SVK

Experts in fibre cement

TECHNICAL DATA

Ardonit - Cromleigh

Ireland

VERSION 2025.02.01

CONTENTS

This technical information is meant to inform you about the SVK slates and how to apply them.

Information about the bearing construction, fixing materials and other products / accessories is only informative and not binding. Always ask information from the manufacturer or the supplier of these products and follow their advice.

SVK slates must be applied in compliance with the national and/or local building regulations and guidelines. If these do not correspond with the SVK-guidelines, SVK must be contacted before construction starts.

Our product guarantee is only valid if construction is carried out conform our most recent technical data, which can be acquired by simple demand. You can also find them on our website www.svk.be.

PRODUCTION

SVK slates are manufactured from a homogeneous mixture of Portland cement, organic process and reinforcement fibres, additives and water. This mixture is deposited in thin layers on a forming roll in a circular sieve machine (Hatschek) under constant pressure until the desired sheet thickness is achieved.

Slates are double pressed and harden for a minimum of 4 weeks under normal atmospheric conditions.

TECHNICAL CHARACTERISTICS

PHYSICAL CHARACTERISTICS

EN 492	Density (oven dry)	≥ 1.700 kg/m³
	Bending moment	
	h ≤ 350 mm	30 Nm/m
	350 < h ≤ 450 mm	40 Nm/m
	450 < h ≤ 600 mm	45 Nm/m
	Water impermeability	No water drops
	Elasticity modulus (wet)	ca. 16.000 N/mm²
	Thermal linear expansion coefficient α	7,5 x 10-6 m/mK
EN ISO 16474-2 EN ISO 2409	Water uptake (coated slates)	< 4% (weight)
	Coefficient of heat conductivity λ	0,72 W/mK
	Paint adhesion	Class 0
	Colour fastness	Conform

DURABILITY

EN 492	Wet-dry cycles	L ≥ 0,75
	Warm water	L ≥ 0,75
	Frost-thaw cycles	L ≥ 0,75
	Warm-rain cycles	OK

WEIGHT

Weight (at moisture content: 12%)	8 kg/m²

REACTION TO FIRE

Class	A2-s1, d0	EN 13501-1

DIMENSIONS AND TOLERANCES

	Dimensions	Tolerances
Length	200 – 600 mm	± 3 mm
Width	200 – 600 mm	± 3 mm
Thickness	4 mm	- 0,4 mm / + 1,0 mm
Squareness	≤ 2 mm	

FINISHING

COATED SLATES

The natural colour of the slates is grey. The front and the sides of the slates are finished with a multi-layer acrylic, water-based coating, highly counteracting the growth of moss. To prevent moss growth, special moss inhibiting constituents are added to the coating. The underside of the slates is treated with an acrylic coating and a colourless water-repellent layer. This finishing offers optimal protection under all weather conditions.

The slates are identifiable by a printed code on their backside.

PRODUCT RANGE

Slate ranges:

- Ardonit: a smooth surface with square edges, available in premium black.
- Ardonit Plus: a smooth surface with square edges, available in blue-black.
- Cromleigh: available in three finishes:
  textured surface with square edges (Cromleigh Rustic)
  textured surface with dressed edges (Cromleigh Textured)
  smooth surface with dressed edges (Cromleigh Smooth).

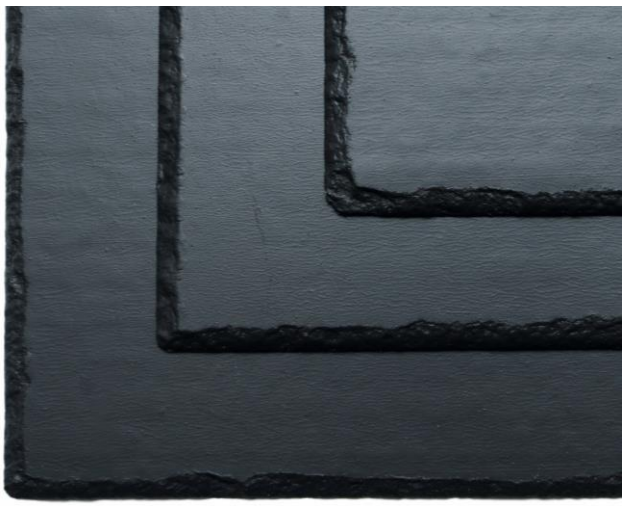
All are available in the colour blue-black. Rustic and Textured slates also in Welsh blue.

SVK reserves the right to delete or add colours without prior notice. Color deviations are measured according to CieLab. The permitted deviations are: ΔE* ± 1.00.

ONLY PLACE SLATES WITH THE SAME PRODUCTION DATE ON THE SAME ROOF OR FACADE SURFACE. IT IS NOT RECOMMENDED TO PLACE SLATES WITH DIFFERENT PRODUCTION DATES ON THE SAME ROOF OR FACADE SURFACE.

SLATES WITH A SMOOTH SURFACE

Edges: square



Edges: dressed

	ARDONIT		ARDONIT PLUS		CROMLEIGH SMOOTH	
Dimensions (cm)	**60/30**	**60/60**	**60/60**	**60/60**	**60/30**	**60/60**
Production dimensions (mm)	600x300	600x600	600x300	600x600	595x295	595x595
Weight (kg)	1,53	3,06	1,53	3,06	1,48	2,95
Edges	square	square	square	square	dressed	dressed
Holes	3		3		3	

SLATES WITH A STRUCTURED SURFACE

Edges: square

Edges: dressed

	CROMLEIGH RUSTIC		CROMLEIGH TEXURED	
Dimensions (cm)	**60/30**	**60/60**	**60/30**	**60/60**
Production dimensions (mm)	600x300	600x600	595x295	595x595
Weight (kg)	1,53	3,06	1,48	2,95
Edges	Square	Square	Dressed	Dressed
Holes	3		3	

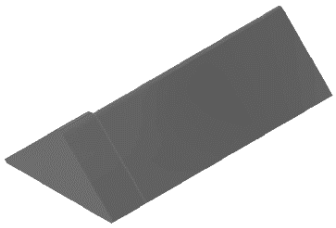
PLAIN ANGLE

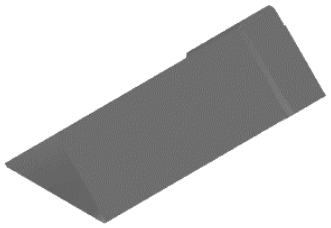
RIDGE

START + STOP

END

VERGE SLATE





WARRANTY

SVK warrants its slates and accessories in fibre cement insofar as the storage, treatment, construction and maintenance of the SVK slates and accessories take place in accordance with the rules and the guidelines of our most recent applicable technical specifications, all of which under normal atmospheric conditions and conditions of use.

The warranty conditions which must be met for the warranty to be fully applicable, are mentioned in the warranty statement. This statement is available on request.

QUALITY

CE

The Declaration of Performance (DOP) under European Regulation No. 305/2011 (CPR) can be found via www.svk.be

The CE marking guarantees compliance with the product characteristics covered by the harmonised European standard, EN 492.

TRANSPORT AND STORAGE

Slates and accessories should be transported, unloaded and handled with care to avoid damage, soiling or breakage.

The slates are bundled in small packs and delivered on pallets, wrapped in shrink foil. This wrapping only prevents the slates from sliding during transport, it does not offer adequate protection against weather circumstances. **Covered transport is therefore obligatory**.

Store the slates on a dry, firm and level surface, in a covered and thoroughly ventilated area safe from all traffic, in warehouse as well as on the building site.

Maximum stack height for storage is 4 pallets.

In case there is no possibility to store the slates in a covered area on site, the shrink foil must be removed or partially opened and the pallets must be covered at all times by a watertight but vapour permeable tarpaulin. Condensation and rainwater ingress between stacked slates must absolutely be prevented, to avoid efflorescence.

In case of storage for a prolonged period we strongly advise to partially open the shrink film, even in case of storage under cover, to prevent condensation under the foil, and thus efflorescence.

Remainders of a pallet of slates, that will not be used shortly, are stocked as described above, either vertically on two battens or horizontally on a level and perfectly dry surface.

When transporting and manipulating building materials, the legislation concerning lifting and hoisting must be always respected.

Underlays, battens and counter-battens, accessories and all other materials needed for the roofing work must be stored in accordance with the ICP regulations and the product storage prescriptions.

Avoid staining and wear gloves when handling the slates. Avoid stains of glue, silicone, polyurethane foam, adhesive tape, render as these can leave irremovable stains.

CUTTING AND DRILLING

When cutting slates, measures to reduce the effect of dust should be taken in accordance with the relevant HSE Guidance notes. After cutting or drilling, avoid dust sediment on the slate surface. In case there is dust on the slates, it should be removed immediately by means of a soft, dry and pure micro-fibre cloth or a soft brush, before the slates are processed any further, exposed to rain or restacked. Cement dust that is left on the slates surface causes unwanted visual effects on the slates after their exposition to weather circumstances.

CUTTING

SVK slates can be cut in different ways:

- Score the face of the slate with a scribing tool and snap over a straight edge.
- Cut with a slate guillotine. Place the slate face side up because the guillotine produces a chamfered cut edge.
- Use a hand slate cutter.
- It is not recommended to use angle grinders, because of their high dust production levels.
- To cut large quantities of slates, use a bench saw with diamond dusted blade and provide dust extraction.

Remove cutting dust immediately from the slates

DRILLING

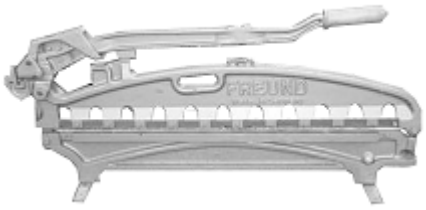
On delivery, SVK slates have standard holes for fixing.

To drill additional holes, up to maximum ten slates can be stacked and holes be drilled with a 4.5 mm sharpened steel drill bit, suitable for fibre-cement. The holes must be maximum 20 mm from the sides of the slates.

It is also possible to punch additional holes. Remove drilling dust immediately from the slates.

GUILLOTINE SCISSOR

For cutting and perforating many slates, e.g. foot slates, sloping slates for mitred hips or ridge, …



SLATE SCISSOR

For cutting and perforating slates (best solution for one-off installation). Also used for cutting out corners.

SLATE HAMMER

Hammer with four functions:

- a knife to cut the slate
- a point to punch holes
- the head to hammer
- a roofing anvil

ROOFING ANVIL

Used together with a hammer. The anvil has a sloping side, the curved point is placed in the rafter.

SLATE RIPPER

Steel tool with curved handle and flat part containing hook-shaped teeth, for removing nails during repairs and as a guide when (re)placing slates.

MAINTENANCE

Just like any other roofing material, slates are subject to pollution and ageing. In time dust and atmospheric pollution sedimentation appear on the roofing. Moss is also hard to prevent and it does not depend on the type of roofing; moss can attach itself to any kind of material.

To ensure the appearance, the life span and watertightness of the roof, the standards and prescriptions recommend regular maintenance.

- Removing moss, vegetation and all kinds of waste that could hinder the proper functioning of the roof covering.
- Maintenance of the rainwater drains
- Checking the fastenings, mainly at the eaves
- Replacing and replacing missing, broken or displaced elements
- Filling the damaged grooves at the level of the lead flashings and waterproofing the parts of the construction that are not protected by a rainwater seal.

This can be done by a firm specialised in cleaning roofs. If you want to do it yourself, there are chemical products on the market to clean the roof surface.

POLLUTION

MOSS FORMATION

Even though there is a moss-inhibiting component in the coating of the slates, external factors play a large part in the roof becoming green or not. It actually aren't the slates that become green, it's the dust and the dirt on the slates that is an excellent soil for moss and algae.

The intensity of the moss development is highly dependable on:

- Roof orientation: mosses mainly develop on the parts of the roof that are exposed to little or no sunshine, such as the roof surfaces facing north or those that are permanently lying in the shadow.
- Ventilation between underlay and slates: proper ventilation ensures that the roof covering remains damp less long. Mosses and algae develop on the sand and dust particles that attach themselves easiest to a wet surface. A good ventilation between the underlay and the slates contributes significantly to the roof surface drying up more quickly and consequently slows down moss development.
- The presence of trees and plants in the immediate environment: the presence of trees and plants in the vicinity naturally has a negative effect.
- Acid rain: forms an acid environment on the roof in which moss and algae thrive.

THE SLATES BECOMING GREEN HAS NO INFLUENCE ON THE QUALITY OF THE SLATES.

ATTACK

To prevent damage to zinc profiles, it is advisable to choose the correct type of zinc and carefully follow the zinc manufacturer's instructions. Avoid any direct or indirect (run-off water) contact with fresh concrete, lime, bitumen, mortar and all building materials that may contain substances harmful to zinc. Manually cut slates may contain unhydrated cement. White efflorescence that results from this is a purely aesthetic damage.

CLEANING

MECHANICAL

Moss is removed by brushing the roof with a hard, but not a metal, bristle. Be sure not to scratch the surface of the materials as dust particles adhere themselves quicker on a rough surface, which aids moss development.

Finally, the roof surface is thoroughly rinsed. Be sure to prevent dust and moss from ending up in the rainwater drainage system.

A second possibility is the cleaning of the roof with a high-pressure cleaner. These works are preferably carried out by a specialised firm because of the risks it holds.

CHEMICAL

When the roof is fully dried out, a good moss detergent is applied that penetrates the material sufficiently to destroy all moss and algae buds. Products that might affect the slates, their coating or the metal parts used for roofing (nails, disc rivets, hooks, gutters, etc.) are not to be used.

Depending on the product used it may be necessary to, after sufficient absorption of the product, remove the remaining pieces of moss from the roof by bristling or rinsing. Detach the drains to prevent these moss remains and the applied product from entering the water drainage system.

SAFETY

The safety aspect during roofing and maintenance work was not addressed in these technical data. For this we refer to the nationally applicable safety regulations. To lay a roof is a hazardous activity and statutory legislation applies to all types of roofing work. Particular attention is drawn to the “Code of Practice for safety in Roofwork”, issued by the Health and Safety Authority, and all other legislation setting out the duties of owners, employers and employees in relation to the construction and maintenance of buildings.

UNDER NO CIRCUMSTANCE IS IT ALLOWED TO WALK DIRECTLY ON THE SLATES. WHERE ACCESS IS REQUIRED. LADDERS OR CRAWL BOARDS SHOULD BE USED.

SCOPE

Ardonit, Ardonit Plus and Cromleigh slates are used for roofing and cladding, all conservations must be applied in accordance with the technical date and the national standards and regulations. The guarantees and warranties given with SVK Slates are conditional upon adherence to the instructions given in the fixing manual.

These regulations apply up to a building height of 15 m. If used for higher buildings, an engineering office must be contacted. The following points should also be considered during the design:

RAIN AND SNOW RESISTANCE

Ireland has a climate with a high risk of significant wind driven rain. The elevation is generally less than 150m above sea level in the country's central plain, whereas the main mountains have peaks above 600m.

SVK slates are one of the most watertight roof coverings available and offer a full protection from water ingress under normal conditions. In unfavourable weather conditions however, water penetration through the slates is sometimes unavoidable.

It is essential to avoid/minimise the risk of water ingress by careful design, detailing and workmanship, attuned to the local exposure conditions.

The Irish Building Regulations require that the roof of a building should be designed and constructed in a way that prevents any moisture infiltration to the fabric or the inside of the building. Any water ingress through the slates, in prolonged periods of wind-driven rain or other exceptional weather circumstances, must be evacuated from the building by a high-quality underlay.

It is important that the exposure to local wind-driven rain of the site of construction is assessed.

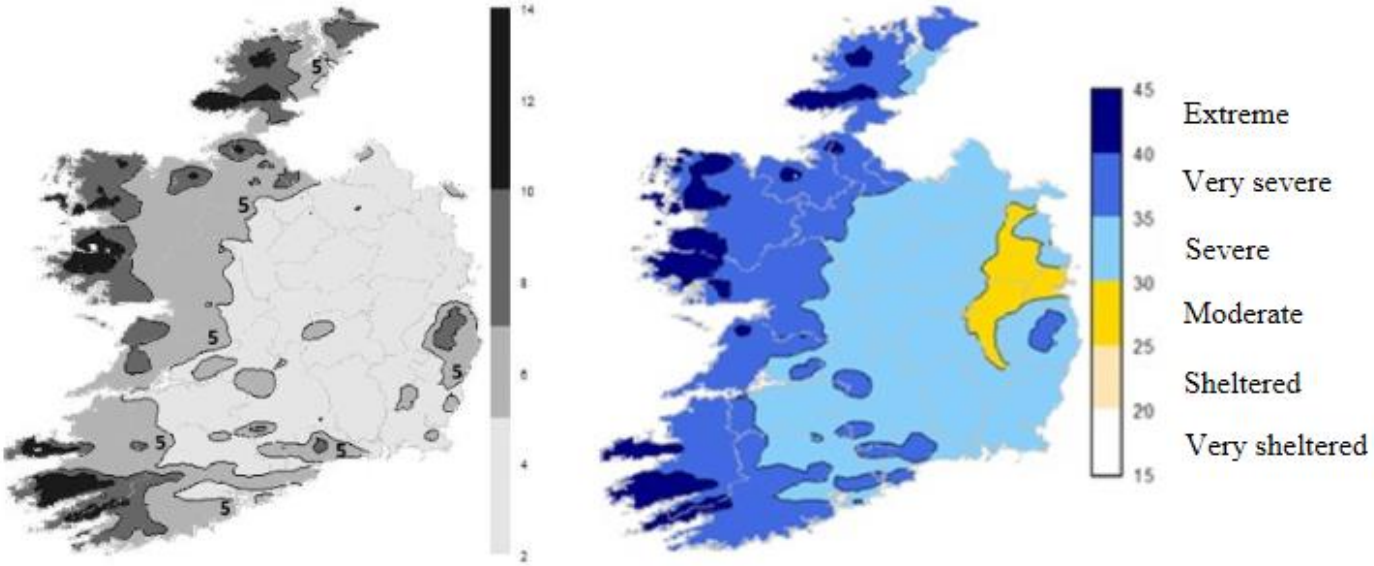


Figure A1: The driving rain index calculated using the older Walsh (2010) methodology on the left and the map spell index (m_s) based on I.S. EN ISO 15927-3:2009 on the right for the Republic of Ireland. Both maps are based on meteorological observations for the period 1991 – 2020.

The figure shows a map of the Republic Ireland divided into two zones based on exposure to local wind driven rain and wind. The two zones are moderate and severe. This map may be used when designing buildings up to 12 m ridge height above adjoining ground level.

MODERATE EXPOSURE

Moderate exposure to wind-driven rain applies in areas where the driving rain index is less than 5 m²/sec/year and wind speeds of less than 26 m/s. In areas of moderate exposure, buildings standing above their surroundings and buildings of any height on hill slopes or hilltops, should be regarded as having a severe exposure.

SEVERE EXPOSURE

Severe exposure to wind driven rain always applies in areas where the driving rain index is 5 m²/sec/year or more and wind speeds greater than 26 m/s.

Roofing products, fittings and accessories, when laid and fixed on a roof, perform in different ways to resist snow and rainwater penetration. The mechanisms of rainwater ingress with roofing products are varied and include: capillary attraction, rainwater creep, driving rain, deluge rain and flooding, raindrop bounce and negative pressure rain suction, etc.

At present, Ireland does not have an agreed standard performance test, or rain or snow resistance test methods to assess the pitch and lap performance of pitched roofing products. Therefore the guidance given for rain resistance is in the form of prescriptive recommendations, which are based on experience SVK has gained from over 100 years supplying roofing products (over 80 years in Ireland).

WATER TIGHTNESS - PRINCIPLES

THE MOST IMPORTANT FACTORS ARE:
CAPILLARITY
WEATHER CONDITIONS
LENGTH OF THE ROOF SLOPE (EAVE TO RIDGE)
ROOF SLOPE.

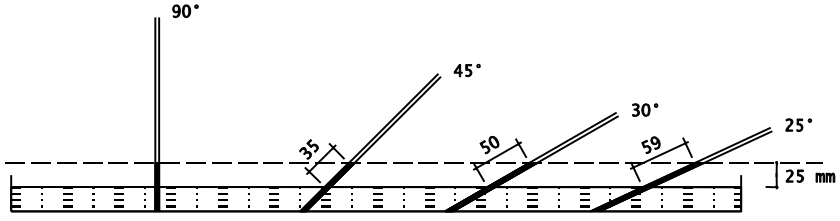
When a roof surface is strongly exposed to the predominant winds, the wind will try to hold up the water that flows down at the bottom edge of the slates and then propel it underneath. In dry weather dust is blown between the slates and in the joints. These factors influence the capillary process greatly.

The measure in which a roof is protected or exposed to heavy wind and rain can only be determined at the site, considering several factors:

- screening by surrounding buildings.
- hilly or plane landscape.
- sea or mountain region

CAPILLARITY

Capillarity is the phenomenon where when two plates are pressed firmly together, fluid will rise between them.



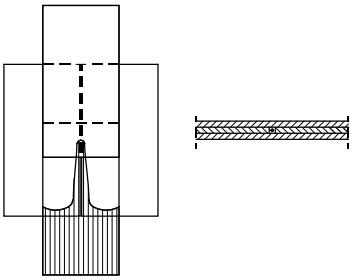
The harder the slates are pressed against each other, the higher the rain will rise between them. The maximum gauge difference between the slates is 25 mm, and this regardless of whether they are placed perpendicular or sloping. The actual rise between the slates varies depending on the inclination they are given. It rises if the roof pitch shrinks. Driving rain and dust building between the slates strengthen the capillary effect.

The drawing above shows that the smaller the inclination the bigger the head-lap needs to be.

To minimise the risk of water infiltration by capillary action, we advise to use hooks instead of nails for fixing slates, because with hook fixing the slates are less close-fitting.

The shape of the capillary action, when fastened with hooks with double coverage, is shown in the figure below.

The suction is strongly determined by the fact that the hook with the side of the slates forms fine channels that function as capillary tubes. This suction can be reduced by using hooks with a bump, which gives the channels a local widening that slows down the capillary action.



INSULATION, AIR- AND VAPOR TIGHTNESS

INSULATION

It is very common to insulate the roofspace. Insulation thicknesses keep increasing and, consequently, the temperature differences between the insulated and non-insulated areas of roof constructions are bigger. This has led to an increased risk of condensation in the cold roof spaces.

In Ireland, the space between insulation and underlay is often ventilated, whilst the space between underlay and slates is not.

Whether an airtight layer is sufficient or a vapour control layer must be placed depends on whether the construction is a cold roof (large, ventilated space between insulation and underlay) or a warm roof (limited space between insulation and underlay, often not adequately ventilated). It also depends on the moisture content of the air in the building. Each situation must be assessed individually.

To minimise the risk of condensation, an airtight layer or more often a vapour control layer on the warm side of the insulation is indispensable.

When installing the insulation material, special attention is paid to the **joints** and connections. These must be **contiguous and closed**, with no free spaces. Also considered that certain insulation materials shrink over time. Clear spaces can lead to rotational flows around and in the insulation, resulting in internal condensation.

VAPOR TIGHTNESS

THE VAPOR CONTROL LAYER NEEDS TO BE PERFECTLY PLACED. WITHOUT GAPS.

All air contains water vapour. The colder the air, the less water vapour it can contain. When the air is saturated, the vapour condenses. This can happen within a structure or system (interstitial condensation) but more often on the colder surfaces.

It is very important to prevent hot air – often containing a lot of moisture – from entering the roof area and passing through the insulation layer, by applying a perfectly airtight and often also water vapour tight barrier on the 'warm' side of the insulation.

If this barrier is not provided or badly placed, condensation within the roof space leads to a high moisture content of the insulation layer, or worse, to timber rot or damage to other materials.

In any case, when placing the airtight, respectively vapour control layer, special attention is needed at joints and edges, joints are to be sealed and all gaps or other apertures are to be avoided.

The underlay itself provides a second airtight (but water vapour permeable!) layer. See to it that the joints and apertures are sealed.

This way the risk of condensation is minimised.

AIR TIGHTNESS

THE ISOLATED ROOF SECTION MUST BE AIRTIGHT.

Airtightness refers to preventing air passage through the roof structure, from the inside to the outside or from the outside to the inside. Any inaccuracy can lead to condensation over time.

Airtightness can be achieved by installing an **airtight screen** on the inside of the roof. This can consist of, for example, a PE foil (airtight, also vapor-tight in the case of a perfectly tight design) or a plasterboard (airtight, in the case of well-finished installation).

VENTILATION

Ventilation makes the roof structure dry faster. If this is not provided, the slates and batten will remain wet longer. Dust adheres easily to a wet surface. This is an ideal growing soil for algae and mosses. In other words, ventilation indirectly counteracts the greening of slates.

Ventilation prevents the space behind the slates from being damp - therefore also better for the entire roof and facade structure. **Ventilation therefore extends the lifespan of the building envelope**.

UNDER NO CIRCUMSTANCES SHOULD VENTILATION BE PROVIDED BETWEEN THE ROOF AND THE INSULATION.

AIR CURRENTS CAUSE HEAT LOSSES AND CONDENSATION.

Vapor migrating from the inside through the roof must be able to be removed via ventilation. Even when there is a vapor barrier, ventilation must be provided: a vapor barrier is never 100% impenetrable. There are always vapor leaks at the connections to the walls, the connections between the strips, penetrations in the fastenings, cracks that have accidentally arisen during installation, etc. With a roof that is not airtight, the amount of condensation can amount to 120 g/day. This must be removed one way or another: through ventilation.

WHY IS IT BETTER TO VENTILATE ABOVE THE UNDERLAY

All air contains water vapour. The colder the air, the less water vapour it can contain. When the air is saturated, the vapour condenses. This can happen within a structure or system (interstitial condensation) but more often on the colder surfaces.

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This way the risk of condensation is minimised.

LENGTH OF THE ROOF SLOPE

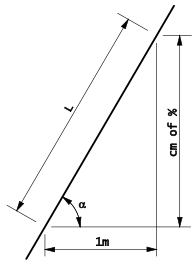
Since all the rain falling on the roof flows towards the gutter, the **amount of water increases on the lower part of the roof**. The fact that infiltrations usually occur in the lower part of the roof surface proves this statement. The longer the roof surface (from gutter to ridge), the greater the risk of infiltration. However, the amount of water that falls on a roof is not determined by the actual roof length but is proportional to its horizontal projection. For example, a 45° roof with an actual length of 7 m has a horizontal projection of 5 m. **Experience has shown that 5 m horizontal projection is the limit up to which a normal covering may be applied, beyond which the covering must be increased.**

Our technical data are valid for all roof slopes with a length - measured by horizontal projection - of max. 6 metres.

The maximum rafter length to which the recommendations for minimum roof pitch, head-laps and side-laps apply, is:

$$\text{Maximum rafter length} = \frac{6\ meter}{cosine\ (angle\ of\ roof\ pitch)}$$

In all other cases, an evaluation of the specific situation is needed, and the appropriate measures must be taken (increasing the head-lap or making other provisions).



When discussing the capillarity, it was demonstrated that the actual rise of the capillary water grew as the inclination shrank. The smaller the inclination, the more the actual roof length approaches the horizontal projection. Moreover, the speed at which the water flows down the roof gets slower when the roof has a fainter inclination. The flowing off takes longer which makes the water layer even thicker. Add to that the fact that with smaller inclinations the side lap, and consequently the width of the slate, start playing a bigger role, it is without a doubt clear that for the watertightness of a slate roof the roof pitch is a very important factor. Consequently, with lower roof pitches a bigger head-lap is necessary to guarantee the watertightness.

The minimum pitch for roofs with fibre cement slates is 25° (47%). De minimum pitch is furthermore dependent on the roofing system used.

The roof pitch can be represented in 2 ways: in degrees or in cm pro meter (of %)

COMPARISON DEGREES - PERCENTAGES

α (degrees)	%	Length of roof surface L pro meter horizontal projection	α (degrees)	%	Length of roof surface L pro meter horizontal projection
25	47	1,103	50	119	1,556
26	49	1,113	51	123	1,589
27	51	1,122	52	128	1,624
28	53	1,133	53	133	1,662
29	55	1,143	54	138	1,701
30	58	1,155	55	143	1,743
31	60	1,167	56	148	1,788
32	62	1,179	57	154	1,836
33	65	1,192	58	160	1,887
34	67	1,206	59	166	1,942
35	70	1,221	60	173	2,000
36	73	1,236	61	180	2,063
37	75	1,252	62	188	2,130
38	78	1,269	63	196	2,203
39	81	1,287	64	205	2,281
40	84	1,305	65	214	2,366
41	87	1,325	66	225	2,459
42	90	1,346	67	236	2,559
43	93	1,367	68	248	2,669
44	97	1,390	69	261	2,790
45	100	1,414	70	275	2,924
46	104	1,440	75	373	3,864
47	107	1,466	80	567	5,759
48	111	1,494	85	1143	11,474
49	115	1,524	90	-	-

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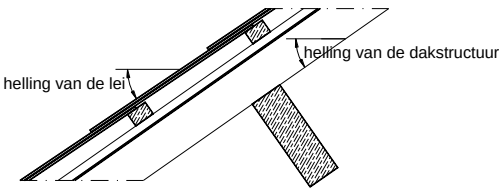


The slope is always measured on the slate itself, at the overlap.
Since the slates lift each other slightly, there is a difference between the slope of the roof and the slope of the slate. This may be important when determining the excess coverage in borderline cases. The tables accompanying the covering systems always state the minimum slope of the slates. The slope difference can be read from the following table.

Slope difference (°) between the roof construction and the slates:

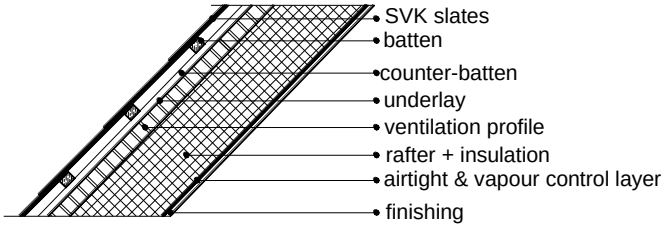
Coverage (mm)	Correction factor (°)
90	0,90
100	0,92
110	0,94

SUPPORTING STRUCTURE

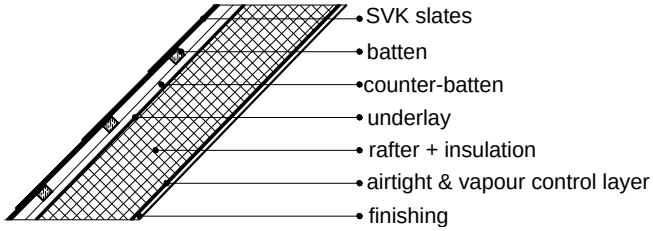
GENERAL

In this section SVK does not necessarily give complete information on all the different components and their properties. For further information we refer to the Irish standards, which must be always respected.

To allow a high quality and aesthetic slating, it is important that the roof structure is adequately designed and executed, according to the valid Code of Practice and all other building regulations.



VENTILATION UNDER UNDERLAY



VENTILATION UNDER SLATES

The roof structure must be professionally designed so it can bear the roof covering and all extra loads (wind, snow …) acting on it, respecting the admissible deformations and tensions in the materials.

It is advisable to bear in mind the slate dimensions when drafting the roof plan, to avoid unnecessary cutting of slates and to prevent that small pieces of slate must be used.

Information on methods available to control excessive condensation, including ventilation, is also given in the Irish Building Regulations, Technical Guidance Document F, Ventilation.

SETTING OUT OF THE BATTENS AND COUNTER-BATTENS

The prescriptions of the ICP 2 SR 82must be respected.

Counter-battens are placed, coinciding with the rafters / trusses. They are fixed at max. centres of 300 mm. Next the roof is to be set out with battens. The battens are fixed, in straight lines, to the appropriate gauge (batten distance). The battens are parallel with the ridge (or at right angles to the line of drainage). Alternate the joints in the battens, no more than one joint in four consecutive battens should be on the same support. Set out the battens, remembering to allow eaves slates to overhang the gutter to ensure water discharge into the gutter.

The overhang is the lesser of:

- 45 to 50 mm
- the centre of the gutter.

We advise to fix a vertical batten at the roof verge and at intersections.

LOADING-OUT ON ROOF

Load-out SVK slates on the roof safely to avoid slippage and distribute them evenly to prevent overloading of the roof structure.

ROOFING UNDERLAY

THE ROOF COVERING ITSELF DOES NOT OFFER A COMPLETE PROTECTION FROM WATER AND DUST. IT IS STRONGLY ADVISED TO INSTALL A WATERTIGHT UNDERLAY.

A roof has several functions:

- to temporarily ensure the **rain-tightness** of the finished roof and to drain the water to the gutter or, failing that, outside the building:
  - in the event of a slate breaking or blowing away
  - in exceptional weather conditions, such as heavy driving rain and gale force winds, resulting in local water infiltration.
  - in case of fine drifting snow or rain that is blown under the slates by the pressure of the wind
- to improve the **storm resistance** of the roof (reducing overpressure under the slates)
- to improve the **dust tightness** of the roof.
- **protect** the roof insulation.
- prevent or limit the dripping of **condensation water.**
- be permanently **vapor permeable**.
- temporarily **absorb any moisture or vapor.**

SVK STRONGLY ADVISES TO USE A VAPOUR PERMEABLE UNDERLAY AND TO VENTILATE THE GAP BETWEEN UNDERLAY AND SLATES.

A solid and permanently vapour-open roof also plays a major role in areas with high humidity.

Always use a high-quality underlay, with a high resistance and stiffness against wind uploads and all other forces. Use a damp open underlay, with good moisture absorption properties. The underlay is to be laid according to the manufacturers prescriptions.

Install the underlay membrane carefully, to make sure that the membrane is not pushed against the roof covering, and there is no contact with the underside of the slates, even in the worst conditions.

We refer to the ICP 2 SR 82 for more information on the underlay.

When installing photovoltaic solar panels on a roof, attention must be paid to proper mounting. Breaks in the shelter must be closed again. The anchoring of solar panels is done in a similar way to the anchoring of ladder hooks.

COUNTER-BATTENS

For accepted timber species, permissible defects and characteristics, we refer to the ICP 2 SR 82

THE COUNTER-BATTENS MUST BE PLANED. STRAIGHT AND OF EVEN THICKNESS.

Counter-battens are fully supported, they must have a depth of min. 22 mm, their width is equal to that of the supporting rafter; they are fixed through the underlay into the rafter. Counter-battens that are too thick should not be used due to the stronger wind load and the larger opening that this creates in the gutter (max. 26 mm). The counter-battens are attached at least twice per linear meter (according to the slope) with stainless steel nails that penetrate at least 27 mm into the wood of the rafters or trusses.

The counter-battens create a space underneath the battens, which has following functions:

- drain any infiltration water to the gutter.
- enable ventilation so that the roof, battens and slates are ventilated, giving them a longer lifespan.
- prevent moisture accumulation against the battens.
- realize a rapid pressure equalization between outside air and the space under the slates, so there is less suction effect in case of strong winds.
- limit the risk of damage to the roof during roofing work.

The fixings of both battens and counter-battens must penetrate deep enough in the roof structure to provide adequate withdrawal resistance of the fixing.

In cases of vertical slating, the battens and counter-battens usually are fixed to a solid wall. Use fixing devices with a proven adequate pullout resistance. Nail type, length and diameter: see ICP 2 SR 82

Counter battens are nailed into the underlying rafters on top of the underlay.

The top of the battens lies in the same plane. When using an underlay with a certain overlap with a difference in thickness, additional measures must be taken at the counter-battens to maintain the flatness of the roof.

Battens should have adequate strength to support the dead load, the imposed load and the wind load on the roof. They must have adequate stiffness to satisfy the requirements of alignments and to avoid excessive bounce or spring when fixing slates. Use planed, straight battens of equal thickness. A perfectly level surface of the supporting frame for the slates is required to obtain an

The wood quality of the battens is the same as that of the counter-battens. Impregnation of the timber used for battens and counter-battens should be considered where they are at risk from attack by wood-rotting fungi, see ICP 2 SR 82.

The section of the battens must be sufficient to prevent any splitting and any penetration of the underlay by the slate fixings. The centre-to-centre distance of the battens depends on the underlying span of the supporting structure and determines the batten dimensions.

Battens must have a length of min. 1200 mm and must be supported at their ends and at least one intermediate support. Butt joints over intermediate supports must be staggered, cantilevering or splicing of battens between supports is not permitted.

Sizes for timber battens.

Rafter centres (*)	Nominal width x depth (mm)	Minimum width x depth (mm)
≤ 400 mm	50 x 25	40 x 22
400 < d ≤ 600 mm	50 x 36	47 x 35

(*) absolute dimensions

Rafter centres exceeding 600 mm are not allowed.

The thickness of the bottom batten is increased by one slate thickness (approx. 4 mm), so that the bottom row of slates has the same slope as the slates above.

The top of the batten lies in the same plane to obtain a flat roof surface. For this reason, planed battens are used. A small deviation can immediately cause a difference in level and/or tension in the slate finish.

The battens are attached to the supporting structure with stainless steel nails that penetrate at least 30 mm into the supporting structure. The diameter of the nails is 1/7th of the thickness of the battens.

VENTILATION

The counter-battens create the necessary gap for ventilation between the underlay and the slates. See to it that this gap is at least 22 mm and is uninterrupted from eaves to ridge.

Ventilation is realised by an air inlet at the eaves, and an air outlet at the ridge, each having a minimum section of 1/2000 of the roof surface.

Information on methods available to control excessive condensation, including ventilation, is also given in the Irish Building Regulations, Technical Guidance Document F, Ventilation.

Under connection details besides the roofing details for constructions ventilated conform the Irish Code of Practice, also an alternative detailing of eaves and ridge finishing for roofs that are ventilated above the underlay is given.

This can be achieved by means of the free space between the battens of at least 15 mm thickness, an air **inlet at the base of the roof** and **an** air outlet **at the ridge; also at the location of roof openings**.

To determine the required ventilation, the following rule of thumb is used:

$\frac{1}{2000}$ x roof surface = required ventilation section at the level of the gutter = required ventilation section at the level of the ridge.

SLATE FIXING

SVK slates are to be fixed in accordance with ICP 2 SR 82 'Irish code of practice for slating and tiling ... ' and BS 8000-6 'Workmanship on building sites – Code of practice for slating and tiling roofs and claddings'.

Before starting work, the area to be slated should be checked, to ensure that all preparatory work has been executed to standard and nothing will hamper the quality of the roofing work.

ONLY SLATES WITH THE SAME PRODUCTION DATE SHOULD BE PLACED ON THE SAME ROOF SURFACE. SLATES WITH DIFFERENT PRODUCTION DATES SHOULD BE INSTALLED ON DIFFERENT ROOF SURFACES TO MINIMIZE COLOUR DIFFERENCES.

EXECUTION

The roof is to be set out carefully, to ensure that a minimum cutting of slates is necessary. Especially try to avoid using small parts of slates. No slate less than half the width of a full slate should be used under any circumstances as this would compromise the side lap.

1. Set out both under-eaves battens as shown in figure A. Their gauge is determined by the under-eaves slate length following the correct laps, as given in the table below.
2. The first under-eaves course is cut and head-nailed to the eaves batten (see figure B). The length of the first under-eaves course is equal to the gauge. The length of the second under-eaves course is equal to the gauge plus the head-lap, the slates are center nailed through site drilled holes to the eaves batten. This first under-eaves course supports the crampions and stiffens the eaves.
   The sum of the lengths of both under-eaves courses is equivalent to the full slate length, so both can be obtained by cutting a full-length slate into two unequal lengths.

   The tails of both under-eaves courses and the first full slate should be aligned.

   Length of under-eaves fibre-cement slate courses (dimensions in cm):

Slate Size	Lap	1st under-eaves slate length (A)	2nd under-eaves slate length (B)
60 x 30	11	24.5	35.5
60 x 30	10	25.0	35.0
60 x 30	9	25.5	34.5

3. Fix the slates for the second under-eaves course to the lower of the two under-eaves battens. **Use an SVK slate-and-a-half width at the verge**, to obtain a broken bond over the first course. Prior to fixing this, drill an extra hole, half a slate width in from the verge and 30 mm up, to allow for the copper crampion that will fix the first full slate course, see figure C.
4. Fix the first course of full size SVK slates. At the verge, an additional hole is drilled 50 mm from the outside edge of the slate, and 30 mm plus gauge from the bottom edge, see figure D. This hole is required for the extra copper crampion in the next course.
5. Each slate of the first full size row is now fixed with:
   - two nails, firmly driven into the batten. The hole in the slates is larger than the nail diameter to allow working.
   - the slates must always be centre-nailed;
   - a crampion placed between the edges of the two lower slates. The shaft of the crampion projects through the hole in the tail of the appropriate slate in the next course and is bent down the roof slope to secure the tail of the slate, not too tight however, to allow the working of the slates.
6. At the verge, every second course a slate-and-a-half width slate is used. Drill 3 nail holes in the slate on the batten line for nailing, and two additional holes for the copper disc rivets, see figure E.

7. Proceed (see figure F) as described above to cover the whole roof area.
   For the remaining courses, a third copper crampion hole is required in the slate-and-a half slates, to accommodate the crampion for the next single width verge slate. Drill this hole half the single slate width from the side and 30 mm + gauge from the bottom edge (or tail).
8. Trim to verges, hips, valley and ridges as necessary.

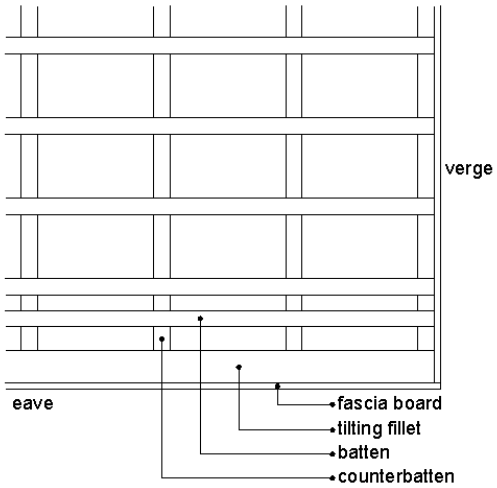


Fig A - Batten configuration at eaves

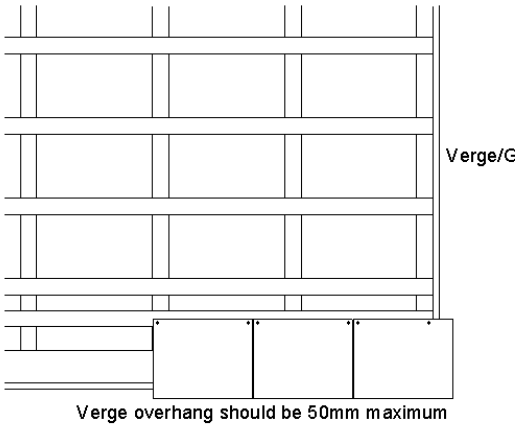


Fig B - Eaves - 1st under eaves course

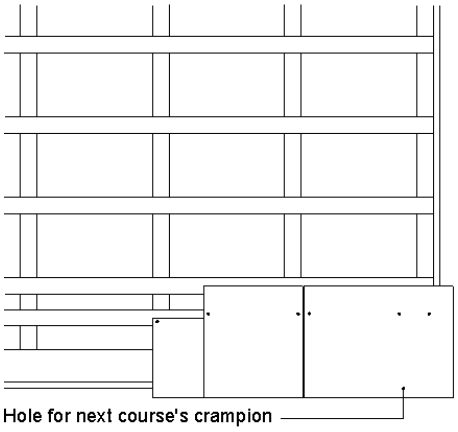


Fig C - Eaves - 2nd under eaves course

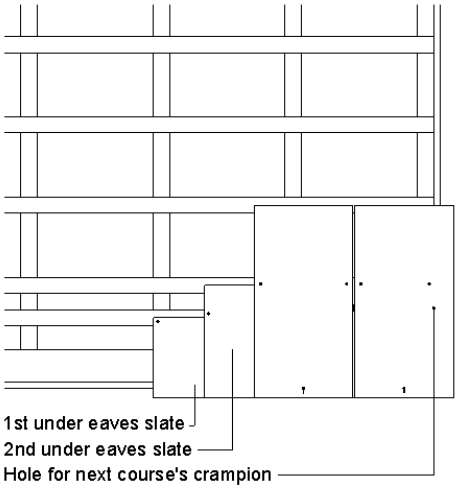


Fig D - Eaves - 1st course of standard eaves

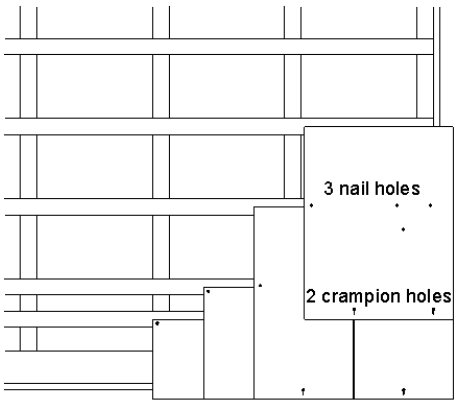


Fig E - Verge - using slate-and-a-half to break bond

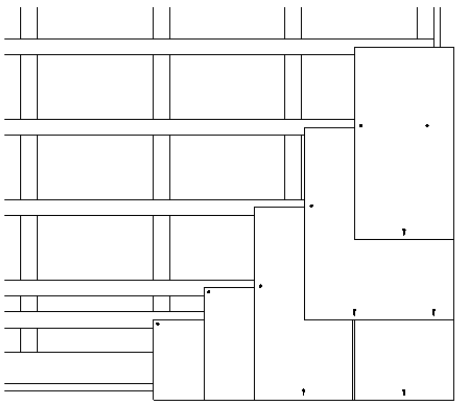


Fig F

WHEN INSTALLING THE SLATES. ALWAYS TAKE INTO ACCOUNT A SIDE JOINT OF 4 MM

In general, the slates are fixed with two nails and, at the tail, a crampion (= disc-rivet), connecting the tail on the centreline of the slate to the two slates below, through the gap between them.

The nails must comply with I.S. 105-1 and should have a diameter of 2.65 mm. Their minimum length is 30 mm, or more if this is necessary to obtain a 15 mm penetration into the batten (where there is a gap between slate and batten, e.g. when tilt is provided at the eaves).

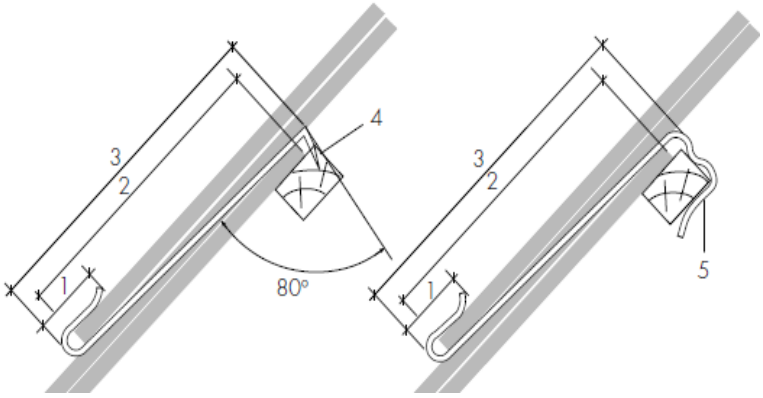
SVK strongly advises to use square extra crenelated copper nails, offering a high withdrawal resistance for centre and head fixing.

The crampions should be of copper coil, conforming to I.S. EN 1172. Use crampions with stem of minimum 19 mm long and diameter less than 2 mm. The disc base of the crampion should be formed of 0.5 mm thick copper sheet and have a diameter of minimum 19 mm. Use high quality crampions, to obtain sufficient uplift resistance.

With façade cladding wrap hooks are recommended instead of drive hooks. For large façades (height > 5 m) wrap hooks are strongly recommended.

The wrap hook needs to be adjusted to the thickness of the batten + the thickness of one slate.

1. Clamp length hook
2. Head-lap
3. Hook length
4. Hook point
5. Hook opening depending on batten thickness



CENTRE NAILING

The slates are fixed with two nails close to the side edge (20 mm to the inner edge of the nail hole) of the slate and positioned immediately above the head of the slates below.

- When nailing the slates the holes are pre-pinned with a diameter greater than the slating nail.
- It's better to use crenelated nails than the normal slating nails because of a higher outpull-resistance.
- 1 slate should be fixed with minimum 2 nails.
- Slates for vertical work need to be centre nailed.
- Undereaves slates and ridge (top course) slates should be head nailed only.

HOOK-FIXING

Though this is not customary in Ireland, we advise to fix the slates with hooks. This fixing method is a very good alternative to the nail fixing of slates. When applying hook fixing, please contact SVK for specific construction advice.

When applying hook fixing:

- The hooks must never be pushed to counteract as much as possible capillary action and creep.
- When using a wrap hook, take the thickness of the batten into account. The use of wrap hooks is not recommended.
- Crimped hooks should be used at pitches of 30° or less.
- Length of the hook = head-lap + 1 cm.
- The drive or wrap hooks are only used on facade or roof pitches of 70° and up. On lower roof pitches the hump on the hook will widen the fine channels, which reduces the capillary action greatly.
- The hook shank diameter should be greater than 2.5 mm and smaller than the minimum slate thickness.

FIXING ACCESSORIES

All fixing accessories, used at junctions or finishings, must be of a material that is compatible with the fibre cement slates and their fixings. Avoid staining, corrosion or other reactions, leading to damage. See ICP 2 SR 82

DRY ROOFING PRODUCTS - MORTAR MIX.

TRY TO AVOID MORTAR MIX

SVK strongly advises to use dry roofing products and systems. Use systems offering a proven resistance to wind load, driving rain and durability.

If however mortar mix is used, plasticizing admixtures must be added, in accordance to the advice of their manufacturer. Wherever problems occur, which could be caused by the fact that the mortar fixing prevents the normal working of the fibre cement roofs or accessories under weather circumstances, **SVK guarantee cannot be invoked**.

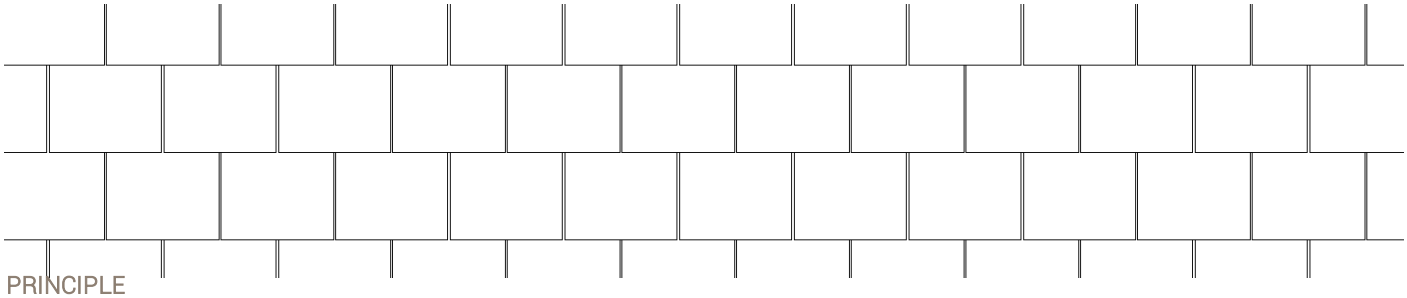
FLASHINGS, JUNCTIONS AND PROJECTIONS

Flashings and junctions must be detailed to prevent the entry of rainwater. The integrity of the underlay as a barrier to wind and water ingress should be maintained around all projections.

We refer to the technical manuals of the manufacturers or Product Federations.

SLATING SYSTEMS

VERTICAL, DOUBLE-LAP (ROOF – FACADE)



PRINCIPLE

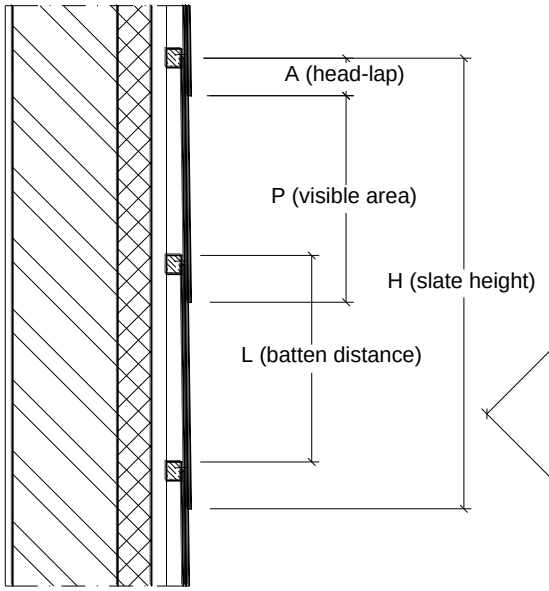
Vertical, double-lap slating is the common way of working and is suitable for all rectangular slates. The slates are laid in broken bond. Double-lap means that each row of slates is partly covered by the two rows above. The head-lap is the distance by which the upper course of slates provides a lap with the next but one course below.

This way, each slate can be divided into three areas (see figure below):

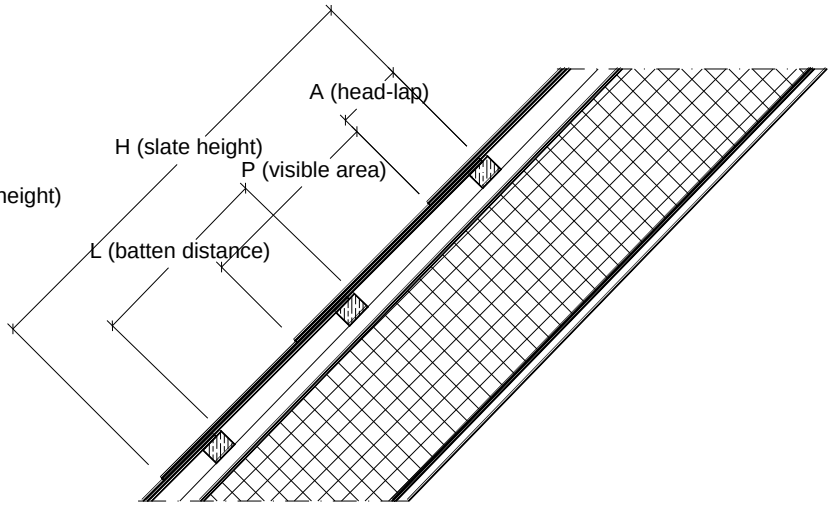
- visible area.
- single lap area.
- double-lap area (= head-lap).

The double covered part is called the head-lap. The height of each of the two other parts equals the batten distance and is determined as following:

$$L(batten\ distance) = \frac{H(slate\ height) - A(headlap)}{2} = P(visible\ area) = single\ lap\ area$$



FACADE CLADDING



ROOF COVERING

THE MINIMUM HEAD-LAP IS DETERMINED IN FUNCTION OF THE ROOF PITCH AND THE EXPOSURE OF THE ROOF.

MINIMUM HEAD-LAP – ROOF PITCH

SVK double lap slates can be laid on roofs with a pitch greater than or equal to 25°.

Due to capillary action roofs with a lower slope cannot be guaranteed. Moreover, the lower the pitch, the more head-lap one has to provide to obtain a watertight covering.

Roof pitch α (°)	Minimum head-lap (mm)	
	Minimum head-lap under moderate exposure	Minimum head-lap under severe exposure
α ≥ 70°	50	50
70° > 35°	90 underlay advised	100 underlay advised
30° ≤ α < 35°	100 underlay strongly advised	110 underlay strongly advised
25° ≤ α < 30°	110 underlay obligatory	110 superior quality underlay obligatory

If the prescriptions for head-laps and minimum roof pitch are not respected, the SVK product guarantee is nullified.

For pitches lower than 25° please contact SVK.

The above recommendations are valid for normal and severe exposure. Any area where abnormal weather conditions can be expected (heavy snowfalls and/or severe exposure to wind-driven rain) special precautions may have to be taken to ensure watertightness of the roof structure.

TO OBTAIN A WATERTIGHT ROOF COVERING. THE FOLLOWING RATIO BETWEEN DIMENSIONS AND LAPS MUST BE RESPECTED WITH FULL SIZE AS WELL AS WITH CUT SLATES (WHEREVER POSSIBLE):

THE WIDTH OF THE SLATE IS MINIMUM TWICE THE HEAD-LAP.

THE HEIGHT OF THE SLATE IS MINIMUM THREE TIMES THE HEAD-LAP.

THE SIDE-LAP IS MINIMUM EQUAL TO THE HEAD-LAP.

FIXING

- Slates greater than 40 x 20 cm are fixed with 2 nails and have a disc rivet at the tail.
- Hooks should not be used for pitches less than 25°.
- Crimped hooks should be used at pitches of 30° or less.

With façade cladding (> 70°) wrap hooks are recommended instead of drive hooks. For large façades (height > 5 m) wrap hooks are strongly recommended. The wrap hook needs to be adjusted to the thickness of the batten + the thickness of one slate.

With drive and wrap hooks the hooks are placed 1 cm higher than the top edge of the slates. This means that the hooks are 1 cm longer than the vertical lap. It is advisable to only use stainless steel hooks.

Nails should be fixing in the middle of the battens.

NUMBER AND DIMENSIONS

Format [cm]	Head-lap A [cm]	Appx. batten gauge L [cm]		Appx. pieces per m²		Appx. weight [kg/m²]	
		Ardonit	Cromleigh	Ardonit	Cromleigh	Ardonit	Cromleigh
60 x 30	5	27,5	27,25	12,0	12,3	18,3	18,1
	9	25,5	25,25	12,9	13,2	19,7	19,5
	10	25,0	24,75	13,2	13,5	20,1	20,0
	11	24,5	24,25	13,4	13,8	20,5	20,4
	13	23,5	23,25	14,0	14,4	21,4	21,3
60 x 60	5	27,5	27,25	-	-	-	-
	9	25,5	25,25	-	-	-	-
	10	25,0	24,75	-	-	-	-
	11	24,5	24,25	-	-	-	-
	13	23,5	23,25	-	-	-	-

The numbers are calculated with a **perpendicular joint of 4 mm.**

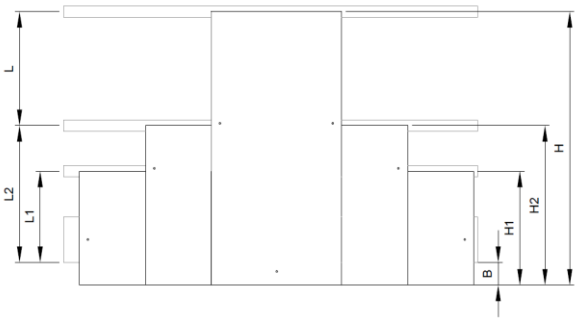
The height of the first row of slates, 1st under-eaves course: $H_1 = L$
The height of the second row of slates, 2nd under-eaves course: $H_2 = L + A$

The bottom slates are fixed with 2 nails.

Batten distances are calculated as following:

$L_1 = L - B$ & $L_2 = L + A - B$

A = head-lap
B = overhang of the bottom slates past the lowest batten (max. 5 cm)
L = batten gauge centre-to-centre, depending on slate height H and head-lap A



Height slate H [cm]	Head-lap A [cm]	Ardonit					Cromleigh				
		L [cm]	H_1 [cm]	H_2 [cm]	L_1 [cm] (B = p. ex. 5 cm)	L_2 [cm] (B = p. ex. 5 cm)	L [cm]	H_1 [cm]	H_2 [cm]	L_1 [cm] (B = p. ex. 5 cm)	L_2 [cm] (B = p. ex. 5 cm)
60	5	27,5	27,5	32,5	22,5	27,5	27,25	27,25	32,25	22,25	27,25
	9	25,5	25,5	34,5	20,5	29,5	25,25	25,25	34,25	20,25	29,25
	10	25,0	25,0	35,0	20,0	30,0	24,75	24,75	34,75	19,75	29,75
	11	24,5	24,5	35,5	19,5	30,5	24,25	24,25	35,25	19,25	30,25

OTHER SLATING SYSTEMS

For other slating systems, SVK advice should be sought.

CONNECTION DETAILS

Apart from the detailing given in this chapter, other situations may require a specific execution, which is not treated here.

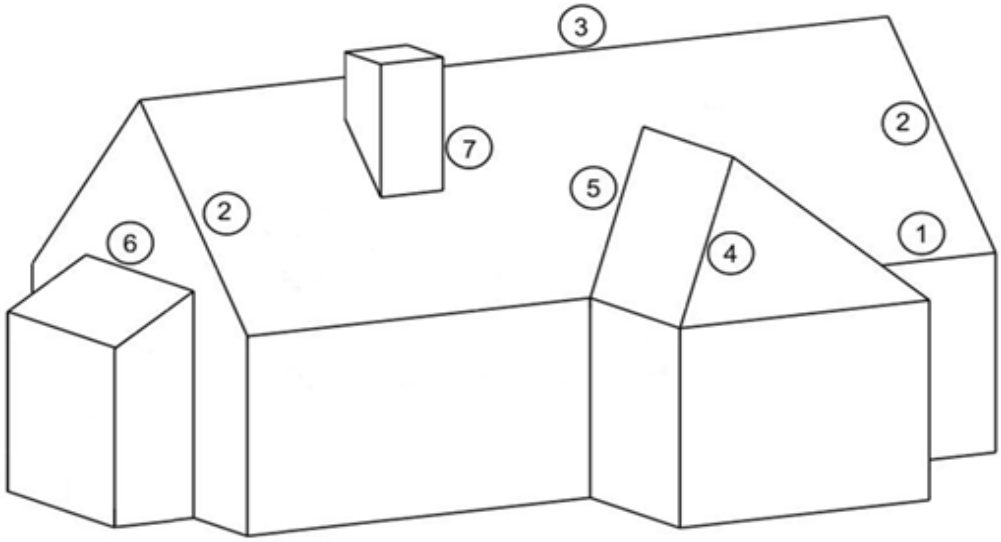
In case of doubt, do not hesitate to ask for advice from our Technical Department.

In any case, several basic rules must always be respected:

- The gap created by the counter-battens must guide any water ingress to the bottom of the roof. See to it that this space is always kept free.
- Take all necessary measures to obtain a watertight roof.
- See to it that the dividing layer between the inside of the building and the roof area is airtight and, if necessary, an effective water vapor barrier is applied (even when this is not visible in the detail).
- Insulation must be applied continuously, avoiding thermal bridges (to keep the details clear insulation may in some places be omitted from the drawings).

Wherever possible, we advise to use proprietary dry roofing products and systems to guarantee watertightness of the different roof details. Only where these are unavailable do we advise to use other materials (e.g. zinc, lead, etc.).

Except when otherwise stated, all roofing details are given for a ventilated roof covering (ventilation above the underlay).



1. eaves
2. verges
3. ridges
4. hips
5. valleys
6. abutments
7. chimneys

The Building Regulations require the ventilation of roofs to avoid condensation. For roof pitches 25 – 35 degrees the requirement is for the equivalent to a continuous 10mm opening at the eaves for standard roofs, and for non-standard the equivalent of a continuous 5mm opening.

To ensure the long-term performance and functionality of the roof, three courses of fibre cement slates are laid at all eaves.

The dimensions of the typical under-eaves slates can be found in the table below.

Format [mm]	Laps [mm]	1st under eaves slate Length A [mm]	2nd under eaves slate Length B [mm]
600x300	90	255	345
600x300	100	250	350
600x300	110	245	355

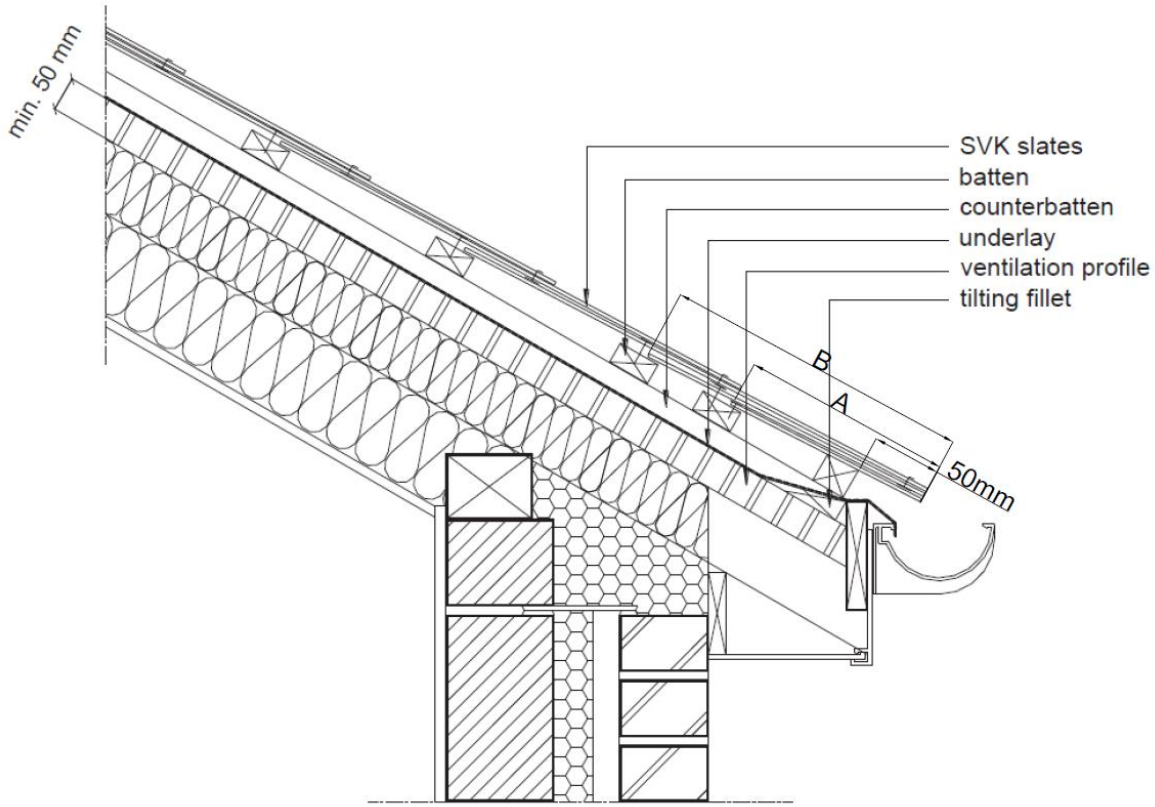
VENTILATION UNDERNEATH THE UNDERLAY

Set out the battens, remembering to provide the correct overhang of the eaves slates to the gutter.

Do not forget to place a tilting piece (or underlay support tray) at the eaves. The tilting piece:

- ensures that all moisture is discharged safely into the gutter.
- supports both first and second under eave courses of the slates.
- lifts the eave and under eave courses up, between 8 and 15 mm, to ensure an even inclination over the slate surfaces.

Where the eaves ventilation is located on the eaves support, allowance should be made for its height.



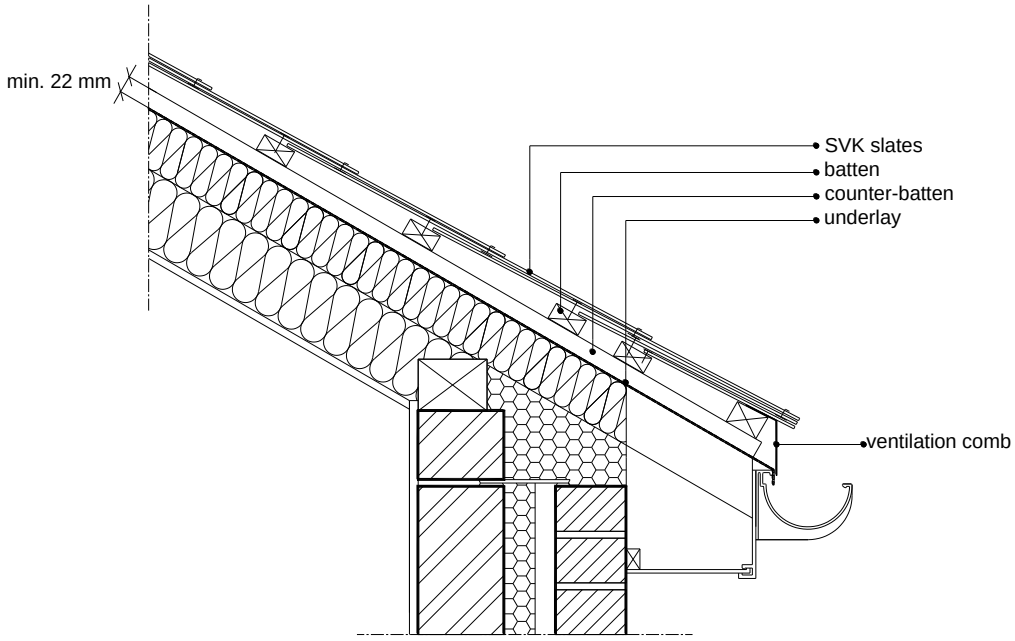
VENTILATION ABOVE THE UNDERLAY

We strongly advise to use ventilation above the underlay. The counter-battens provide an uninterrupted gap so the evacuation of the infiltrated water into the gutter and the section ventilation inlet at the eaves are guaranteed.

The bottom batten is 4 mm thicker than the other battens, to obtain the same pitch of the slates over the whole roof surface. It is strongly advisable to put a comb filler at the eaves, this avoids blockage of the ventilation gap by dry leaves, bird nests, etc.

The recommended overhang for:

- a 100 mm wide gutter is 45 to 55 mm, measured horizontally from the fascia, tilting fillet or wall face.
- gutters of different widths should be taken to the centerline of the gutter or 45 to 55 mm, whichever is the lesser.



THE SPACE BETWEEN THE BATTENS IS LEFT OPEN TO ALLOW FOR AN AIR INTAKE. SUFFICIENT AIR SUPPLY MUST ALWAYS BE ENSURED.

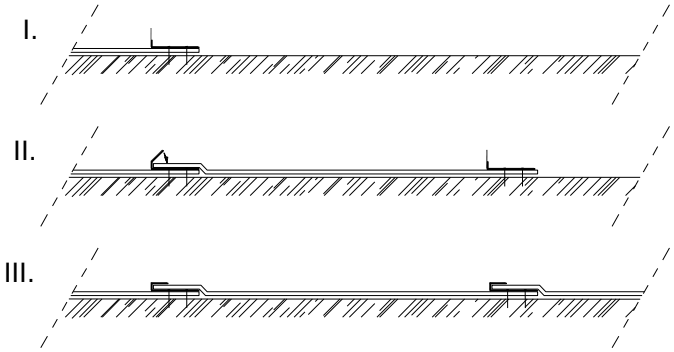
IF YOU WANT TO CLOSE THE OPENING AT THE LOCATION OF THE GUTTER. A VENTILATION COMB CAN BE USED.

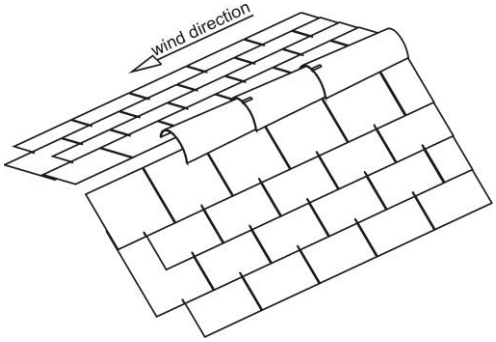
For roofs laid with double lap SVK fibre-cement slates, there are many possibilities for dry ridge finishing.

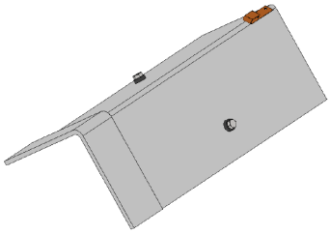
Ridges of fibre-cement in different degrees are readily available. At the ridge the length of the top two courses of slate should ensure the minimum head-lap is maintained. Slates laid to a fixed batten gauge or head-lap may not provide the minimum head-lap cover by the ridge. It is recommended that the top two courses are set out with shortened slates, if necessary, to ensure that the minimum head-lap of the ridge over the penultimate course is achieved.

Position and fix the top slating battens or additional battens to suit the fixing of the SVK ridge cappings. Use a raised ridge board of at least 25 mm thick. An additional ridge fix batten downslope is required for the fixing of a self-sealing wood screw, minimal dimension 60mm x 6.3mm. Lay the ridge pieces with the internal socket joints facing towards, or the external socket joints facing away from, the prevailing wind. Fix the ridge cappings into the ridge board to a true line with a ridge hook and two screws. Use the factory-provided holes for fixing the head-lap.

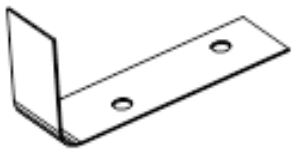
Drill the ridges as required for the additional self-sealing screws, the screws penetrate the ridge in the middle on both sides, 50mm from the bottom edge. The pre-drilled hole should be wide enough to allow movement of the ridge but not too wide so that the watertightness is still guaranteed. End ridge units should always be full length. The ridges are laid with a lap equal to the socket length (70 mm).







Flat square ridge



Ridge clip

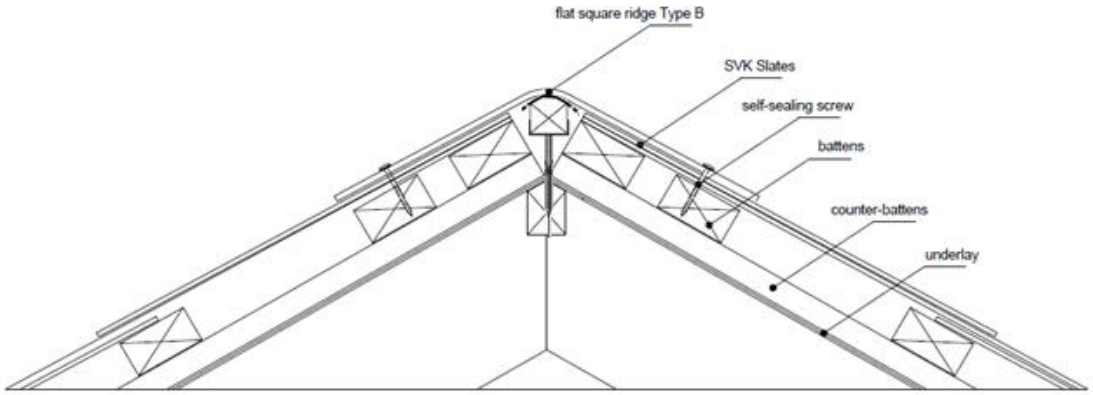
In case dry ridges are used in another material (concrete, clay, sheet metal ridges), they should be laid in accordance with the slate and/or the sheet metal manufacturer's technical recommendations.

Bedded ridges are not recommended by SVK. If however, SVK double lap fibre-cement slates are used with bedded ridges we refer to the ICP 2 SR 82for working instructions.

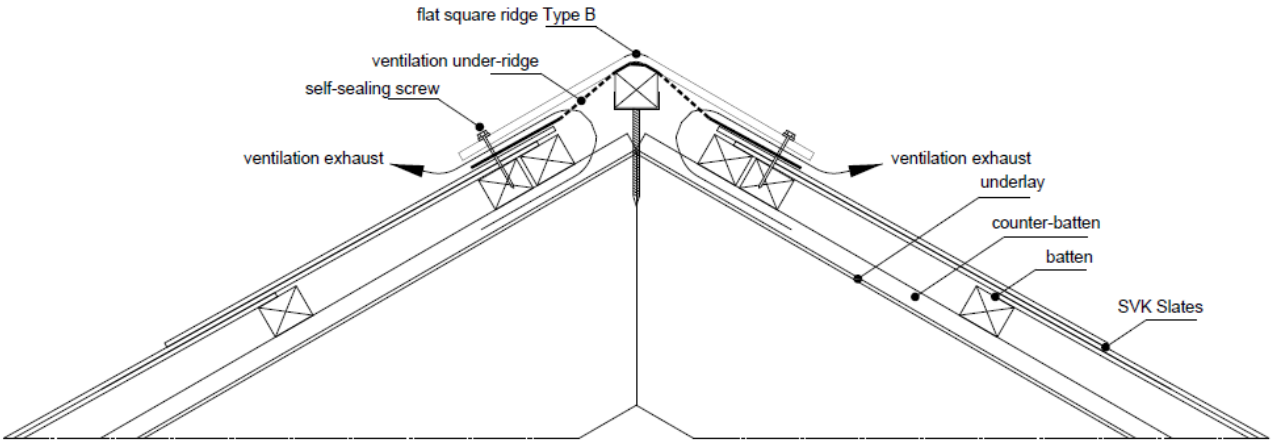
Special attention must be paid to the underlay at the ridge, see ICP 2 SR 82for further details.

NON-VENTILATED RIDGE FINISHING

Slates are laid up to the ridge, leaving just a small gap between the slated surfaces and the ridge. In this case ventilation slates are placed in the second row down from the ridge, to ensure a continuous airflow.



VENTILATED RIDGE FINISHING



For roofs finished with fibre cement ridges, use a ventilation under-ridge to provide the necessary ridge ventilation. Install it in accordance with the manufacturer's instructions. Leave sufficient space between the slated surfaces and the ridge to allow for ventilation.

VERGES

Verges may be straight or raked. The undercloak should be bedded in mortar when laid on brickwork or masonry.

Verges, being situated at the edge of a roof surface, are exposed to high and turbulent wind loads. Therefore, they must be adequately secured against lifting.

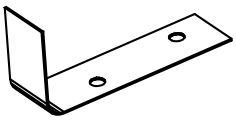
The plain overhanging verge, where slates overhang the gable or bargeboard, used to be a common way of forming verges. If unsupported, the verge overhang should be greater than or equal to 38 mm and not greater than 50 mm.

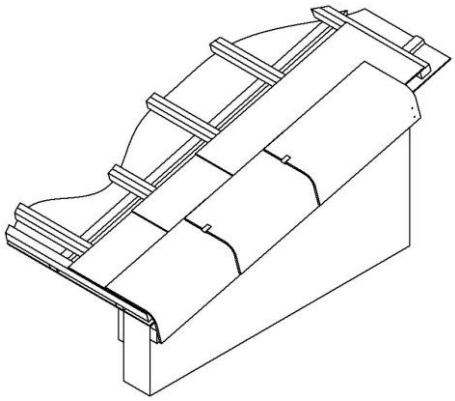
We strongly advise however to use verge slates or proprietary systems.

Bedded Verges are not recommended by SVK. If however SVK double lap fibre-cement slates are used on bedded verges we refer to the ICP 2 SR 82 for working instructions.

VERGES FINISHED WITH VERGE SLATES

The verge slates are laid on top of the slates. They are fixed on their vertical side by 2 nails, diameter 2.65 mm, in the lap area of the slates. Predrill the holes with a diameter of 4 mm, to allow the working of the verge slates. Except for roofs in very sheltered areas, it is also necessary to fix the upper surface of the verge slates. Predrill two 4 mm diameter holes in the slate underneath and fix with a ridge hook.



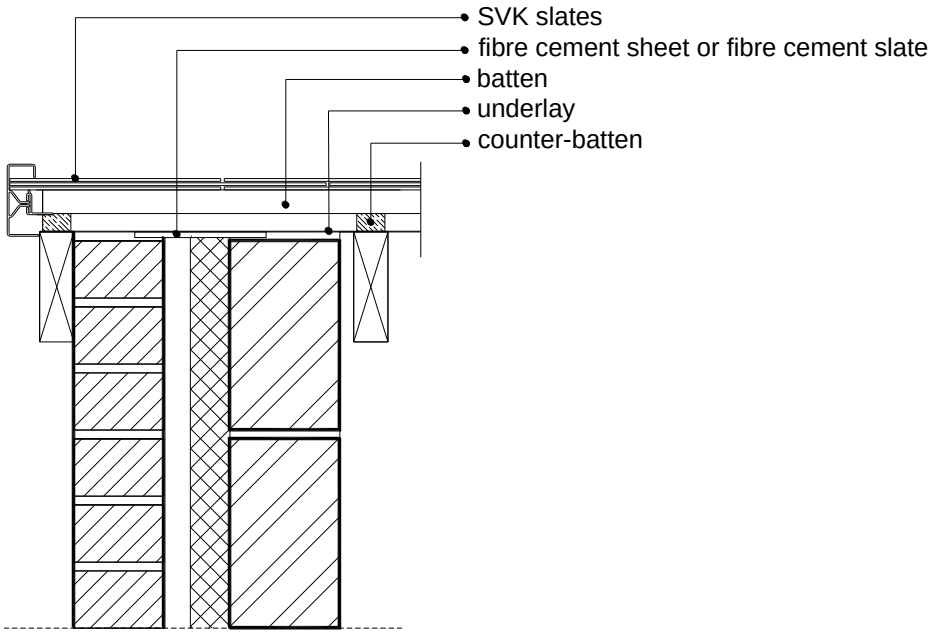


VERGES FINISHED WITH DRY-FIX VERGE TRIMS

Dry-fix verge trims are an alternative to verge slates.

Lay dry verge systems in accordance with their manufacturers' instructions.

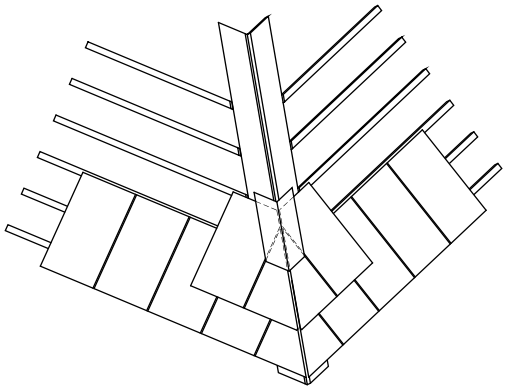
See to it that the verge strip leads the water away from the facade surface. Ensure that the verge slates are extended fully into the verge strip and that the latter firmly holds them.



The conversion table below indicates the required angle of the plain angle ridges type B used as capping, for a specific roof pitch.

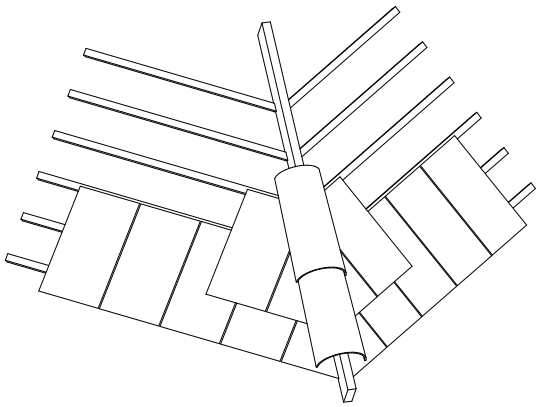
Ridge application for roof pitch of:	Ridge angle	Conversion to roof pitch when used as hip ridge on 2 identical roof pitches of:
25°	130°	37°
30°	120°	45°
40°	100°	65°

MITRED HIPS



A roof pitch of min. 35° is recommended.
Mitred hips require an equal roof pitch on both sides of the hip.
Cut slates to a close mitre to the hip line. Make sure the head of the slates is always min. 100 mm wide. Use wide slates (cut from doubles) rather than using small pieces of slate.
Lay cut soakers with each course, extend minimum half the slate width each side of the hip line. These soakers have a minimum length of (batten gauge + head-lap + 25 mm). They are fixed into the support with two slate nails per roof pitch.
The slates themselves are fixed with at least two nails and a crampion.
With pitches less than 45° external tail fittings are required to resist high wind loads, except in sheltered locations.

HIPS FINISHED WITH SVK FIBRE-CEMENT CAPPINGS



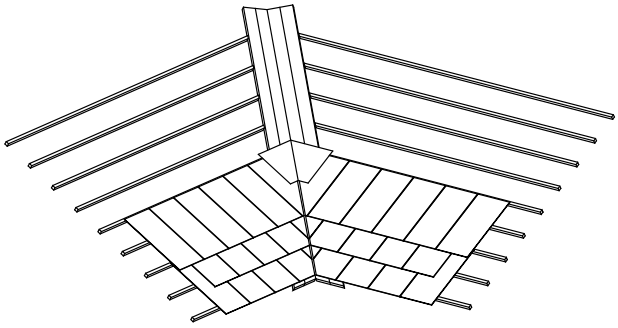
The hips are basically finished the same way as ridges.
Position and fix a raking batten to either side of the hip rafter to suit the fixings of the hip cappings. Rake cut slates to the hip line. Wherever this is necessary, make extra holes for fixing the slates. Cut the slates close to the hip line, the head-lap of the slates by the hip capping must be minimum the head-lap. The slates are fixed alongside the hip line supplementary with 2 nails.
When using hook fixing at hips, the slates should be hooked and nailed.
The hip must be capped.
The ridges are placed with a downward socket. Cut the bottom hip cappings from a full-length unit to align with the eaves.

OTHER HIP CAPPINGS

In case dry hip cappings in another material are used (concrete, clay, sheet metal ridges), they should be laid in accordance with the slate and/or the sheet metal manufacturer's technical recommendations.

Bedded hip cappings are not recommended by SVK. If however SVK double lap fibre-cement slates are used with bedded cappings, we refer to the ICP 2 SR 82for working instructions.

MITRED VALLEYS



Cut slates to a close mitre to the valley line. Make sure the tail of the slates is always min. 150 mm wide. Wide slates (cut from doubles) must be used rather than small pieces of slate.

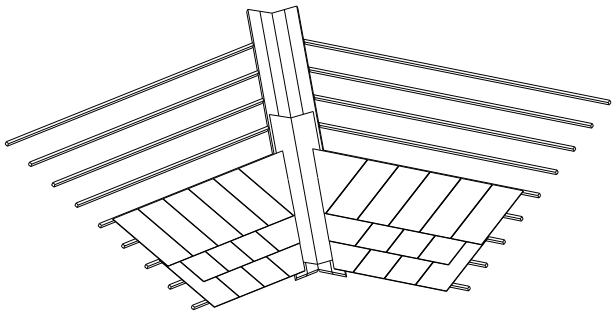
Lay cut soakers with each course. These soakers extend minimum 150 mm each side of the valley line. Butterfly wing shaped soakers have a minimum length of the slate (measured along the valley line) + 25 mm. They are fixed into the support with two slate nails per roof pitch.

The slates themselves are fixed with at least two nails and a crampion or another appropriate tail fixing. Wherever this is necessary, make extra holes for fixing the slates. Should a double width slate be installed it should fixed with at least two nails and have two crampions rivets.

Mitred valleys are not recommended in exposed locations, nor if the roof pitch is less than 35° or the valley length is greater than 6 m.

Avoid mitred valleys at pitches below 50°, if the roof pitches intersect at an angle more acute than 90° on plan or have different roof pitches.

OPEN VALLEYS



On both sides of the valley line a timber lay-board is applied. On top On both sides of the valley line a timber valley board is applied. On top of these a sheet metal valley is laid

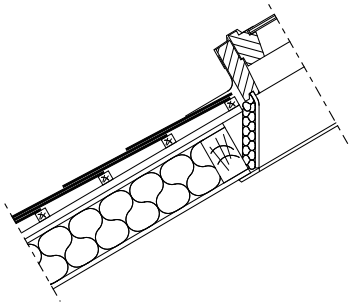
The slates are cut to rake, parallel to the valley centre. Use wide slates (cut from doubles) rather than using small pieces of slate, ensuring that the tail of no slate is less than 150 mm wide.

In the centre is an open channel, with slates overhanging the valley edge by 80 mm.

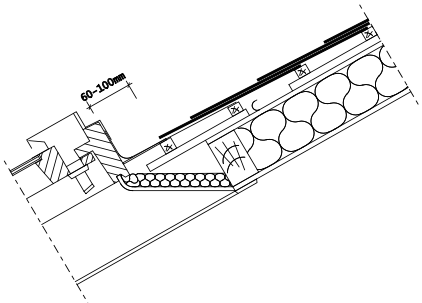
The slates themselves are fixed with at least two nails and a crampion or another appropriate tail fixing. Wherever this is necessary, make extra holes for fixing the slates. Should a double width slate be installed it should fixed with at least two nails and have two crampions rivets.

Never bend any slates.

SKYLIGHT

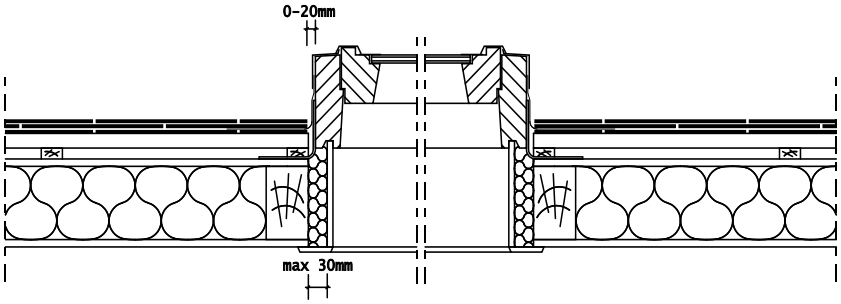


Connection at the bottom of the skylight



Connection at the top of the skylight

Connection to the side of the skylight



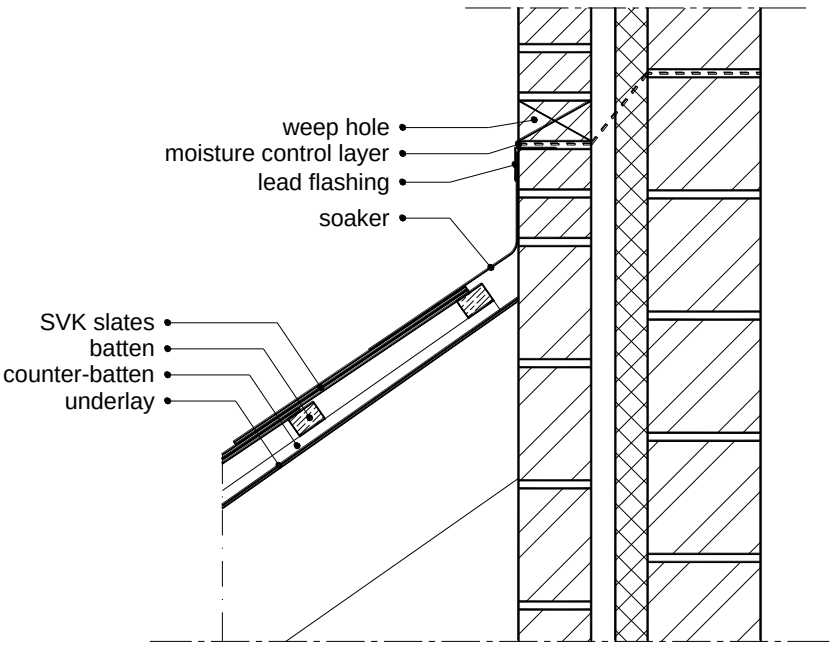
ABUTMENTS

TOP ABUTMENTS

The length of the top two courses of slates should ensure the minimum lap is maintained in combination with an apron and cover flashing.

If ventilation must be provided, it must be realised with ventilation slates.

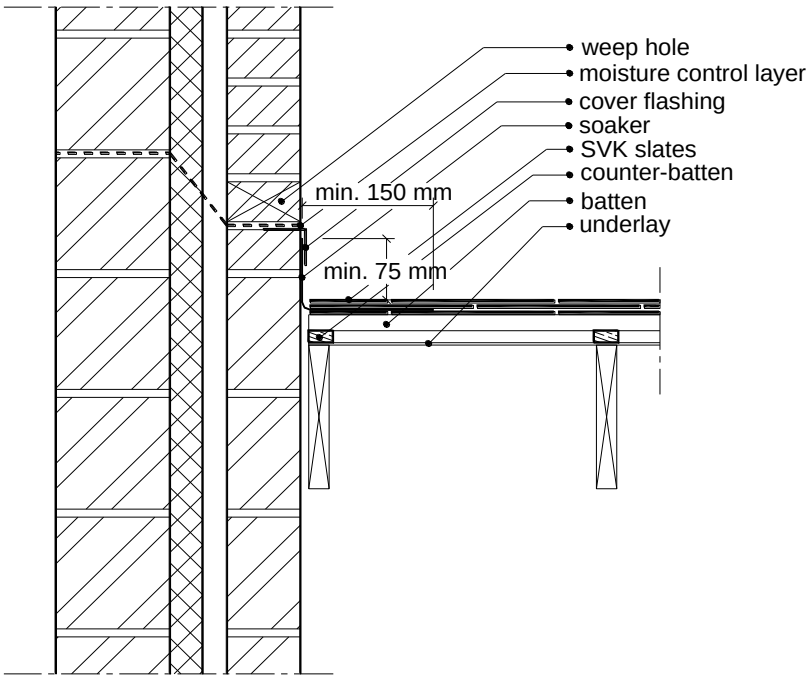
In the wall above, an effective flashing must be provided, to avoid water ingress to the inside of the construction.



SIDE ABUTMENTS

Slating should be finished close to the abutment. Use L-shaped soakers with a length ≥ the length of (batten gauge + head-lap + 25 mm). The top of the soaker should be turned down over the head of the batten and secured. The horizontal side of the soaker should be covered by the slate, at least half a slate width, the vertical side of the soaker reaches at least 75 mm above the slate surface.

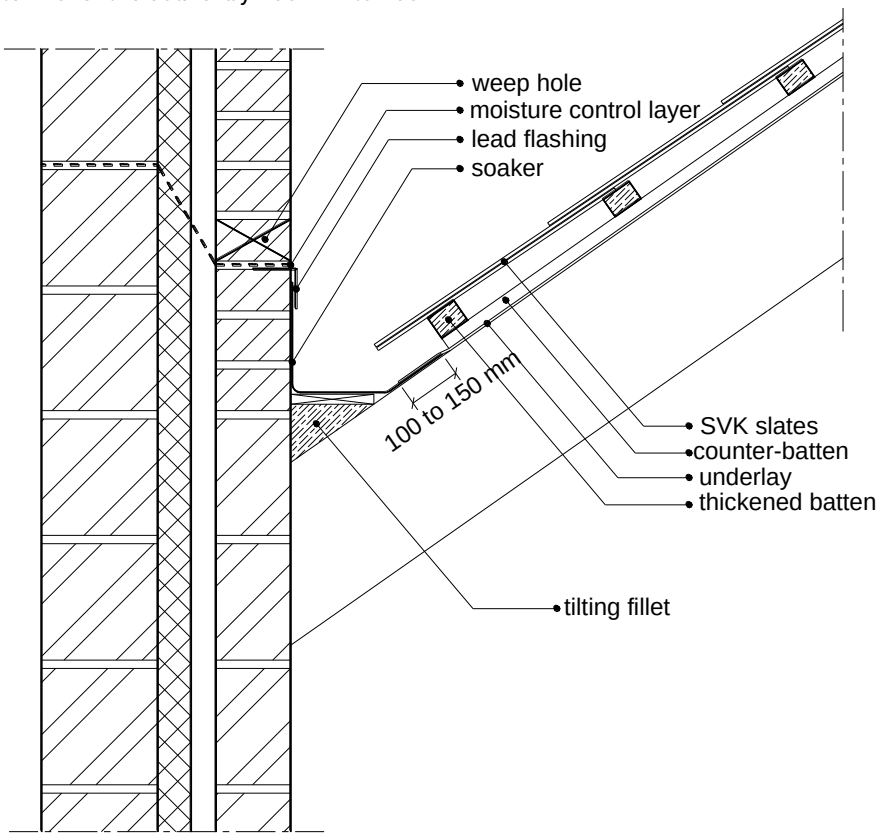
Where used, proprietary abutments or secret gutters are detailed according to the manufacturer's recommendations and should be adequately sized for the length of the abutment with sufficient provision for water outlet. Where there is a risk of blockage by debris, a combination of a cover flashing and abutment gutter could be necessary.



BACK ABUTMENTS

For SVK fibre-cement slates intended for the use at a back abutment, the following should be considered:

- The bottom course should overhang into the back gutter by 45 mm to 55 mm horizontally or to the center of the gutter, whichever is the lesser.
- Ensure the bottom course is not kicked up and is in the same plane as the adjacent courses.
- A double course of slates, laid to give a broken bond, should be used at the bottom course.
- The flashings must ensure that, in case of blockage by debris, no water ingress into the building can occur.
- The underlay should extend over the soaker by 100 mm to 150 mm.



CHIMNEYS

Finish the roof at the top, the side and the bottom, as described above – as top, side and back abutment. Give special attention to the connections of the different flashings at the angles.

LIST OF REFERENCE DOCUMENTS

- EN 492 - Fibre-cement Slates and their Fittings – Product Specification and Test Methods.
- EN 13501-1 - Fire classification of construction products and building elements - Part 1: Classification based on results of testing of the fire behaviour.
- S.R. 82 (2017) - Slating and Tiling Code of Practice. SAI Standard.
- Code of Practice for Safety in Roofwork. Health and safety authority.
- Climatological Note N° 17 (2022) – Distribution of driving rain in Ireland.
- Buildings Regulations 2019 - Technical Guidance Document F – Ventilation. Department of Housing, planning and Local Government.
- BS 5534 - Code of practice for slating and tiling (including shingles), amended 2010.
- BS 8000-6 - Workmanship on building sites. Slating and tiling of roofs and walls. Code of practice.
- All relevant standards, regulations, guiding documents etc… listed in the reference chapter of the above standards.