Coverland

PRODUCT AND TECHNICAL MANUAL

Adhering to the use of good roofing practices

Part of the MONIER GROUP

PREFACE

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 MONIER Roofing - 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. The use of Coverland concrete roof tiles and the application of good roofing practices will ensure owners of a long-lasting, maintenance-free and weather tight roof for the life of the building. In the event that further information is required, please call your nearest Monier Roofing branch office.

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CONCRETE ROOF TILE RANGE
DOUBLE ROMAN

The Double Roman is clean, classic and traditional, making it the ideal choice for any home.

The Double Roman tile was the first tile to be mass produced in South Africa which accounts for its unparalleled popularity. The Double Roman can trace its shape back to Roman engineering principles, where it was discovered that arches have an ability to withstand great pressures as the arch distributes the weight evenly down to the base of the structure. Hence the birth of the Double Roman tile. Scientifically tested weather locks ensure complete weather resistance.

STANDARD FINISH

THROUGH COLOUR

Victorian Grey 901061 | Brown 901021 | Red 901011 | Slate Grey 901031 | Terracotta 901041

FARMHOUSE

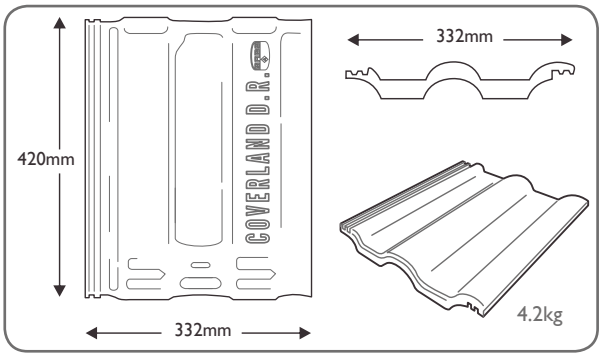
Kalahari 901053 | Red 901013 | Terracotta 901043

CLASSIC

Moreland Green 901077 | Green 901097

TECHNICAL DATA

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



STRUCTURAL DATA

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

Rafter Centres	
Up to 760 mm	38 x 38 Batten
Up to 950 mm	38 x 50 mm Batten on edge
Headlap (mm)	
17° to 25°	100
26° and over	75
Batten Centres (mm)	
17° to 25°	320
26° and over	345
Batten per m² (m)	
17° to 25°	3.13**
26° and over	2.9**
Number of tiles per m²	
17° to 25°	10.42
26° and over	9.66
Approximate mass of tile m² (kg)	
17° to 25°	46
26° and over	41
Undertile Membrane Recommended at all Pitches	
17° to 25°	Mandatory
26° and over	Recommended

** No allowance made for wastage.

Disclaimer: The appearance and colour of the Victorian Grey concrete roof tile may vary due to the source of raw materials used in the manufacturing process.

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TAUNUS

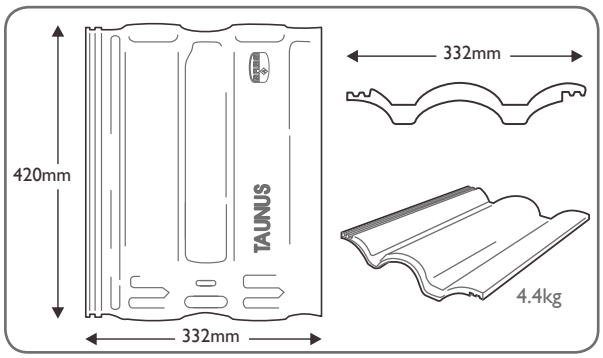
Always eager to set new standards in style, quality and excellence, MONIER Roofing developed the striking Taunus. This bold profile tile has a long and noble history. For centuries they were individually handmade from clay.

Not only does it represent the highest standards in technical refinement, but now, thanks to MONIER Roofing's unique production capability, the Taunus is stronger, more balanced and above all, more affordable than its predecessor.

Taunus boasts a required incline of 17°, making it the perfect choice for low-pitched roofs. It's deep roll creates roofs of majestic character with it's bold, striking contours and organic undulating rolls.

TECHNICAL DATA

Overall size of tile (mm)	420 x 332 mm
Approximate mass per tile	4.4 kg
Linear cover per tile	300 mm



STRUCTURAL DATA

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

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

** No allowance made for wastage.

Disclaimer: The printing process, age and lighting conditions may affect the appearance and colour of these illustrations. MONIER Roofing recommends you examine an actual sample tile of your colour choice before making your buying decision. Special colours are available on request. Contact your nearest outlet for further information.

STANDARD FINISH

THROUGH COLOUR

Brown 910021 | Kalahari 910051 | Red 910011 | Slate Grey 910031 | Terracotta 910041

FARMHOUSE

Brown 910023 | Kalahari 910053 | Red 910013 | Terracotta 910043

LUMINO CRYSTAL FINISH NEW

FARMHOUSE

Brown 910023/3 | Kalahari 910053/3 | Red 910013/3 | Terracotta 910043/3

LUMINO FLAIR FINISH NEW

THROUGH COLOUR

Black 910031/4 | Green 910091/4 | White 910081/4

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RENOWN

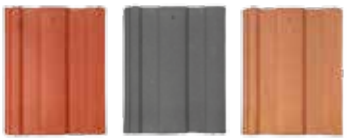
The Renown tile is incredibly sturdy in appearance and composition. This profile boasts an extremely efficient weather lock.

The Renown is a distinct concrete roof tile with a subtle geometric shape. Its heritage is traditionally European in origin and could even be traced back to Roman times.

The Renown is a tile that speaks for itself through its clean sophisticated lines and elegantly chiselled profile, yet engineered to be cost-effective and durable.

STANDARD FINISH

THROUGH COLOUR

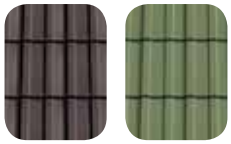


Red 906011 | Slate Grey 906031 | Terracotta 906041

LUMINO FLAIR FINISH

NEW

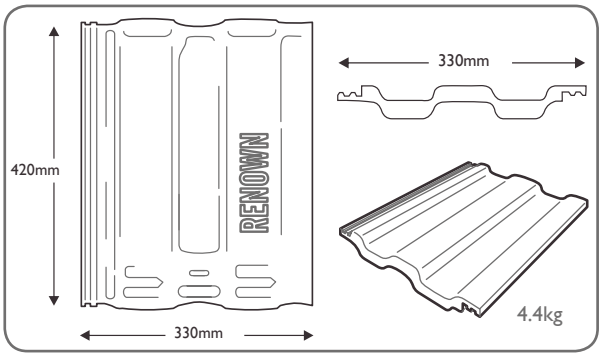
THROUGH COLOUR



Black* 906031/4 | Green* 906091/4

TECHNICAL DATA

Overall size of tile (mm)	420 x 332 mm
Approximate mass per tile	4.4 kg
Linear cover per tile	300 mm



SABS | CONCRETE MANUFACTURERS ASSOCIATION | AutoSpec

STRUCTURAL DATA

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

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

** No allowance made for wastage. * Only available in KwaZulu-Natal and Free State. Disclaimer: The printing process, age and lighting conditions may affect the appearance and colour of these illustrations. MONIER Roofing recommends you examine an actual sample tile of your colour choice before making your buying decision. Special colours are available on request. Contact your nearest outlet for further information.

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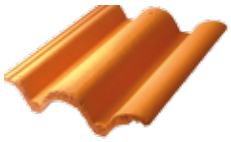


CUPOLA

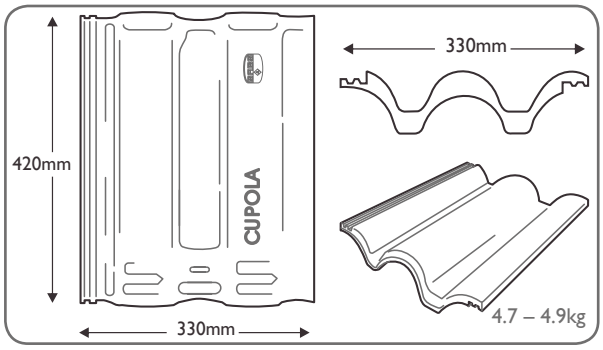
The exclusive and high quality Cupola profile denotes a strong Mediterranean character – ideally suited for majestic homes and corporate buildings with large roof surfaces.

The Cupola tile adds a new dimension to the roofing landscape by combining a classic appearance with the advantages of modern technology. This strong, deep rolled profile, with its bold curves and incredible colour, provides large, undisturbed roof surfaces with a design orientated touch.

The Cupola is made from high quality raw materials (pre-classified washed sand, cement, and long-lasting colour pigments based on iron oxides) used in a fully automated manufacturing process. The combining of materials is meticulously monitored. Daily samples are taken and highly advanced tests on strength and size are conducted.

TECHNICAL DATA

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



STRUCTURAL DATA

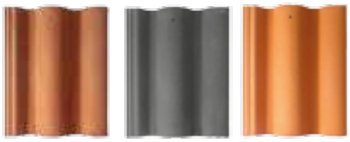
The roof structure specifications should comply with the regulations in your area.

Rafter Centres	
Up to 760 mm	38 x 38 Batten
Up to 950 mm	38 x 50 mm Batten on edge
Headlap (mm)	
17° to 25°	100
26° to 45°	75
Batten Centres (mm)	
17° to 25°	320
26° to 45°	345
Batten per m² (m)	
17° to 25°	3.13**
26° to 45°	2.9**
Number of tiles per m²	
17° to 25°	10.42
26° to 45°	9.66
Approximate mass of tile m² (kg)	
17° to 25°	± 51
26° to 45°	± 47
Undertile Membrane Recommended at all Pitches	
17° to 25°	Mandatory
26° to 45°	Recommended

** No allowance made for wastage.

STANDARD FINISH

THROUGH COLOUR



Brown 907021 | Slate Grey 907031 | Terracotta 907041

FARMHOUSE

Brown 907023 | Kalahari 907053 | Red 907013 | Terracotta 907043

LUMINO CRYSTAL FINISH

NEW

THROUGH COLOUR

Brown 907021/3

FARMHOUSE

Brown 907023/3 | Kalahari 907053/3 | Terracotta 907043/3

LUMINO FLAIR FINISH

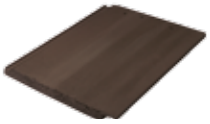
NEW

THROUGH COLOUR

Black 907031/4

Coverland

ELITE



An elegant profile, enabling upmarket designs with clean lines to be constructed with all the benefits associated with a concrete roof tile.

The flat profiled Elite tile epitomises sophistication and elegance. The clean aesthetic lines and distinctive style bring architectural beauty, quality and a superior finish to any building, be it residential or commercial.

The Elite concrete roof tile originated from new and advanced technologies in the manufacturing process of concrete roof tiles and is available in a variety of surface finishes and colours.

The Elite tile was launched as a cost-effective alternative to slate tiles.

STANDARD FINISH

THROUGH COLOUR

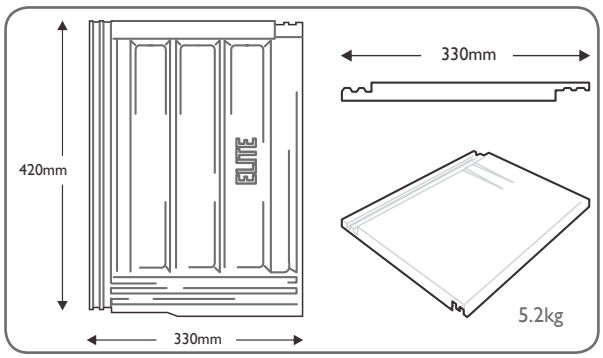
Black
905031

LUMINO FLAIR FINISH

NEW

THROUGH COLOUR

Black
905031/4



TECHNICAL DATA

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

STRUCTURAL DATA

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

Rafter Centres	
Up to 760 mm	38 x 38 Batten
Up to 950 mm	38 x 50 mm Batten on edge
Headlap (mm)	
17° to 25°	100
26° and over	75
Batten Centres (mm)	
17° to 25°	320
26° and over	345
Batten per m² (m)	
17° to 25°	3.13**
26° and over	2.9**
Number of tiles per m²	
17° to 25°	10.6
26° and over	9.8
Approximate mass of tile m² (kg)	
17° to 25°	55
26° and over	50
Laying application	
17° to 25°	Broken Bond
26° and over	Broken Bond
Undertile Membrane Recommended at all Pitches	
17° to 25°	Mandatory
26° and over	Mandatory

** No allowance made for wastage.

Disclaimer: The printing process, age and lighting conditions may affect the appearance and colour of these illustrations. MONIER Roofing recommends you examine an actual sample tile of your colour choice before making your buying decision. Special colours are available on request. Contact your nearest outlet for further information.

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PERSPECTIVE

Monier's Perspective roof tile provides a clean, smooth countenance to the architecture of a building, while still providing a metrical undulating contour, offering more character than that of a plain flat tile.

The Perspective tile encompasses a modern, pleasing shape imbued with a high level of protective performance against harsh weather conditions. This tile is the master of style and practicality, a true leader in present-day construction. This innovative product includes a balanced combination of modern aesthetics and functionality, ensuring satisfaction of demanding contemporary customer needs and giving the home owner a fresh alternative to the traditional profiles available on the market.

In order to meet and exceed the highest standards required, the tile underwent rigorous testing in our state-of-the-art European testing facilities where driving rain performance and wind tunnel testing were amongst the harsh conditions that the Perspective tile successfully endured.

The Perspective's design aids in the realisation of a meticulously constructed long-lasting habitat. Robustness and progressive elegance combine to give the perfect recipe of providing shelter from the storm whilst being the apple of the homeowner's eye.

This tile is currently only available in the Western Cape.

TECHNICAL DATA

Overall size of tile (mm)	420 x 332 mm
Approximate mass per tile	4.6 kg
Linear cover per tile	300 mm

STRUCTURAL DATA

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

Rafter Centres	
Up to 760 mm	38 x 38 Batten
Up to 950 mm	38 x 50 mm Batten on edge
Headlap (mm)	
17° to 25°	100
26° and over	75
Batten Centres (mm)	
17° to 25°	320
26° and over	345
Batten per m² (m)	
17° to 25°	3.13**
26° and over	2.9**
Number of tiles per m²	
17° to 25°	10.42
26° and over	9.66
Approximate mass of tile m² (kg)	
17° to 25°	52
26° and over	44
Undertile Membrane Recommended at all Pitches	
17° to 25°	Mandatory
26° and over	Mandatory

** No allowance made for wastage. * Only available inland.

Disclaimer: The printing process, age and lighting conditions may affect the appearance and colour of these illustrations. MONIER Roofing recommends you examine an actual sample tile of your colour choice before making your buying decision. Special colours are available on request. Contact your nearest outlet for further information.

LUMINO CRYSTAL FINISH

NEW

FARMHOUSE

Kalahari *
904053/3

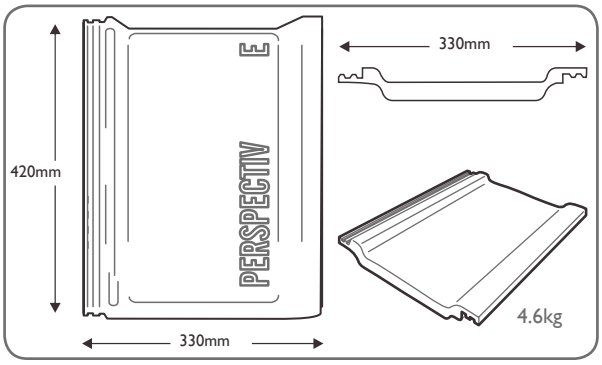
Terracotta *
904043/3

LUMINO FLAIR FINISH

NEW

THROUGH COLOUR

Black *
904031/4



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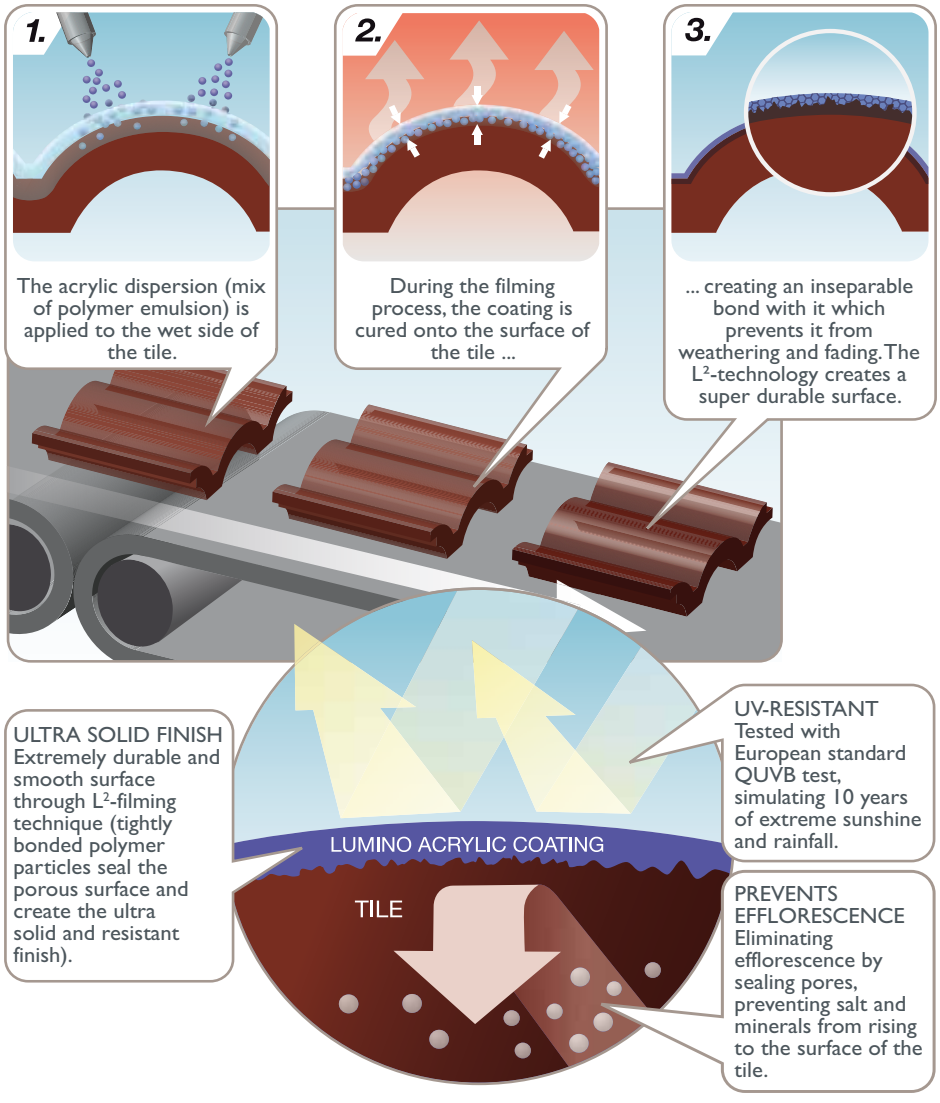
LUMINO TILE RANGE

The LUMINO® range is a new generation of roof tile finishes. The intense colour coating is a result of the unique L^2-coating technique which enhances the colour of the roof tiles significantly giving them a fresh, brighter look, making their appearance significantly richer than existing products on the market. The coating technique is formulated so that it is UV-resistant and prevents efflorescence. The new premium tile colours are bright and beautiful and do not fade over time to create looks that last. The LUMINO® range is the ultimate way to overhaul the image of a drab home. It is recommended to those who like to have an original touch to the features of their house.

- Worldwide experts in acrylic coating techniques.
- Over 20 years of success in Europe and sun-extreme climates such as Malaysia and Indonesia.
- Developed and tested by Monier Technical Centre in Germany.

See styles and colours available under each tile profile in the brochure.

THE PATENTED L^2- TECHNOLOGY – FOR LOOKS THAT LAST



COVERLAND LUMINO TOUCH-UP PAINT to paint your cut Lumino® tile edges and make them the same as the surface of the tile.

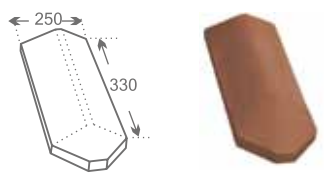
SCIENTIFICALLY TESTED
MONIER
GERMANY

Coverland

FITTINGS – CONCRETE ROOF TILES

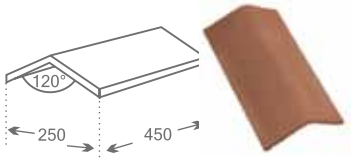
"V" RIDGE HIP STARTER

No. per Hip	One	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	14-16 mm	Laying	Open end butts next tile
		Mass	± 4.4 kg



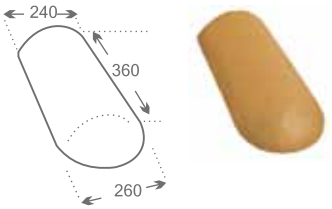
"V" RIDGE TILE

No. per LM	± 2.2 tiles	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	12-14 mm	Laying	Butt jointed
		Mass	± 3.7 kg (Standard)



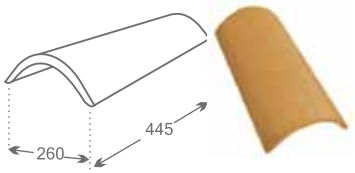
TAPERED HIP STARTER

No. per Hip	One	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	13-16 mm	Laying	Overlapping
		Mass	± 4.4 kg



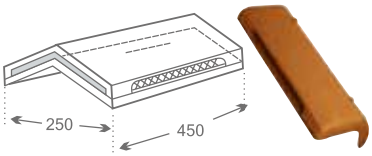
TAPERED RIDGE

No. per LM	± 2.5 tiles	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	13-16 mm	Laying	Overlapping
		Mass	± 4.2 kg



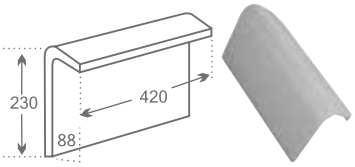
"V" VENT RIDGE

No. per LM	± 2.2 tiles	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	12-14 mm	Laying	Butt jointed
		Mass	± 8 kg



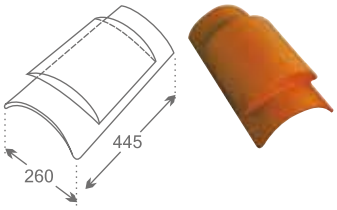
MONO RIDGE

No. per LM	± 2.2 tiles	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	14-16 mm	Laying	Butt jointed
		Mass	± 5 kg (Standard)



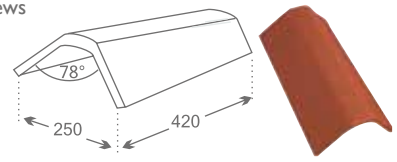
TAPERED VENT RIDGE

No. per LM	± 2.5 tiles	Fixing	Bed in mortar. Coverland Dry Ridge System included
Thickness	13-16 mm	Laying	Overlapping
		Mass	± 7 kg



RAKE VERGE

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



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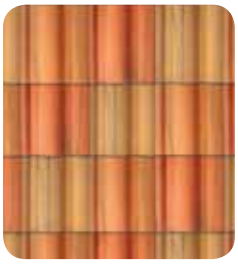
ARKITONE RANGE

The Arkitone Range is a Mediterranean concept of randomly laid concrete roof tiles of different colours creating an artistic style in roofing. It makes a quiet statement in superiority, status and appearance. Definitely in a class of its own!

STANDARD FINISH

TAUNUS & CUPOLA


Autumn


Sunset


Tuscan


Dusk


Harvester

LUMINO CRYSTAL FINISH

NEW

TAUNUS


Tuscan Mix

CUPOLA


Tuscan Mix

Coverland

CLAY ROOF TILE RANGE
COTTO COPERTURE

The undulating shape and the geometric form of the Cotto Coperture clay tile is recognised by the bold roll and special overlapping side and back grooves. This ensures that rain water, hail and snow slides freely and fast from the roof. The Cotto Coperture range offers excellent features such as weather resistant, durability and watertightness. The Cotto Coperture clay tile range consists of the Cotto Coperture Dorotea and Cotto Coperture Red Argilla, which are fully imported from Italy.

STRUCTURAL DATA

Tile Size	415 x 255 mm
Linear Cover (width)	200 mm
Number of tiles per m²	14.4
Batten Centres (mm)*	345 mm
Weight per tile	2.9 kg
Weight per m²	14.76 kg
Laying Application	Straight Bond
Minimum Roof Pitch	17.5°
Undertile Membrane	Recommended at all pitches Mandatory 17.5° - 25°

* It is advisable to measure approximately 20 tiles on site before battening the roof as tile sizes can vary during the firing of the clay.

RIDGE

No. per LM Size	3.3 tiles
Fixing	40.5 - 28 cm Bed in mortar
Laying	Overlapping
Mass	3.1 kg

THREE WAY RIDGE

No. per LM Size	Where necessary
Fixing	44 - 47.5 cm Bed in mortar
Laying	Overlapping
Mass	5.2 kg

HIP STARTER

No. per LM Size	One
Fixing	40.5 - 28 cm Bed in mortar
Laying	Overlapping
Mass	3.2 kg

FOUR WAY RIDGE

No. per LM Size	Where necessary
Fixing	40.5 - 40.5 cm Bed in mortar
Laying	Overlapping
Mass	8.6 kg

DOROTEA

Epitomising the perfect balance between the past and the present, the Cotto Coperture Dorotea combines modern technology with the appearance of the ancient Tyrrhenian fascia roofing on the Italian peninsula.

Different colours and shades depict the effects of time and the inclement sun and rain. Over the years, the combination of yellows, reds and browns of varying nuances, create a picturesque mosaic of beautiful harmonising colours.

The colours and shades of ancient times are reflected in the five different surface finishes of the tile. The final effect is that of a roof with warm tones, incorporating different shades of red and yellow, reminiscent of Tyrrhenian roof designs.

RED ARGILLA

In the making of Architectural masterpieces, there is a need for natural substances. One tries to construct a harmony between countryside and architecture, between man's creation and nature.

The Red Argilla is a natural red clay tile which offers developers, specifiers and homeowners the opportunity to use a clay roof tile to blend in with nature, while achieving the style and tradition of a Mediterranean roof.

COPPO DOMUS RUSTICO

Coppo Domus is handmade, handcrafted, one by one, as the ancient roof tiles. The new colours are cleverly inspired by the Italian landscape: its countryside, its medieval villages, its distinctive Mediterranean style.

Coverland

THE MARSEILLE RANGE

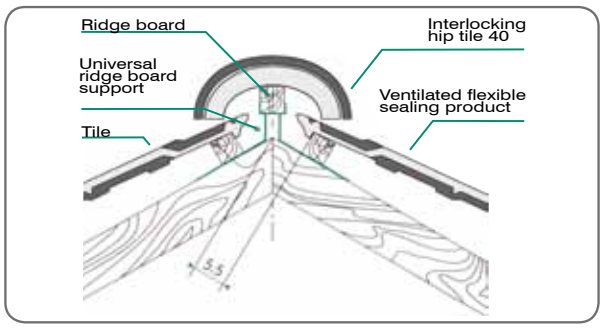
The Marseille clay tile is available in Red, adding that personal touch to any project by blending with its environment and instilling new life into old roofs. This is a tile destined to rejuvenate the roofs of yesteryear.

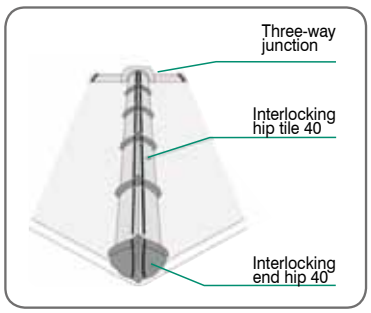
RIDGES

These can be fixed using Mortar or the Dry Ridge System. Being quick to lay, the dry ridge provides additional ventilation. It separates the ridge tiles from the roof covering. It prevents any cracking and permits any subsequent replacement of a tile or ridge tile.

HIPS

These can be fixed using Mortar or the Dry Ridge System. MONIER Roofing recommends laying a dry ridge system creating a ventilated sealing solution. This system allows the ridge/hip tile to be separated from the slopes. The tiles alongside the hip are cut to rake.





The Marseille Clay tile is the original interlocking tile from the beginning of the 20th century. This clay tile was designed and produced on an industrial scale by Guichard Carvin et Cie and was first produced at the Marseille's tile works, France - hence where it derives its name. It has a "Bee" mark imprinted on the top of the tile, which makes it unique and exclusive to MONIER Roofing.

The Marseile clay tile is imported from France and what makes this clay tile different from any other roof tile is that it has a triple lock section and a double overlap to brave the force of any rains. Once again the best selection of clay is selected and through a production process of pressing, one is assured of a highly precise tile with regularity in laying. The Marseille offers a 4cm variable gauge to adapt to numerous types of battening lending itself to new-build or renovation.

STRUCTURAL DATA

Tile Size	435 x 265 mm
Linear Cover (width)	215 mm
Number of tiles per m²	12.5 - 14
Batten Centres (mm)*	340 mm
Weight per tile	3.4 kg
Weight per m²	46.47 kg
Laying Application	Broken Bond
Minimum Roof Pitch	17.5°
Undertile Membrane	Recommended at all pitches Mandatory 17.5° - 25°

* It is advisable to measure approximately 20 tiles on site before battening the roof as tile sizes can vary during the firing of the clay.

INTERLOCKING HIP TILE 40

No. per LM	2.5 tiles
Fixing	43.5 - 25 cm Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	3 kg

INTERLOCKING END HIP 40

No. per LM	Where necessary
Fixing	Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	3.3 kg

THREE-WAY JUNCTION

No. per LM	Where necessary
Fixing	Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	3.5 kg

GUARANTEED FOR 30 YEARS FROST RESISTANCE

Coverland

THE OCCITANE RANGE

The Occitane clay roof tile is imported from France and is made of Limoux clay, which gives the tiles their legendary performance of mechanical strength and frost resistance. The structure of the lock guarantees that the tile fits perfectly and because it is treated with silicone, in the finishing process excellent watertightness is ensured.

Reliable, easy and economical to lay thanks to its large covering capacity of 10 tiles in a square meter. The Occitane clay roof tile also has a marked "gauge" look that transforms a roof into a unique charm. The tile has a large format and a range of divided gauges offering greater flexibility in laying.

Occitane clay tiles are available in a range of colours to fit in perfect harmony with the environment. Colours available are Silvacane Littoral, Silvacane Xahara and Red. These colours bring the patina of age onto a roof, while following up to date roofing solutions and respecting traditions.

STRUCTURAL DATA

Tile Size	478 x 310 mm
Linear Cover (width)	235 mm
Number of tiles per m²	10
Batten Centres (mm)*	420 mm
Weight per tile	4.2 kg
Weight per m²	42.54 kg
Laying Application	Straight Bond
Minimum Roof Pitch	17.5°
Undertile Membrane	Recommended at all pitches Mandatory 17.5° - 25°

* It is advisable to measure approximately 20 tiles on site before battening the roof as tile sizes can vary during the firing of the clay.

HALF-ROUND RIDGE/HIP TILE 50

No. per LM	2.5 tiles
Fixing	47 - 24 cm Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	4.3 kg

END HIP TILE 50

No. per LM	Where necessary
Fixing	Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	4.2 kg

THREE-WAY JUNCTION

No. per LM	Where necessary
Fixing	Bed in mortar/ Dry Ridge System
Laying	Overlapping
Mass	3.5 kg

RIDGES

These can be fixed using Mortar or the Dry Ridge System. Being quick to lay, the dry ridge provides additional ventilation. It separates the ridge tiles from the roof covering. It prevents any cracking and permits any subsequent replacement of a tile or ridge tile.

HIPS

These can be fixed using Mortar or the Dry Ridge System. MONIER Roofing recommends laying a dry ridge system creating a ventilated sealing solution. This system allows the ridge/hip tile to be separated from the slopes. The tiles alongside the hip are cut to rake.

COLOURS

Silvacane Littoral

Red

Silvacane Xahara

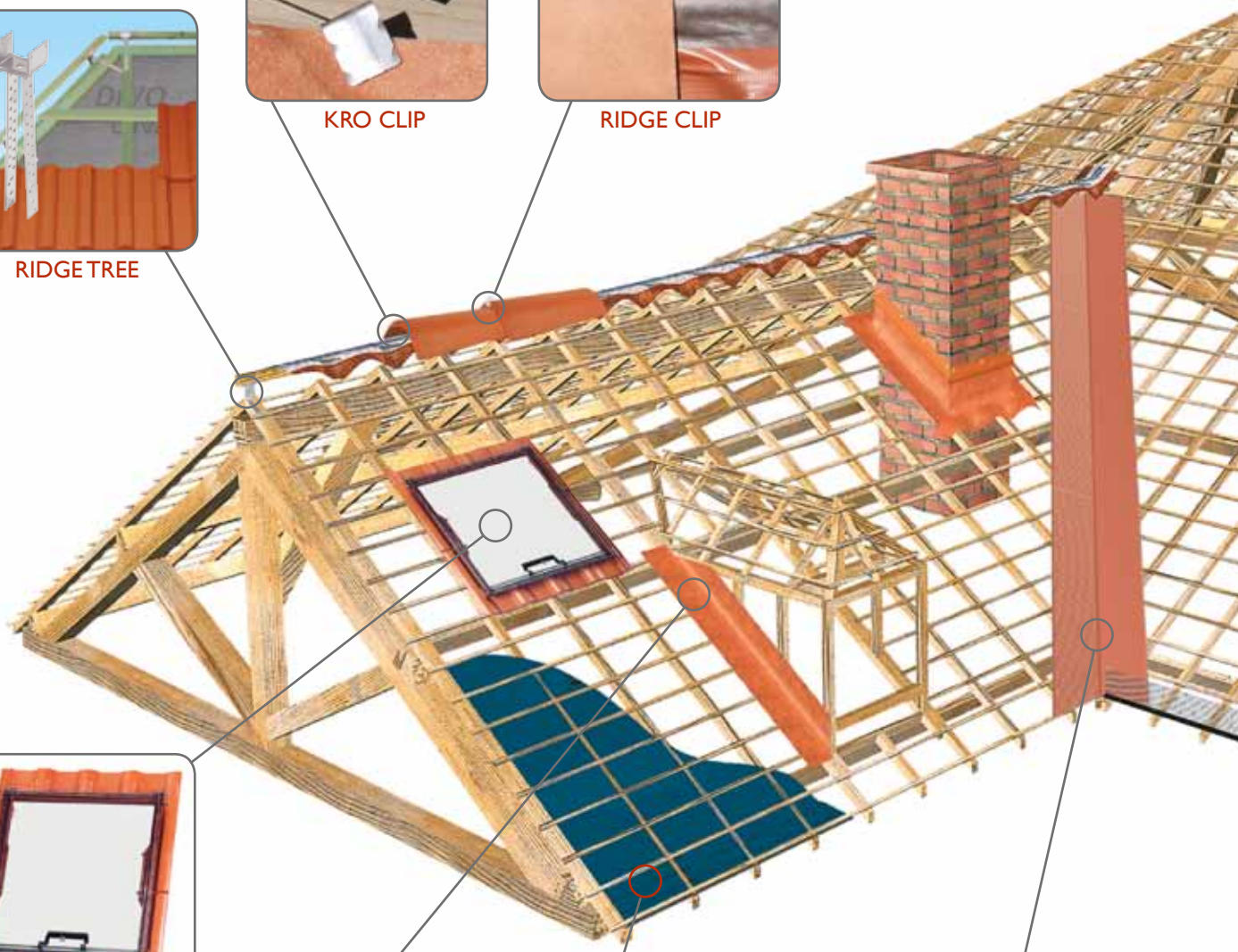
Coverland

OUR WORLD OF ROOFIN

KRO CLIP

RIDGE CLIP

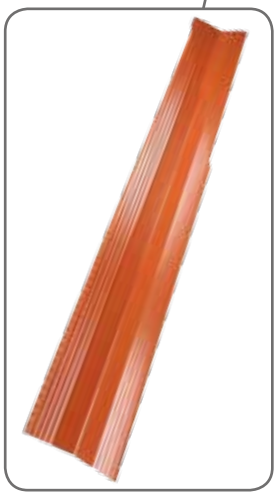
RIDGE TREE



BRAAS WINDOW

EASYFLASH

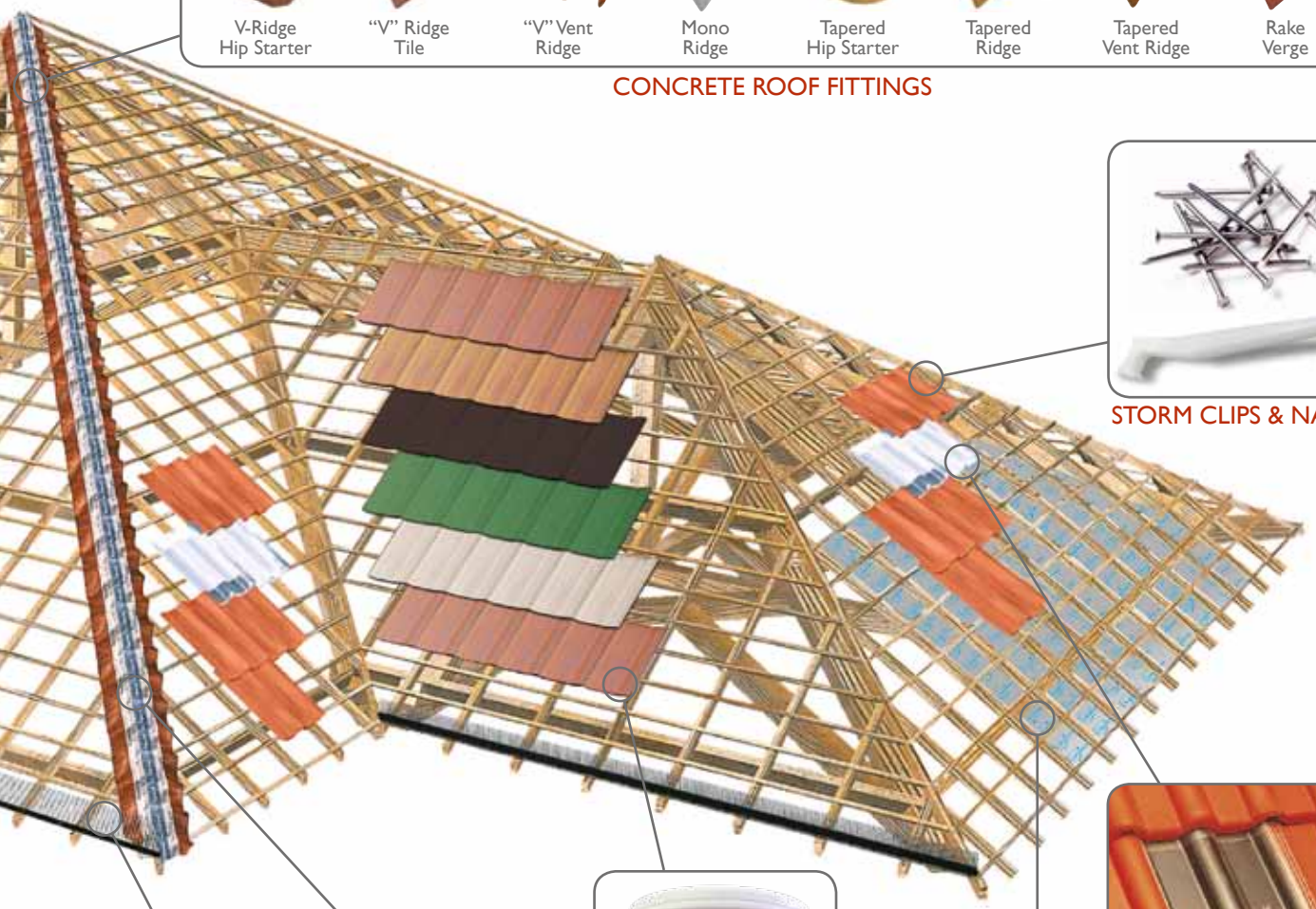
UNDERTILE MEMBRANE

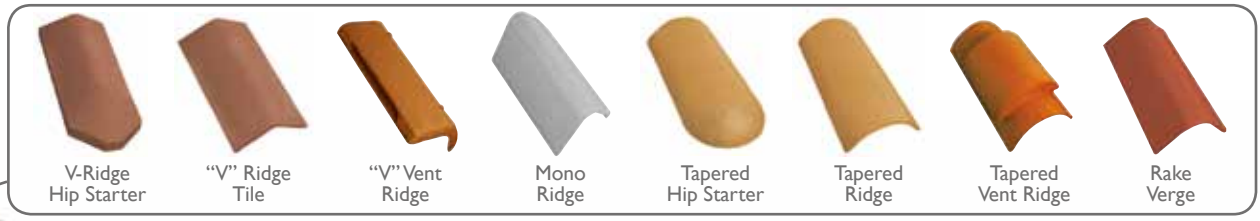


VALLEY

Coverland

G SYSTEM COMPONENTS





CONCRETE ROOF FITTINGS

STORM CLIPS & NAILS

CLEAR TILE

LUMINO TOUCH-UP PAINT

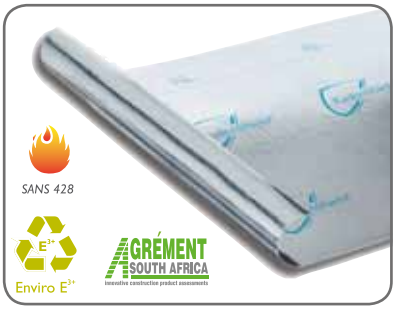
RadenShield™ CLIMAGAURD

DIY installation package now available for existing structures to retrofit your roof with radiant barrier

RADENSHIELD™ CLIMAGUARD

EAVE FILLER/COMB

COMPACTRIDGE



RADENSHIELD

Coverland

ROOFING COMPONENTS

RADENSHIELD

The proven solution that keeps your home cool in summer and warm in winter. Available in both single and double sided aluminium.

RADENSHIELD™ is also available as RADENSHIELD™ ClimaGuard which is a DIY installation package so that you can retrofit your roof with the radient barrier.

Features and Benefits

- Unique bonding process prevents delamination and tearing
- Effective reflection of radiant heat (97%)
- Easy installation
- Save 30% on electricity
- Decreases air conditioning usage by 40%
- Up to 10°C cooler

Technical Data

- Material: Non woven single or double sided aluminium as well as industrial
- Weight: 126 gsm + 6kg (single sided)
  172 gsm + 8kg (double sided)
- Width: 1.5 m
- Length: 30 m
- Coverage: 40,5 m

ClimaGuard

- Width: 750 mm
- Length: 20 m
- Coverage: 15 m²

UNDERTILE MEMBRANE

Reduction of wind upliftment. Packaging for 3-ply (also available in 2-ply).

Features and Benefits

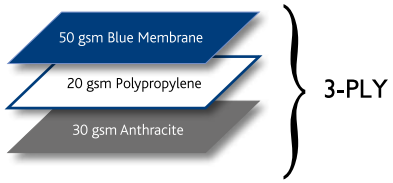
- Higher heat resistance
- Superior wind uplift strength
- Barrier against dust invasion and water ingression
- High tensile resistance and nail tear strength
- Cost effective
- Vapour impermeable

Storage and handling

- MONIER Roofing Undertile Membrane is supplied in rolls bearing the product name. Each secured by plastic wrapping.
- All rolls should be securely stacked on their end, on site, on a level surface, preferably under cover, and must not be allowed to rest against sharp projections.
- Rolls stacked in the open must be protected from accidental damage, and unwrapped material must not be left exposed to UV light for a prolonged period.
- Reasonable precautions must be taken in handling the rolls to prevent damage, such as tears or perforations, occurring before and during installation and prior to the application of the roof covering.

Technical Data

- Material: Available in 2 or 3 layer laminate of 50 grams blue, 20 grams Polypropylene, 30 grams Anthracite



- Thickness: 400 microns
- Length: 30 m
- Width: 1.5 m
- Weight: Average mass (grams/m²) minimum
- Coverage: 40,5 m with a overlap of 150 mm
- Packaging size: Per roll – 1.5 m wide by 30 m long
- Average nail tear strength: 80 Newtons
- Tensile strength: 200 Newtons

COMPACTRIDGE

The only ventilating ridge system that prevents leaks and is maintenance-free.

Features and Benefits

- The most storm-proof solution on the South African market
- Prevents mould by allowing ventilation (mould affects your health and the health of your roof)
- Compared over 1- 3 years, CompactRidge has a material and labour cost-saving of 28% to 133% compared to traditional mortar products
- No cracking or leaking normally attributed to mortar applications
- Maintenance-free
- Time saving: installed in one third of the time compared to traditional methods

Technical Data

- Material: Aluminium, polyisobutylen and fleece
- Ventilation cross-section: 170 cm2/m
- Packaging units: 10m rolls

ROOFING COMPONENTS

EASYFLASH

The only maintenance-free abutement solution that seals for 15 years in any weather condition.

EasyFlash has a 100% Butyl self adhesive backing with a highly stretched crepped aluminium surface and is used for sealing junctions between walls and roof tiles. This innovative super adhesion is due to its special high performing CH bond butyl glue and is engineered in Germany. and is of superior quality.

EasyFlash can be used for wall connections, dormers and chimney abutments. The crepped metallic surface has a similar lifetime as lead and zinc, but with improved shape-ability (stretchability of approx. 60%). The product is self-adhesive and can be applied to dry, dust-free surfaces and can be installed swiftly and effortlessly due to the ability of the material to stretch and fit several types of structures.

Features and Benefits

- Effectively used to seal junctions between walls and roof tiles
- Due to its special high performing CH bond butyl glues, EasyFlash is super sticky
- Seals for 15 years in any weather condition
- UV resistant
- Maintenance-free
- Time saving: installed in one third of the time compared to traditional methods
- Cost-saving: Compared over 15 years, EasyFlash costs one third less than traditional methods over its lifespan

Technical Data

- Material: Aluminium composite with butyl self-adhesive
- Length: 5 meter rolls
- Width: 250 mm

Enviro E^{3+}

RIDGE TREE

Ridge and hip fixing device which allows an optimal alignment of the ridge and hip battens.

Feature

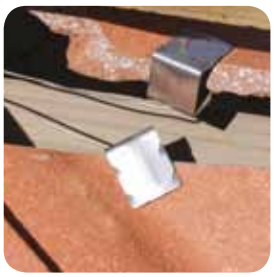
- Applicable for all battens and no need for removing the last batten.

Technical Data

- Material: Corrosion-resistant steel wire and wood
- Requirements: 1 piece per rafter at the ridge and every 60cm one piece

KRO CLIPS

Fixes cut tiles of 8 - 16 mm thickness both at valley and hip securely.



Feature

- Easy installation only with a hammer

Technical Data

- Material: Corrosion-resistant stainless spring steel

Coverland

ROOFING COMPONENTS

RIDGE CLIP

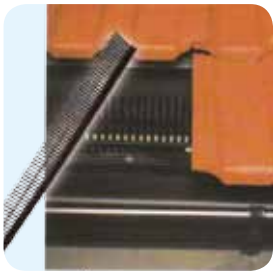
For the fixing of ridge and hip tiles.

Feature
- Clips leave space for changing the overlap of the ridge tiles by 1 cm (2 cm) thus allowing adjustment to the length of ridge or hip.

Technical Data
- Material: Stove-enamelled aluminium

EAVES FILLER

Prevents the access of birds and mice, and facilitates airflow for the Dry Ridge System.



Features and Benefits
- Highly flexible to adjust to any tile profile
- Durable
- Simple and rapid installation

Technical Data
- Material: Polyethylene
- Ventilation cross-section: max. 300 cm^2/m
- Length: 300 mm

CLEAR TILE

The Clear Tile has been designed as a cost-effective means of illuminating rooms and is easy to install. It is a profile that has been constructed out of extremely durable, highly transparent polycarbonate acrylic. The Clear Tile has the same dimensions as those of the standard profiles and is available in the Coverland profiles - Cupola, Double Roman and Taunus.

This product has been 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.

Enviro E^{3+}

Features and Benefits
- Simple to install, (takes the place of the existing concrete roof tile).
- Each tile is fitted with a securing device for proper installation
- Allows light to enter the roof space illuminating room surroundings, including garages, attics, atriums.
- Produced to withstand the harshest elements (wind tunnel tested - Germany).
- Highly UV resistant and aesthetically distinctive. (UV simulation tested - Germany).

Technical Data
- Material: Transparent Polycarbonate – extremely durable

Installation
- The Clear tile is easy to install as it simply takes the place of the existing concrete roof tile.
- Each tile is fitted with a securing device for proper installation

VALLEYS

These pre-cut, pre-shaped solution for valleys are of a high quality, and are highly durable, they are quick and easy to install as no preparation of the valley is required.

Features and Benefits
- No under-construction required
- Little installation time and durable
- No fixing clips required
- Low price
- High performance

Technical Data
- Material: Aluminium base metal sheet valley Hot dip galvanised steel (PUR coating Ragal 320 GD + Z 275 *Pural*)
- Size: 2100 mm x 460 mm
- Colours: Brown, Black, Terracotta

ROOFING COMPONENTS

WINDOWS

Coverland windows are watertight and allow natural light into living areas, passages, attics and store rooms. They are suitable on all pitched roofs for all conventional roof tile profiles up to 65 degrees. They also allow an easy exit to the roof as well as allowing good ventilation.

Enviro E3+

Features and Benefits

- Water-tight under driving rain and sound retardant
- Hail, snow and superior constant load bearing capacity
- High impact-resistant polycarbonate with wind-load testing C4 / B4
- The opening direction can be easily changed in one of three directions
- Two different ventilation positions adapt to the requirements of an individual ventilation
- Additional stability because of the aluminium step border and reinforced frame
- Pleated apron with crepped aluminium support can easily be moulded/stretched to all surfaces
- Built in surround guttering and sealing foam ensure water-tightness
- Easy to install - lighter than metal skylights
- DIY installation possible due to design, weight and easy fit to replace 4 x tiles
- Modern design and material

Technical Data

- Dimensions: 761 x 704mm
  (replaces 4 concrete tiles)
  476 x 520mm (visible light)
- Frame: Special hardened PVC (ultraviolet treated)
- Dome: Polycarbonate (will not fade / discolour)
- Apron: Crepped aluminium support & butyl
- Colours: Black

Installation

- The weight and design of the windows make DIY installation easy

STORMCLIPS, NAILS, SCREWS AND OXIDES

Range of fastening storm clips to match concrete tile profiles, including a universal storm clip. Galvanised ep clout nails are smooth and serrated nails 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.

Features and Benefits

- No under-construction required
- Little installation time and durable
- No fixing clips required
- Low price
- High performance

Technical Data

- Galvanised EP clout nails: 25, 32, 40, 50, 63, 75, 82, 90, 100 mm
- Aluminium nail: 40, 50, 63 mm
- Oxides: pigments to match tile colours

ROOFING MATERIALS

RAFTERS/TRUSSES

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

MONIER ROOFING UNDERTILE MEMBRANE

MONIER Roofing undertile membrane Agrément approved certificate 2004/304.

BATTENS

To comply with SANS 653 Softwood battens and brandering.

BATTEN NAILS

Non-corrodible nails 3,35mm Ø - long enough to penetrate the rafter to a depth of 55mm.

TILES

To comply with SANS 542 for concrete roof tiles.

FITTINGS

To suit design criteria.

TILE NAILS

Non-corrodible clout nails, as supplied by MONIER Roofing - long enough to penetrate the batten to 2/3 of its depth.

TILE CLIPS

Non-corrodible "Storm clip".

FLASHINGS

Non-corrodible flashing materials should be used. To avoid the possibility of electrolytic corrosion, always ensure that flashings, which come into contact with one another, are compatible.

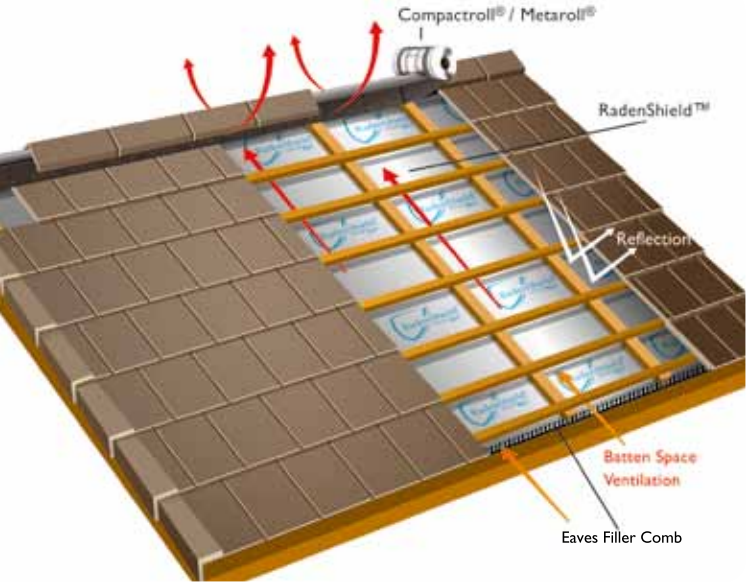
GENERAL

Roofing components such as roof windows, clear tiles, coverfill and pigments, are also supplied by MONIER Roofing.

AGRÉMENT SOUTH AFRICA
innovative construction product assessments

Coverland

COOL ROOF SYSTEM



Heat transmission can occur through three processes, namely radiation, conduction and convection. Radiation, which accounts for the lion's share of heat transmitted within a home, causes discomfort within our sanctuaries.

RADENSHIELD is an integral part of the COOL ROOF system, as it is imbued with high reflectivity and low emissivity values which provide the perfect recipe to combat radiant heat. Due to high product performance and strength, RADENSHIELD is also used as an underlay. Its qualities prevent tearing during installation and ensure optimum and long-term product effectiveness. New products available in the DIY Product Package, RADENSHIELD™ ClimaGuard.

Benefits

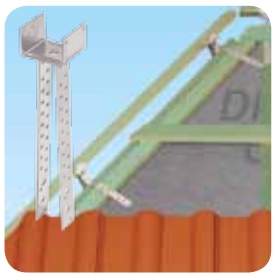
- Effective reflection of radiant heat (97%)
- Easy installation
- Save 30% on electricity
- Decreases air conditioning usage by 40%
- Up to 10°C cooler
- Unique bonding process prevents delamination and tearing

Enviro E³⁺

THE COMPLETE COOL ROOF SYSTEM CONSISTS OF THE FOLLOWING:

COMPACTRIDGE

The Compactroll is a new and universal solution for dry ridges. It ventilates the ridge and is placed on the aligned ridge and hip battens. It is 100% mortar-free and is equipped with a water-tight high-tech UV resistant fleece.

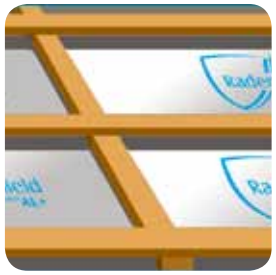


RIDGE TREE

The Ridge Tree, which is a ridge and hip fixing device, allows for optimal alignment of the ridge and hip battens in the dry ridge system.

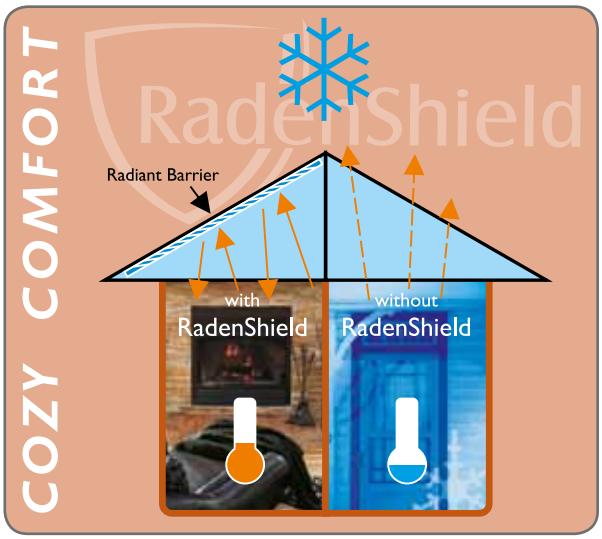
EAVES FILLER COMB

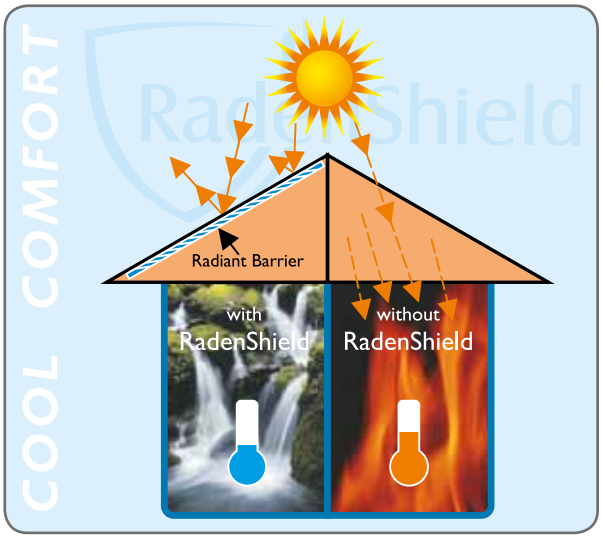
One of the key components for ventilation. The MONIER Eaves Filler Comb promotes natural ventilation flow while keeping birds out of your roof.



COUNTER BATTEN

Creates a natural ventilation and stream to carry away hot air trapped between the roof tiles and the Radenshield.





Coverland

DRY RIDGE SYSTEM

The dry-ridge system allows for air circulation from the eaves of the roof, to the ridge. It offers ventilation and protection against the elements (rain, dust, wind etc.) and allows for expansion and contraction of the ridge.

Benefits

- Ensures no cracking or leaking normally attributed to mortar applications
- No maintenance
- The most stormproof solution on the South African market
- Good ventilation preventing mould from forming which is a benefit to your health and the health of your roof
- Installed in one third of the time compared to traditional methods
- Material and labour cost-saving: Compared over 3 years, up to 133% more cost-effective than traditional mortar products

Enviro E3+

The requirements for secure adhesion are:

- A clean, dust free, dry surface within area of the adhesive edge
- Press the adhesive edge firmly and carefully
- At the beginning of a new roll overlap the product for at least 5 cm

KRO CLIPS

Fixes cut tiles of 8 - 16mm thickness both at valleys and hips securely.

Feature
Easy installation only with a hammer

Material
Corrosion-resistant stainless spring steel

RIDGE TREE

Ridge and hip fixing device which allows an optimal alignment of the ridge and hip battens.

Feature
Applicable for all battens and no need for removing the last batten

Material
Corrosion-resistant steel wire and wood

Requirements:
1 piece per rafter at the ridge and every 60cm one piece

COMPACTRIDGE

Material
Aluminium, polyisobutylen and fleece

Ventilation cross-section
170 cm2/m

Packaging units
10m rolls

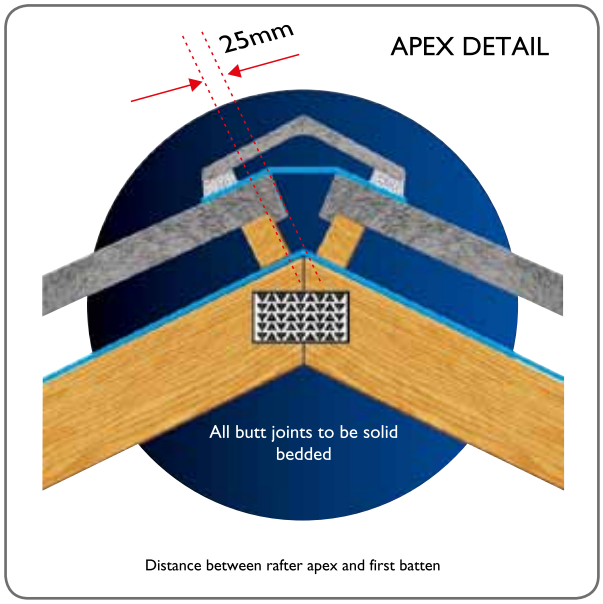
RIDGE CLIP

Material
Stove-enamelled aluminium

Coverland

TECHNICAL GUIDELINES

FIXING THE UNDERTILE MEMBRANE AND BATTENS



The undertile membrane 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.)

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 UNDERTILE MEMBRANE

If the roof has valleys, start by fixing a strip of undertile membrane 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 undertile membrane on the edges with clout nails.

EAVES UNDERTILE MEMBRANE

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 undertile membrane does not form any troughs where water may be trapped. To achieve this the undertile membrane 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 undertile membrane.

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.

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 UNDERTILE MEMBRANE AND BATTENING

Proceed with fixing undertile membrane 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.

VALLEYS

At valleys, the horizontal strips of underlay shall overlap undertile membrane 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 undertile membrane. Horizontal battens are now mitred and secured to the valley counter battens.

HIPS

At hips, the undertile membrane 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 undertile membrane 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 undertile membrane. Horizontal battens are now mitred and secured to the hip battens.

WINDLOADINGS AND UNDERTILE MEMBRANES

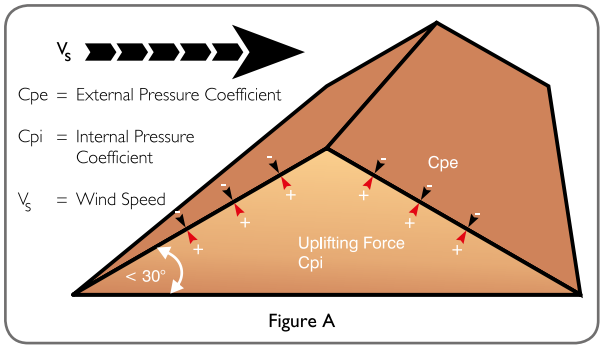


Figure A

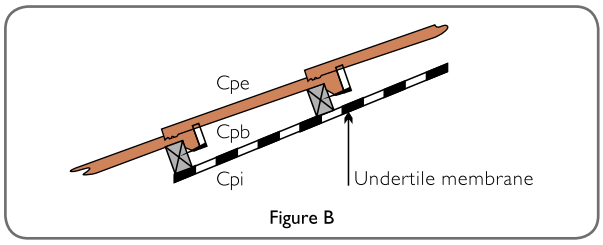


Figure B

Figure A: 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

Figure B: 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 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.

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 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. 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.

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 before tiling commences.

GENERAL

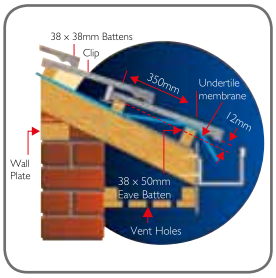
Before tiling work commences, fascia boards, beam filing, valley flashings, plastering and painting work, should be completed to avoid unnecessary traffic on the roof.

Steps for working out batten centres

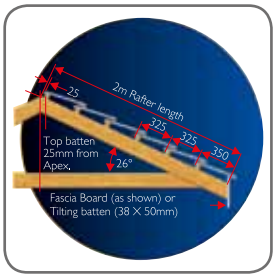
When tiling a roof it is important to position the battens equidistantly from each other to prevent uneven courses. MONIER Roofing has produced a simple formula using the tables provided to assist you in this task. Follow these four easy steps to locate the batten centres of rafters ranging from 1 metre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

The four steps to 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



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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.

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 MONIER Roofing outlet for expert advice when considering a re-roofing job.

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

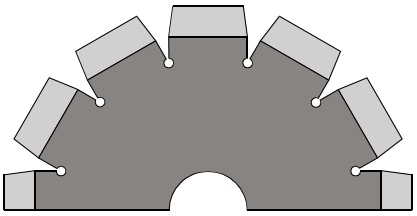
Rafter Length	Courses on Roof	Batten Centres	Rafter Length	Courses on Roof	Batten Centres	Rafter Length	Courses on Roof	Batten Centres	Rafter Length	Courses on Roof	Batten Centres	Rafter Length	Courses on Roof	Batten Centres
1.000	4	0.250	2.700	9	0.300	4.400	14	0.314	6.100	20	0.305	7.800	25	0.312
1.050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

INSPECTING THE ROOF STRUCTURE

Roof slope 26 degrees and above ±75mm tile overlap minimum batten gauge 345mm

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

CUTTING AND DRILLING OF TILES



For cutting and drilling, control measures are required.
Wet cutting or dust extraction should be applied.

Ear protection

Eye protection

Respiratory protection – dusk mask type P3/FFP3

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.

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TILING

Ascertain the mechanical fixing requirements as per the laying and fixing specifications (as supplied by your nearest MONIER Roofing branch). Roofs to be tiled in accordance with SANS 062.

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.

MECHANICAL FIXING

Should be in accordance with the laying and fixing specifications.
Where clips are used, they should be fixed to the battens. The clips should be at the tail of each tile - as close to the batten as the head of the tile beneath it permits.

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.

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.

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. Alternatively, wet cutting of tiles is recommended to contain the release of dust (see index).

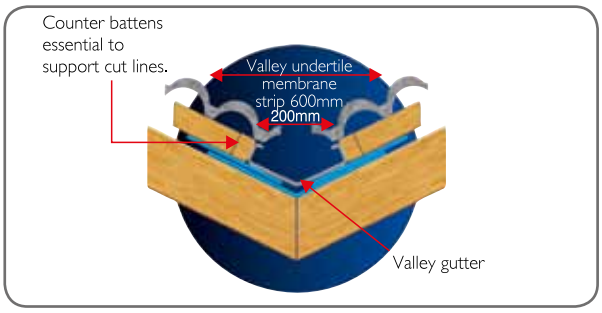
HIPS

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.

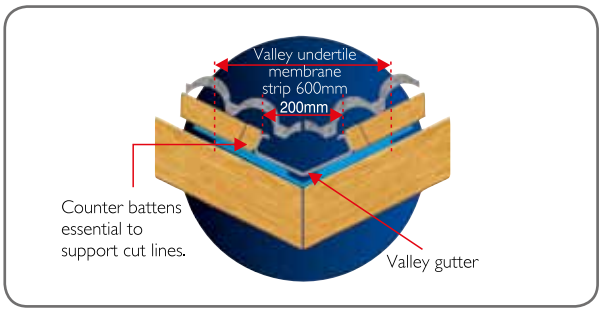
OPEN VALLEY

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.



CLOSED VALLEY

Proceed as indicated above, 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.

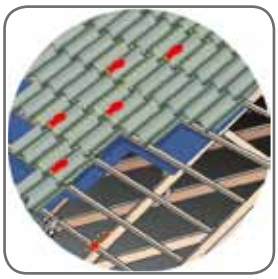


Useful tips

1. 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.

2. 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.

3. 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.



GENERAL SUPPORT INFORMATION

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.

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 lime deposit on the surface can also fluctuate considerably. Efflorescence is a natural phenomenon and a temporary condition only.

NOTE:
MONIER recommends the Lumino tile range selection to prevent efflorescence.

MORTAR BEDDING

BEDDING OF HIPS

(As per bedding of ridges in 10 easy steps)
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 MONO RIDGES

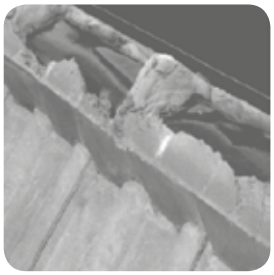
The same recommendations for ridges, in 10 easy steps, apply (see pages 33-35).

BEDDING OF TAPERED RIDGE

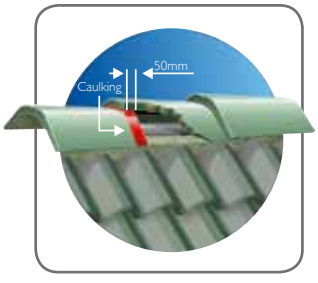
The same recommendations, as for ridges, apply with the exception that the overlapping joints are caulked and not solidly bedded.

DRY RIDGE SYSTEM

Where possible, a dry ridge system is preferable to bedded ridges. On pitches of 40° and above, the 90° Barge tile is recommended for use as a ridge and hip tile.



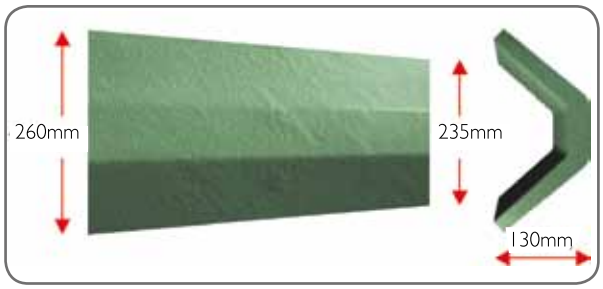
Bedding for butt joint



Caulking of tapered ridge

Coverland

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. Mortar bedding is only used at the ridge joint and the tiles at this junction should be mitred on site for correct location and finish.

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

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.

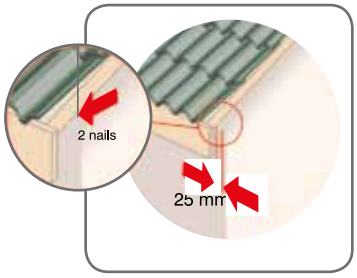
COMPATIBLE WITH ALL COVERLAND PROFILES
The Rake Verge system is compatible with all Coverland profiles. Together, they provide a uniform, attractive overall finish to any pitched roof.

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

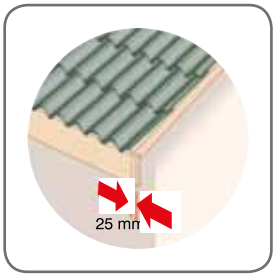
AESTHETICALLY PLEASING
The Rake Verge system provides a beautiful finish to any pitched roof.

Technical data
Tapered fitting
- Mass of ±5,4kg per unit
- Length 420mm
- Linear coverage = ±320mm per unit dependent on batten gauge
- Profiled Tiles: 38 x 38mm Tiling batten = 38 x 50mm Verge counter batten
- Flat Tiles: 38 x 38mm Tiling batten = 38 x 76mm Verge counter batten
- Variable overlap

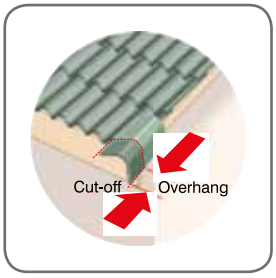
INSTALLATION PROCEDURE



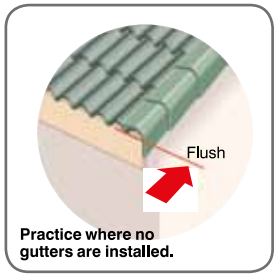
STEP 1
In order to obtain a straight line along the eave, the first rake verge tile needs a dummy spacing. This is obtained by driving two nails, one underneath the other, into the end batten as close to the edge as possible so that they protrude ±25mm. Where fascia boards are used, cut fascia to allow ±25mm protrusion beyond the batten to support the first rake verge.



STEP 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.

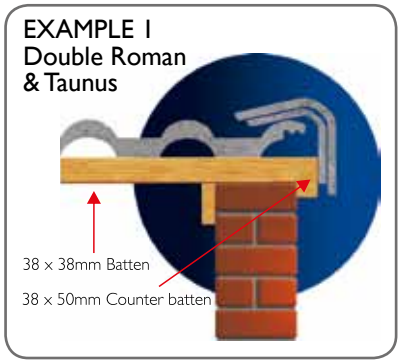


STEP 3
Now continue along the verge by placing each rake verge butting up against each course of tiles and overlapping each preceding verge tile until you reach the ridge line. Do the adjacent verge, finishing at the ridge.

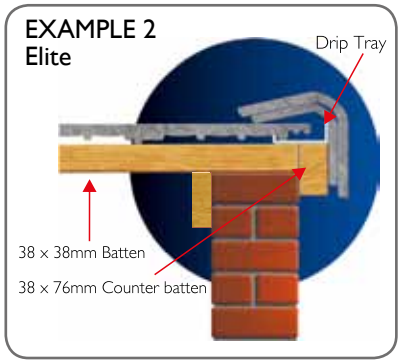


STEP 4
At the apex of the roof the rake verges are mitred to form a neat junction with the ridge line. Both the top rakes are bedded in mortar as in the ridge line.

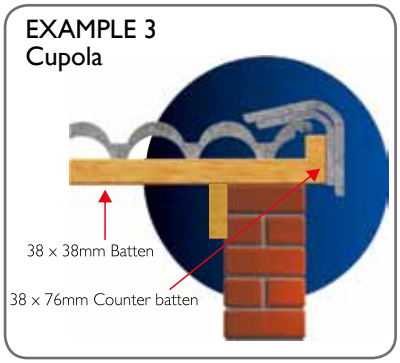
Note: Flat tiles require additional weather proofing. Consult your local branch for information and for other specialist products.



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



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.



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.

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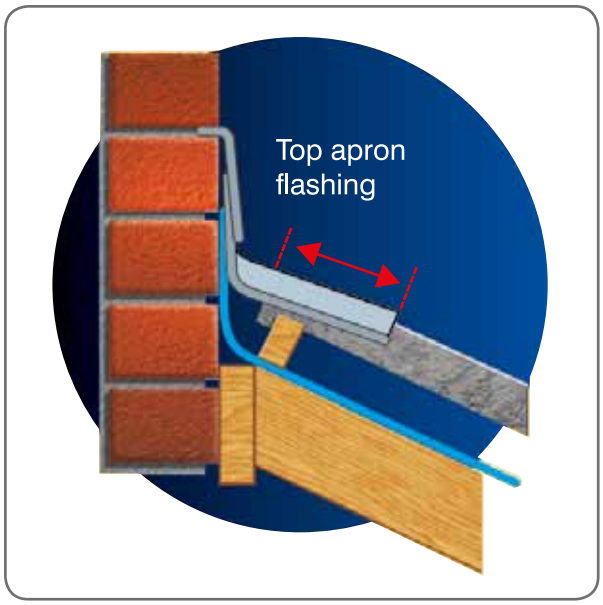
ABUTMENTS



EASYFLASH AT A 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.

EASYFLASH AT A 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.

EASYFLASH AT A 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.)

For further information on the installation of EasyFlash, kindly request our comprehensive EasyFlash brochure.

GUTTER METHOD

CONCEALED SIDE GUTTER

A pre-formed 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.

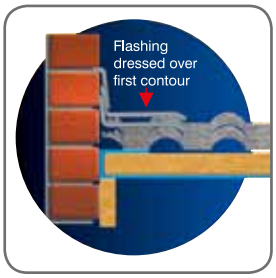
The whole gutter should be pitched at a slightly lower angle to lead onto the head of the tiles below, and a trough should not be allowed to form at the bottom of the gutter where the debris and water will dam up.

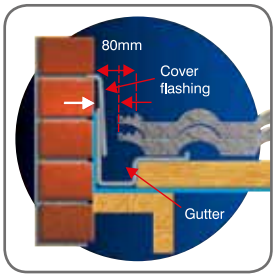
Care should also be taken to form the bottom lip of the gutter in such a way that the rain will not overflow into the roof. At this particular point the front flashing should be carried up under the side gutter and adjacent tile as far as necessary to ensure a waterproof junction. Where this type of 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.

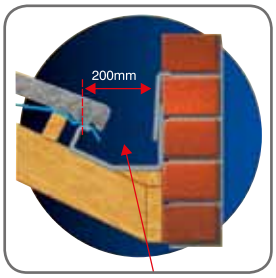
BACK GUTTER

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.







Gutter size to be in proportion with water flow

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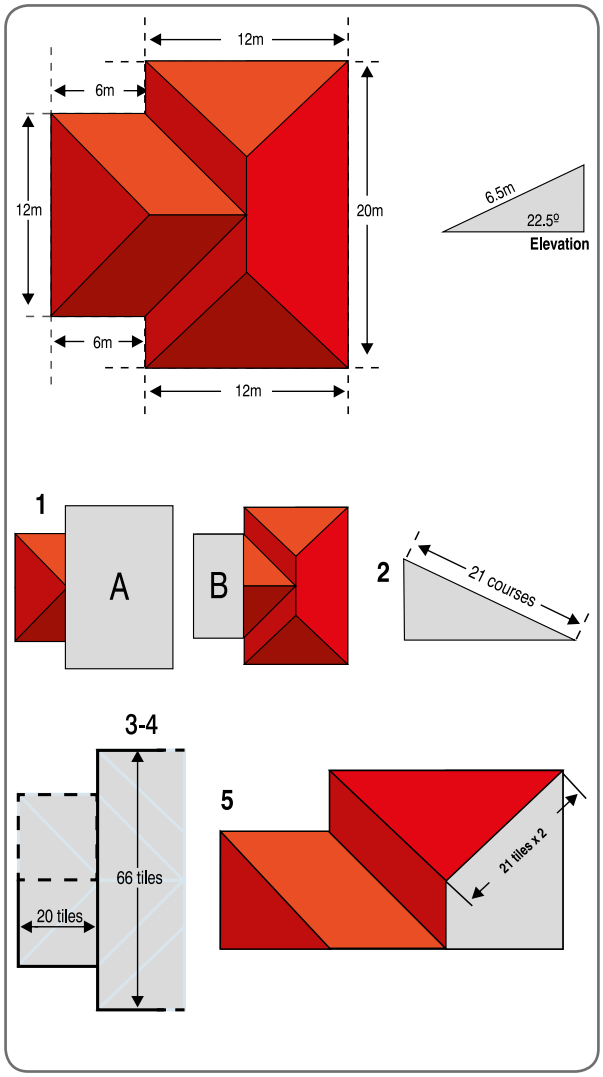
ROOF TILE ESTIMATING



Specification

Coverland Taunus tiles at 22,5° roof pitch.

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

We recommend method a) as follows:

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

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

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.

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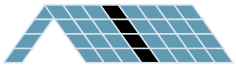
ESTIMATING TABLES

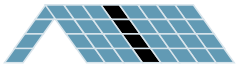
Table 1

Number of tiles per rafter length



At m	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
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
5,800	18	17
5,900	19	17

Number of tiles per rafter length



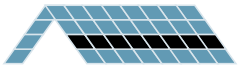
At m	320 mm batten centres	345 mm batten centres
6,000	19	18
6,100	19	18
6,200	20	18
6,300	20	19
6,400	20	19
6,500	21	19
6,600	21	19
6,700	21	20
6,800	22	20
6,900	22	20
7,000	22	21
7,100	22	21
7,200	23	21
7,300	23	21
7,400	23	22
7,500	24	22
7,600	24	22
7,700	24	23
7,800	25	23
7,900	25	23
8,000	25	23

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.

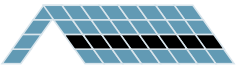
Table 1

Number of tiles per eaves length



At 300 mm m	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
12,330	41
12,630	42
12,930	43
13,230	44
13,530	45
13,830	46

Number of tiles per eaves length



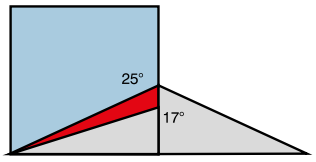
At 300 mm m	linear cover
14,130	47
14,430	48
14,730	49
15,030	50
15,330	51
15,630	52
15,930	53
16,230	54
16,530	55
16,830	56
17,130	57
17,430	58
17,730	59
18,030	60
18,330	61
18,630	62
18,930	63
19,230	64
19,530	65
19,830	66
20,130	67
20,430	68
20,730	69
21,030	70
21,330	71
21,630	72
21,930	73
22,230	74
22,530	75

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.

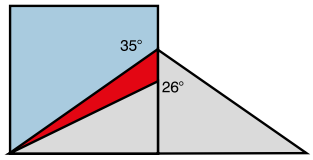
All figures are nett. Wastage must be added.

Coverland

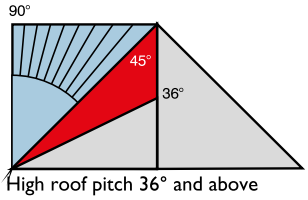
LAYING AND FIXING SPECIFICATIONS



Low roof pitch 17° to 25°



Normal roof pitch 26° to 35°



High roof pitch 36° and above

MECHANICAL FIXING

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 2.8 mm gauge serrated shank type.

Recommended laying and fixing specifications for Coverland concrete roof tiles.

The following laying and fixing specifications for Coverland concrete roof tiles have been established in accordance with SANS 062/1956 (Code of Practice for fixing concrete roof tiles), SANS 0160/1980 (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), MONIER Roofing technology data, and extensive experience gained by MONIER Roofing.

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.

DEFINITIONS

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

LAYING SPECIFICATIONS

HEADLAPS

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 "stormclips" should always be used where specified. Ensure correct stormclip is used for specific profiles.

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 MONIER Roofing for advice in these circumstances.

LAYING AND FIXING SPECIFICATIONS

CATEGORY A - UNEXPOSED AREAS
All inland regions other than certain specified areas.

CATEGORY B - SEMI-EXPOSED AREAS
Coastal regions and certain inland areas.
Generally the area within 30km from the coastline, the top of the escarpment or the watershed of the first mountain inland. Whilst cognizance should be taken of local practices, the application of good roofing practice should not be compromised for expediency.

CATEGORY C - EXPOSED AREAS
Critical coastal areas, and certain inland areas.

The classification of exposure categories assumes the use of a suitable underlay, properly fixed over the total area of the roof including the gable end and eave overhangs.

When possible, local knowledge and local wind speed data should be used in the assessment of the exposure category. (Refer to SANS 0160/1980 for Regional Basic Design Wind Speed determination.)

FIXING GUIDE

CATEGORY A - UNEXPOSED AREAS
All inland regions other than certain specified areas.

Mechanically fix two courses of tiles at the eaves, ridge and verges for the full overhang, whichever is greater. Cut tiles at hips, valleys and abutments to be secured with kro clips or coverfill.
It is recommended that closed soffits be fitted on all verge and eave overhangs.

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

CATEGORY B - SEMI-EXPOSED AREAS
Coastal regions and certain inland areas.

Mechanically fix a band of tiles (x) equal to a fifth of the number of courses on the rafter lengths at the eaves and ridges, and also at chimneys and abutments.
Mechanically fix a band of tiles equal to (x) along (y), as calculated above, at each verge (or the full overhang, whichever is the greater.)
Tiles at hips, valleys and abutments to be secured with kro clips to every third tile on the roof.
Closed soffits must be fitted to all verge and eave overhangs.

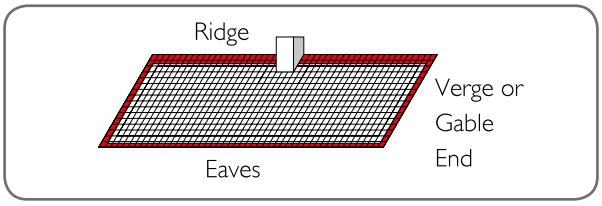
Roof pitches
17° to < 26° - undertile membrane mandatory
26° to < 45° - undertile membrane recommended (mandatory at the coast)
45° to vertical - undertile membrane mandatory, each tile to be nailed and clipped

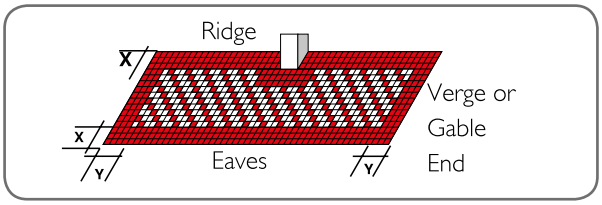
CATEGORY C - EXPOSED AREAS
Critical coastal areas and certain inland areas.

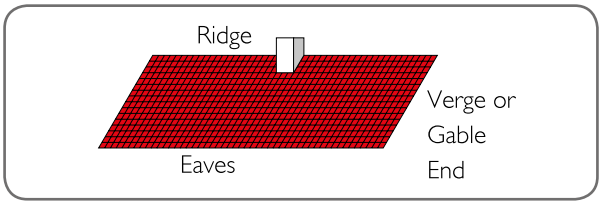
Roof pitches
17° to < 26° - undertile membrane mandatory, each tile to be clipped
26° to < 45° - undertile membrane mandatory, each tile to be nailed or clipped
45° to vertical - undertile membrane mandatory, each tile to be nailed and clipped
Closed soffits to be fitted at all verge and eave overhangs.

The exposure category of the required roof may be assessed using the flowwing table:

Height to Ridge not exeeding M	Regional Basic Design Wind Speed ms^{-1}				Exposure Category
5	41	to	40 49 50	and below inclusive and above	A B C
10	44	to	43 49 50	and below inclusive and above	A B C
15	43	to	42 47 48	and below inclusive and above	A B C



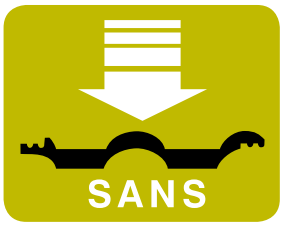




Coverland

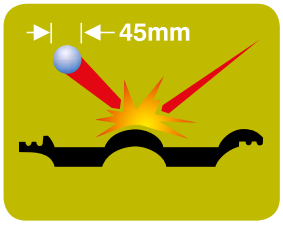
PHYSICAL AND CHEMICAL PROPERTIES

Coverland concrete roof tiles are produced by a high pressure extrusion and compression process which imparts the following properties to the product:



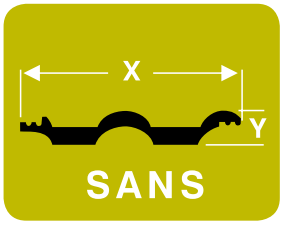
Strength

STRENGTH
Coverland concrete roof tiles comply with the strength requirements of SANS 542/1990.



Impact Strength

IMPACT STRENGTH
Coverland concrete roof tiles can withstand the impact of a 45mm hailstone.



Dimensional Tolerance

DIMENSIONAL TOLERANCES
Coverland concrete roof tiles comply with the dimensional tolerances of SANS 542/1990.


Water Impermeability

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 – they retard heat penetration in summer and retain the 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

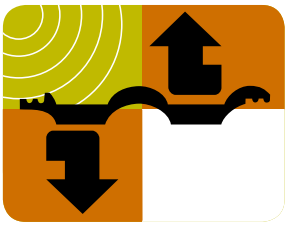
FROST
Coverland concrete roof tiles are unaffected by frost.

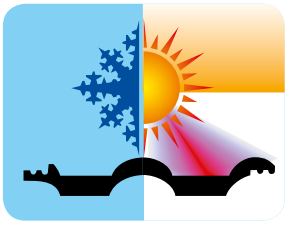
ULTRAVIOLET RADIATION
Coverland concrete roof tiles are unaffected by intense ultraviolet radiation.

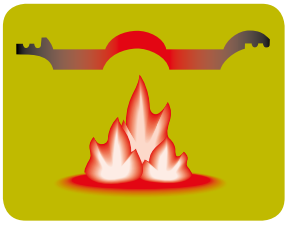
FIRE RESISTANT
Coverland concrete roof tiles are non-combustible when tested to BS 476 Part 4:1984. Classified SAA when tested in accordance with BS 476 Part 3 1975 with respect to fire penetration and spread of flame.

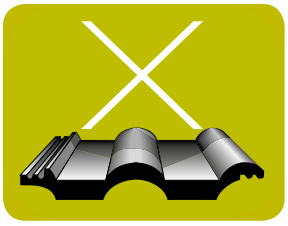
DURABILITY
Coverland concrete roof tiles will provide a weatherfast roof for many years when laid according to the MONIER Roofing and SANS Tiling Standards.

MAINTENANCE
Coverland concrete roof tiles are maintenance-free.


Insulation


Thermal Properties


Fire Resistant


Maintenance

HAILSTONES

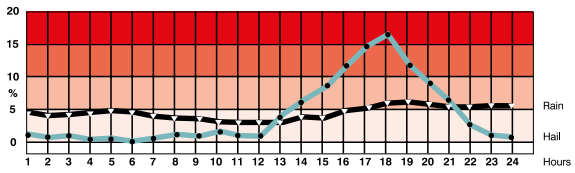


Figure A
Daily variation of frequency of hail and rain over a period of 20 years

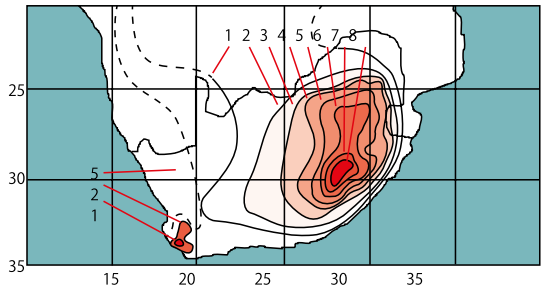
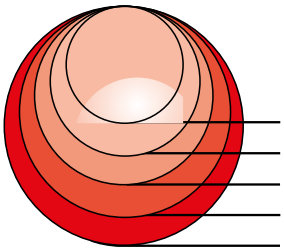


Figure B Hail frequency
Average number of days per annum with hail



	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

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.

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 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.

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.

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.

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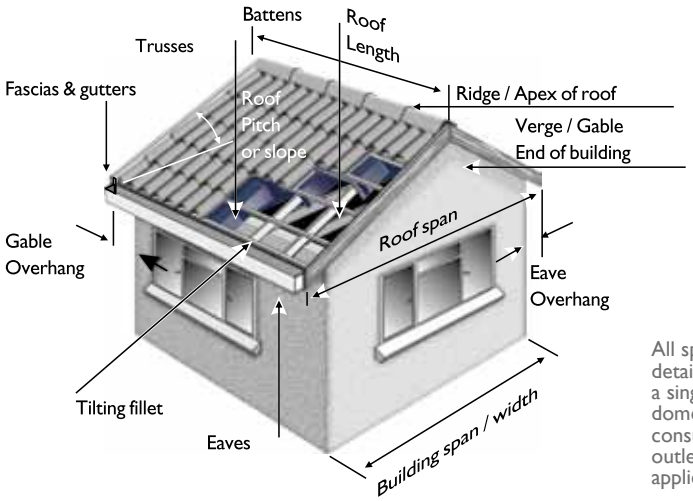
10 EASY STEPS TO TILING A ROOF

1. TOOLS REQUIRED

- Saw
- Chalkline
- Tape measure
- Pointing trowel
- Hammer
- Brush
- Nail bag

ROOF TERMINOLOGY

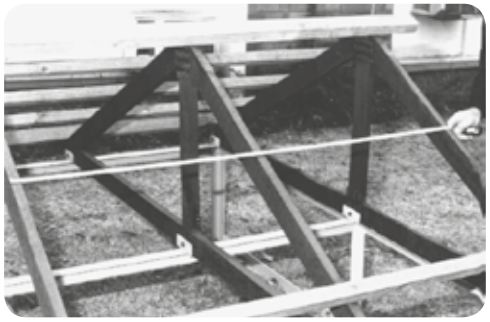


All specifications detailed are for a single storey domestic building – consult your nearest outlet for other applications.

2. TRUSS CENTRES

Maximum 760mm 38mm x 38mm Batten.
Maximum 900mm 38mm x 50mm Batten on edge.
Elite tile 950mm 38mm x 50mm Batten on edge.
Always consult your timber merchant for truss design and timber sizes.

1) Truss centres must be equal and correct distances apart.
2) Apex - Truss heights must be level!

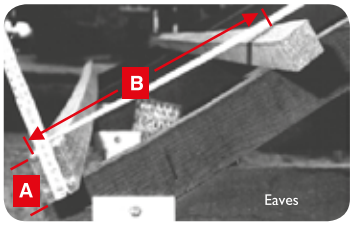


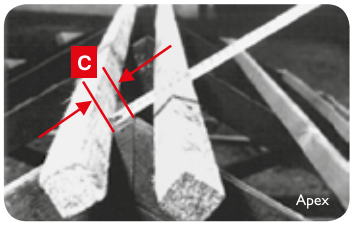
3. ROOF UNDERTILE MEMBRANE

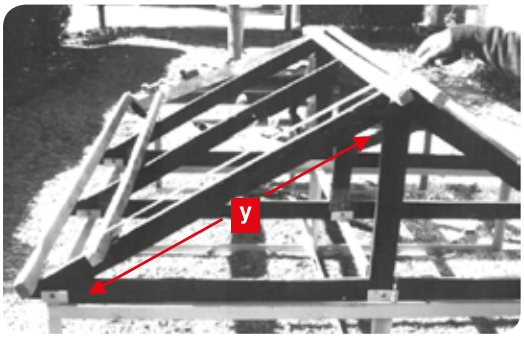
a. Coastal areas - mandatory at all pitches.
b. Other areas - 17° - 25° - mandatory
26° - 45° - optional (recommended).
c. Lay undertile membrane on top of trusses & under battens.
d. Elite profile - undertile membrane mandatory at all pitches.

4. EAVES APEX

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







5. BATTEN CENTRES

Roof Pitches
17° - 25° 320mm maximum
26° - 45° 345mm maximum
Centres should never be below 300mm.

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

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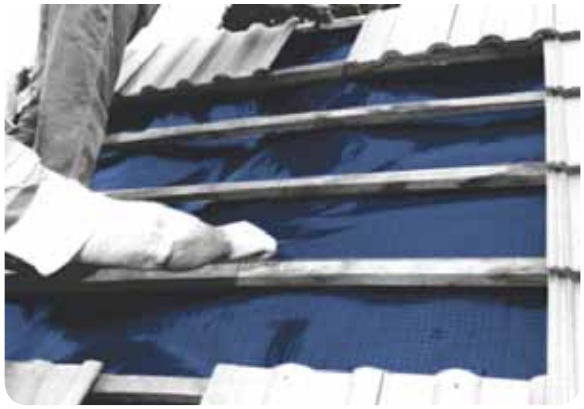
10 EASY STEPS TO TILING A ROOF

6. MARKING YOUR ROOF OUT

a. Always mark your roof out.
b. Gable overhang not to exceed more than one tile.
c. Lay a course out at the eaves, shuffle this to get desired overhang (each tile has 1.5mm shuffle).
d. Ensure tiles are seated properly, corner break can occur if this is not done.
e. Run one row of tiles up right hand gable, keeping square to bottom row.
f. 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.
g. Mark outside edge of underlock of every fourth tile and shoot chalkline to corresponding tiles top and bottom.

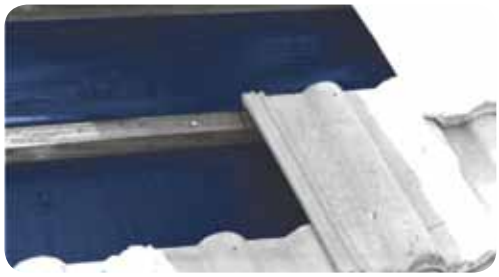


7. LOADING OF ROOF

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.

8. LAYING OF TILES

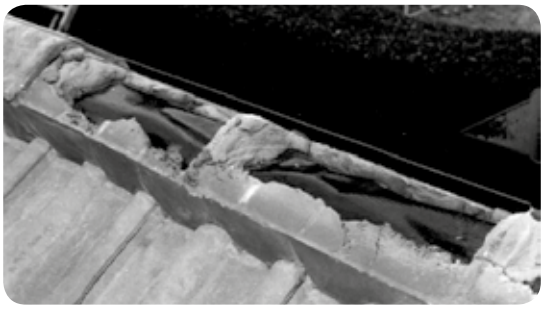
a. Proceed to lay tiles from right to left keeping to chalk lines, lay three rows at a time.
b. When walking on tiles always step on the bottom middle of the tile.



NOTE:
MONIER recommends the Dry Ridge System for the laying of ridges.

10. BEDDING OF RIDGES

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

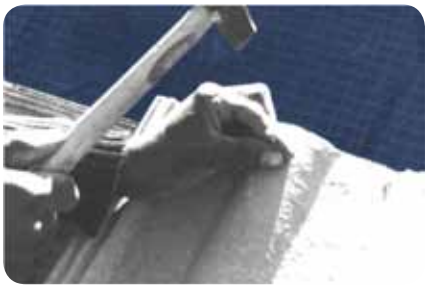


9. FIXING EXPOSED AREAS OF TILES

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

a. Coastal regions - all tiles to be mechanically fixed. Eaves to be closed.
b. 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.
c. Always ensure at least one row in from exposed areas is nailed/clipped.

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



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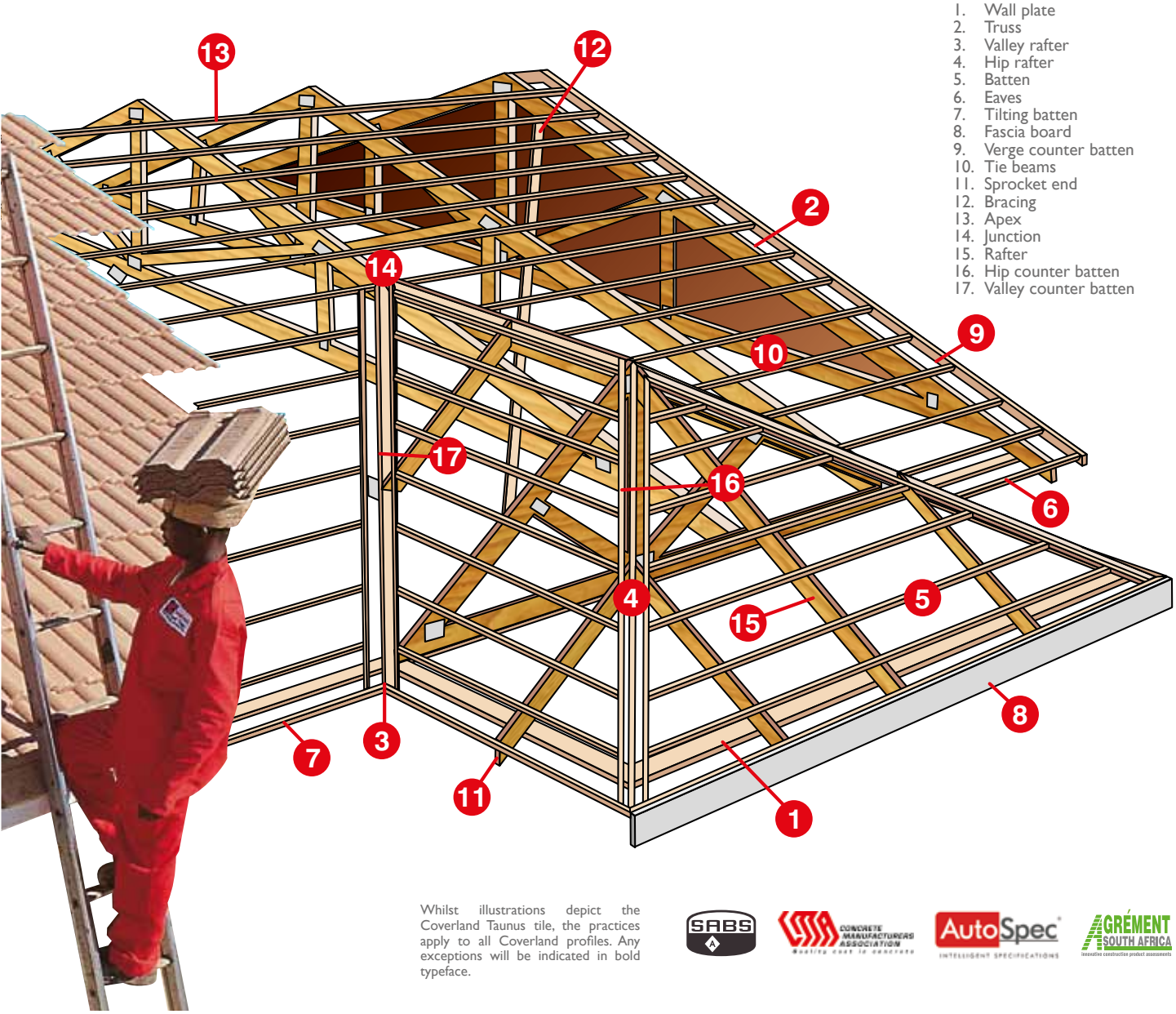
ROOF STRUCTURE TERMINOLOGY



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 Taunus tile, the practices apply to all Coverland profiles. Any exceptions will be indicated in bold typeface.

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. Alternatively, wet cutting of tiles is recommended to contain the release of dust (see p72).

NOTICE:

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

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