resisted by Coverland concrete roof tiles, is less than 6 in 1 000 hailstorms.

Based on the hailstorm frequency of five per year in the highveld/bushveld regions, the risk is reduced to a chance of 1 in 33 years. Hailstorms that tend to be a very localized phenomena only become significant, so far as building roofs are concerned, when they occur in townships. The afore-mentioned risk is further reduced by the chance of the critical one-in-thirty-three-year hailstorm falling in a township or the open veld. The most densely populated area of the Highveld is Gauteng.

If the land utilisation for residential purposes within this region is projected at 60%, the risk becomes once in 55 years.



Efflorescence

Efflorescence, often referred to as "lime bloom", is a natural phenomenon and is found in products containing cement. It is a white deposit which appears on the surface of all concrete based products. Efflorescence is a temporary condition, and does not affect the functional properties of the product. Wind and rain will gradually remove the deposit and the true colour of the tile will be restored.

NOTE: Coverland recommends our coated tile range selection to prevent efflorescence.

CAUSES OF EFFLORESCENCE

Concrete consists of sand, gravel, cement and water — with the cement being produced by burning alumina and lime together with other elements. Water in the form of rain, condensation or dew dissolves part of the lime. A barely soluble white film of lime is created by this chemical reaction and is seen on the surface of the tile when the water evaporates.

HOW IS EFFLORESCENCE REMOVED?

The natural process of weathering (e.g. rain water washing over the tiles), will wash the chalky deposit away, and the true colour of the tile will be restored.

CAN EFFLORESCENCE BE REMOVED ARTIFICIALLY?

A diluted acid mix can be applied as a short-term measure. It is, however, the recommended and accepted practice to allow nature to remove the deposit.

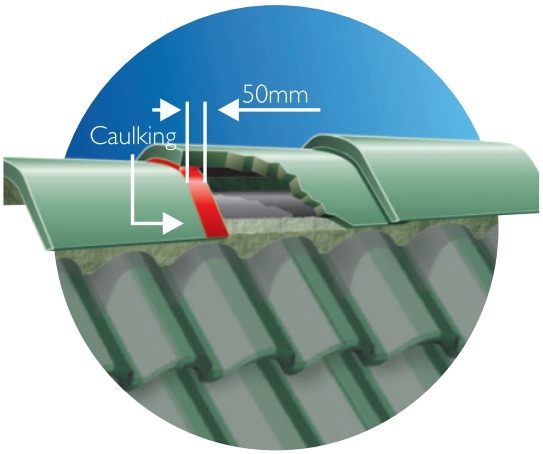
CAN EFFLORESCENCE RE-APPEAR?

In some instances, efflorescence may recur temporarily. Since the lime content of any concrete product can vary and the weather conditions can also differ, the level of the limae deposit on the surface can also fluctuate considerably. Efflorescence is a natural phenomenon and a temporary condition only.

Mortar Bedding

BEDDING OF HIPS

Bed into position a hip starter. Temporarily bed a ridge at the apex of the hip. Run a levelling line between the hip starter and the top ridge. Proceed to bed ridges from the hip starter to the apex, keeping to the line.



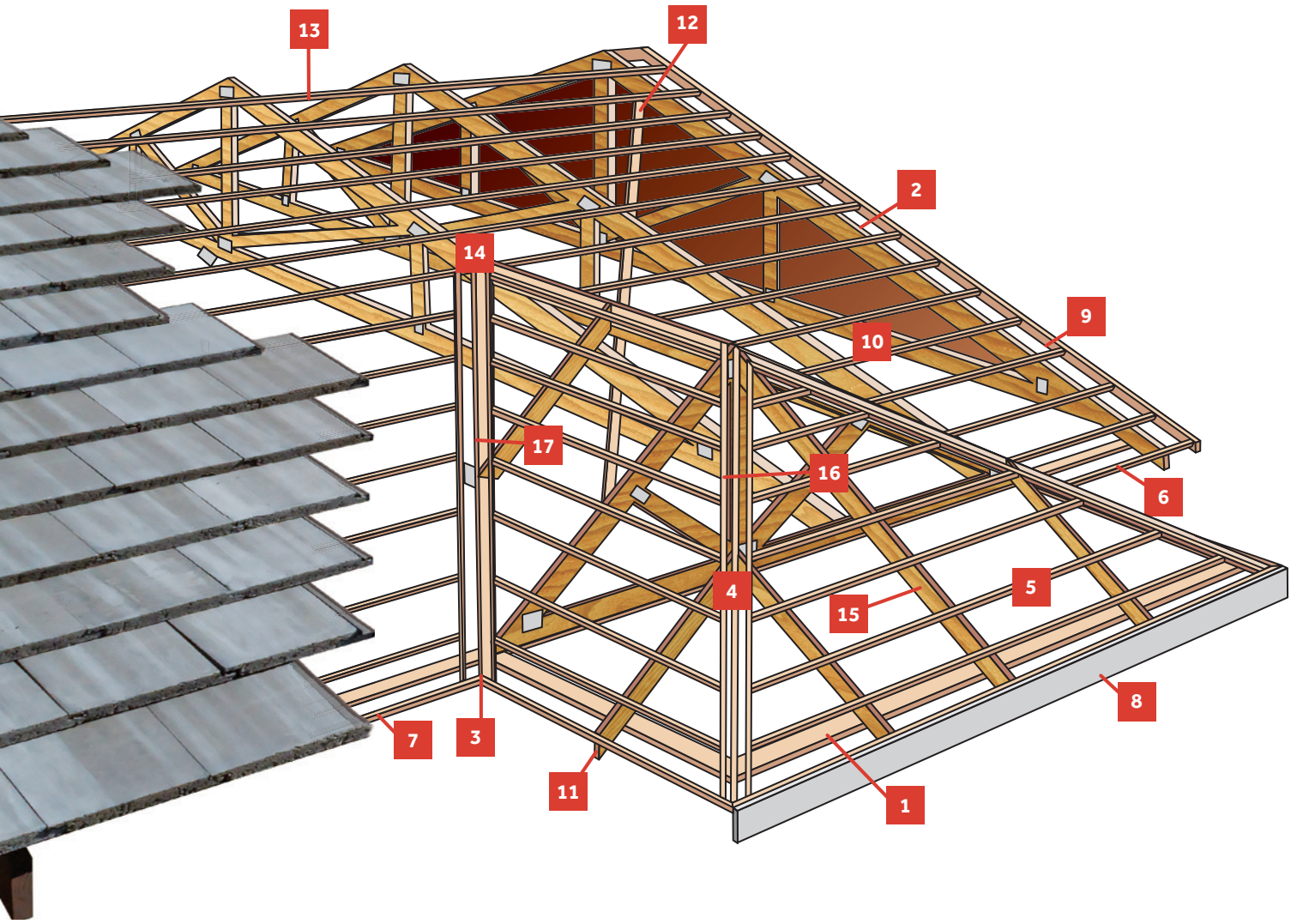
BEDDING OF RIDGES

1. Mix to a fairly dry workable consistency 3 parts sharp graded sand, one part portland cement and colorant (about 1kg pigment per 50kgs cement).
2. Run a 225mm strip of DPC along the ridge line. Exception: CT – Run a 150mm strip of Malthoid along the ridge line.
3. Soak ridge in water to provide wet joint with mortar.
4. Bed at each end of the roof one ridge in a bed of mortar – 50mm wide and 75mm high. Press ridges into mortar.
5. Run a gut line between the two bedded ridges. Proceed to lay ridges keeping to line.
6. Only butt joints of ridges to be solid bedded, remainder of ridges to be edge bedded.
7. All pointing to be neatly struck off and roof to be brushed and cleaned off. Any damaged tiles within the roof to be replaced.
8. In some coastal areas the ridge tiles are solid bedded.
9. Contact your nearest outlet if in doubt.

For bedding of tapered ridge, apply with the exception that the overlapping joints are caulked and not solidly bedded.

Coverland recommends the Dry Ridge System for the laying of ridges. On pitches of 40° and above, the 90° Barge tile is recommended for use as a ridge and hip tile (refer to Roofing Systems & Components).

Roof Structure
Terminology



1. Wall plate
2. Truss
3. Valley rafter
4. Hip rafter
5. Batten
6. Eaves
7. Tilting batten
8. Fascia board
9. Verge counter batten
10. Tie beams
11. Sprocket end
12. Bracing
13. Apex
14. Junction
15. Rafter
16. Hip counter batten
17. Valley counter batten

Whilst illustrations depict the Coverland Elite tile, the practices apply to all Coverland profiles. Any exceptions will be indicated in bold typeface.

Notes

Notice

Although Coverland has compiled this document as accurately as possible, discrepancies may occur in construction methods due to variables in the building industry. Information contained in this brochure is provided in an advisory capacity and Coverland accepts no liability for work executed by contractors or private individuals. Coverland reserves the right to change any information herein at their discretion without prior notification. Contact your nearest Coverland branch for an approved Roofing Contractor.

Raw materials used in the production process differ at the various branches and may cause colour differences in the finished product. Special colours are available on request in all profiles but subject to minimum quantities. Colours may vary due to printing processes and Coverland suggests actual viewing of the tile samples.

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Coverland

Brits
010 492 8800
Cape Town
041 463 1155
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031 565 3260
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043 492 0040
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010 492 8780
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041 492 0130
Gqeberha/PE
041 463 1155
Richards Bay
035 797 2160
Roofing Academy
011 760 2788

Coverland (Pty) Ltd
Block 6, Constantia View Office Estate
2 Hogsback Avenue
Quellerina
011 222 7300
info.sa@bmigroup.com

bmigroup.com/za