

INSTALLATION MANUAL



Installation Instructions 25x40 cm. (10"x16")
and 40x40 cm. (16"x16")



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PORCELAIN STONEWARE SLATES

PORCELAIN STONEWARE

**Traditional Appearance
&
Advanced Technology of
Vitrified Porcelain Stoneware**

- TEXTURED SURFACES
- 3 NATURAL FIRED-IN COLOURS
- CHIPPED EDGES
- PRESTIGIOUS APPEARANCE OF NATURAL SLATE/STONE

High Durability

- FROST PROOF AND WATERPROOF
- NON CORROSIVE: SUITABLE FOR HIGH SALINITY AREAS
- HIGH WIND RESISTANCE
- THROUGH COLORED
- NON COMBUSTIBLE

Maintenance Free

- NON POROUS (ABSORPTION 0,05%)
- NOT PROMOTING GROWTH OF MOSS OR OTHER FOREIGN MATTER
- COLOURFAST

High Breaking Strength

- 9,5 MM THICK, CAN BE WALKED ON
- LIGHT WEIGHT ROOFS

**Easy and Fast
Installation
(by screw OR clip fixing)**

- UNIFORM DIMENSIONS AND THICKNESS
- NO NEED TO SORT
- 2 OR 3 FIXING HOLES

**Garanteed 50 years
by
Ardogres**

ARDOGRES GARANTEES THAT ITS ROOFING TILES WILL PROVE TO BE FROST PROOF AND WATERPROOF FOR 50 YEARS . (SEE CERTIFICATE IN THE LAST PAGES)

Installation Instructions
400 x 250 mm Rectangular Size

1. Roof deck preparation

Generally the roofer intervenes when the roof deck is finished.

Before starting with the installation the roofer must:

- check the inclination of rafters
- lay waterproofing membranes or panels if required
- lay the wooden battens

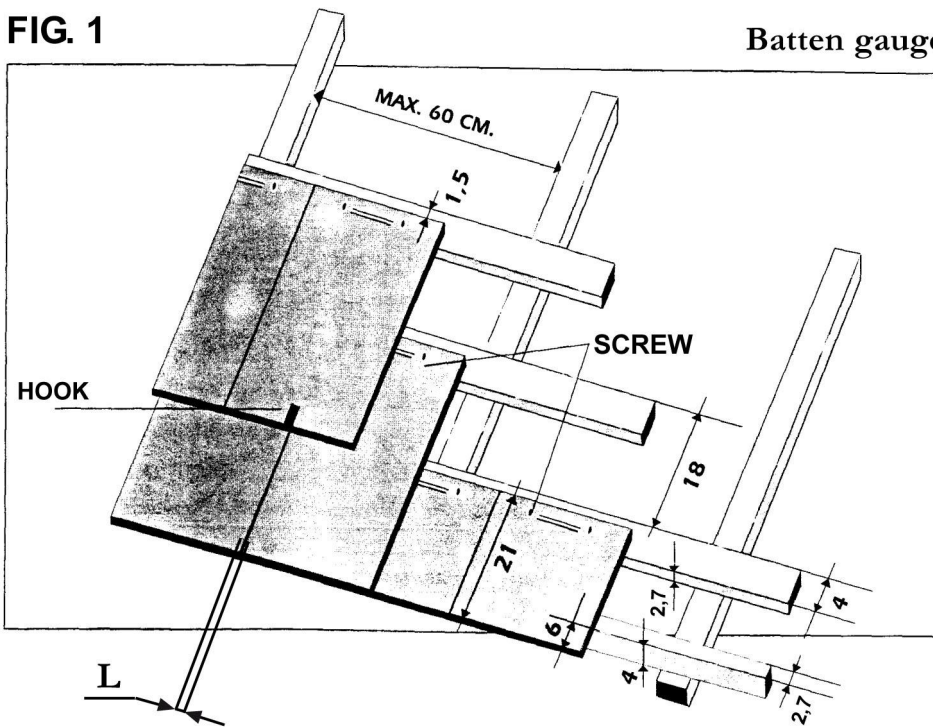
2. Wooden battens

Ardogres Porcelain Stoneware Slates can be laid on wooden battens or board.

Battens on boarded roofs must be supported on counter battens to increase ventilation under the slates and allow free drainage of any water that may reach the underlay. Spacing of counter battens (fixed through to the rafters and not to the boarding alone) should not exceed **60 cm** (see Fig.1).

The first batten must be 10 mm higher to ensure the alignment of the bottom course slates.

FIG. 1



Batten gauge: 180, 160, or 140 mm (see Table 1)

The choice of the batten gauge is based upon roof pitch, exposure, pitch length. See Table 1 for further information.

The top batten must be at least 60 mm under the ridge line. In order to obtain that it is possible to vary the gauge of the last battens.

L: joint width

Installation	L min.	L max.
by screws	3	10
by hooks	4	10
with snow guard	8	10

Batten section:

Length: 40 mm

Thickness: between 25 and 28 mm, according to the weight/sqm.

IMPORTANT : in case of hook/clip fixing it is advisable to check the actual clip width (around 32 mm, see Fig. 2) before choosing the batten thickness.

Installation Instructions
400 x 250 mm Rectangular Size

3. Fixing methods

Our Porcelain Stoneware Slates are laid in horizontal courses from the eaves to the ridge.

Overlapping slates must be jointed in the center of the under slates. This is automatically taken care of by starting every other course with a half slate.

Clip fixing

Ardogres supplies 2 types of stainless steel (18/10) clips:

Spring hooks (see Fig.2) designed to fit the profile of the special headlap area of our slates, designed to resist wind-driven rain.

IMPORTANT :

In case of hook fixing it is advisable to check the actual clip width (around 32 mm, see Fig. 2) before choosing the batten thickness.

Nailing clips (see Fig. 2A): also useful for fixing cut slates in valleys, hips, verges, eaves.

Screw fixing

Every slate can be individually screwed using its 2 pre-drilled holes that speed up the installation and ensure the easy replacement of single elements.

IMPORTANT : in order to prevent ruptures and enable easy replacement, slates must not be held to rigidly in place.

To obtain that, the head of the screws should just touch the slate and screws should not be driven too far or not driven far enough.

The main factors to be considered in deciding on the fixing method are the exposure and location of the site, the roof pitch and the overall appearance of the building.

FIG. 2

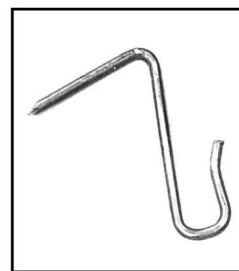
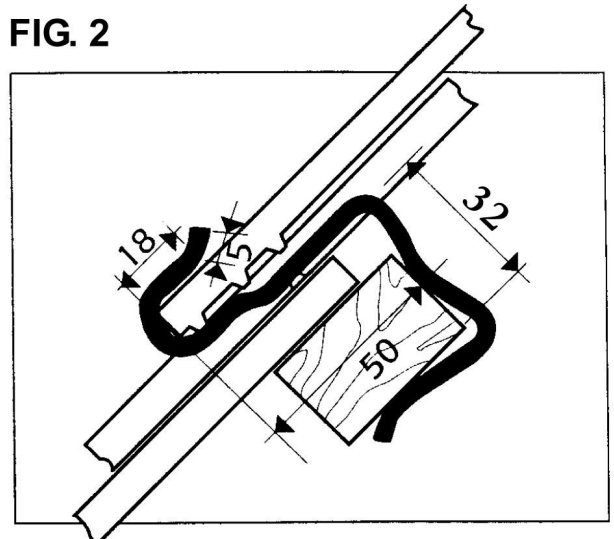


FIG. 2A



FIG. 2B

Ardogres supplies stainless steel 4x40 mm screws, partially threaded (see Fig. 2B) to enhance breaking resistance.

Laying is even faster using our special template (see Fig. 4) which enables roofers to place all the screws first and fix the slates afterwards.

With our adjustable template the joint width can be varied according to the use of clips, screws or snow guards.

Installation Instructions
400 x 250 mm Rectangular Size

4. Cutting, fitting and bedding Ardogres slates

Cutting our slates is easy using a normal tile cutter for porcelain stoneware floor tiles.

A diamond saw can be useful when cutting small pieces or pieces with particular shapes.

IMPORTANT: every slate must be fixed in at least 2 points but the cutting operation can eliminate one or two holes.

In this case a diamond saw can be used to make

notches and use them to fix each slate by screwing or clipping.

When fixing slates in particularly exposed areas of the roofs such as eaves or verges, it is recommended to use both screws and clips.

Eaves slate: cut 210 mm high

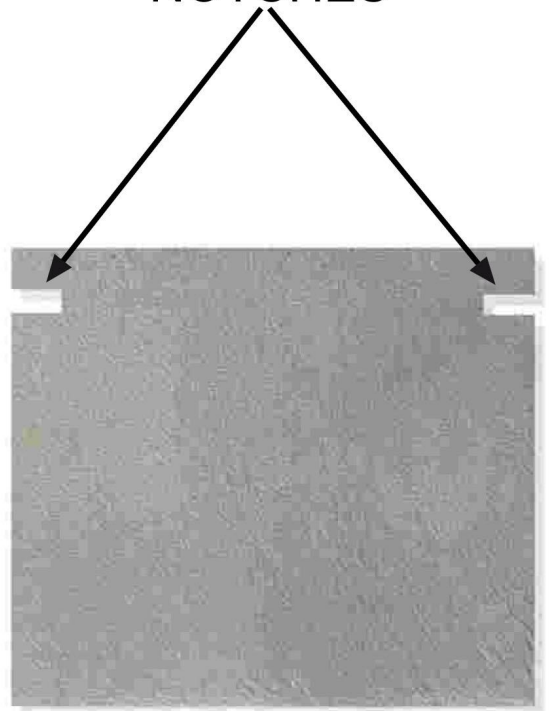
Top slate: height can vary

There are two basic ways of cutting our slates:



1 - Cut away the bottom to keep the fixing holes

NOTCHES



2 - Cutting the top and notching to keep the chipped edge

Installation Instructions
400 x 250 mm Rectangular Size

5. Typical details

For ridges, verges, hips, valleys and ventilation systems, we suggest to use metal profiles immune to corrosion and attack by weather.

In the finishing of any roof workmanship is essential as well as the choice of the right material. Copper, zinc, stainless steel are recommended but clay special tiles can be also used in some cases.

In the figures below some examples of flashing are illustrated.

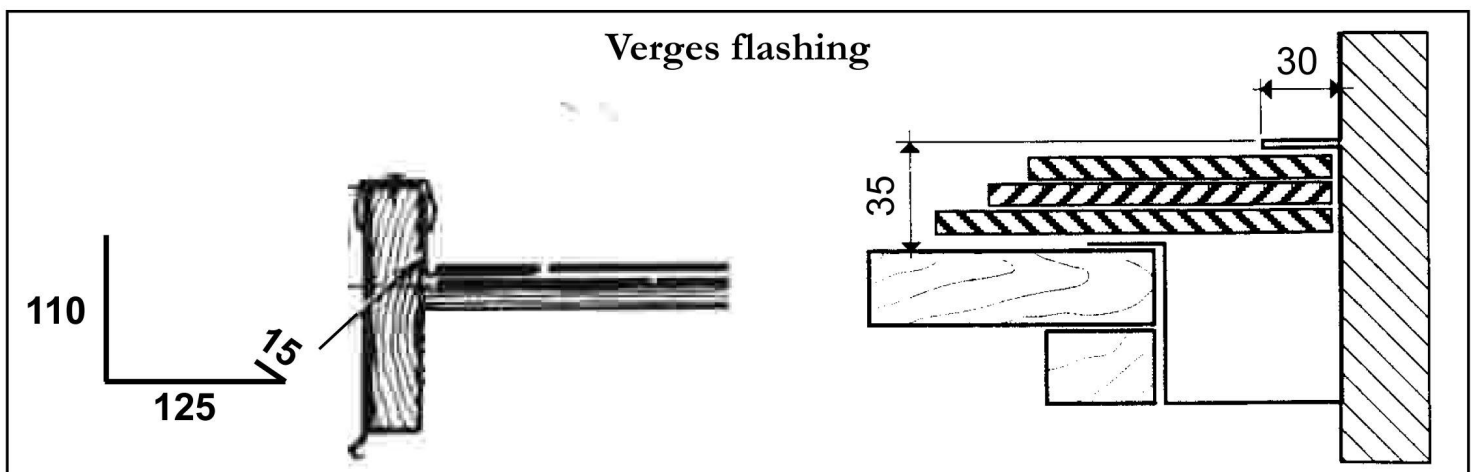
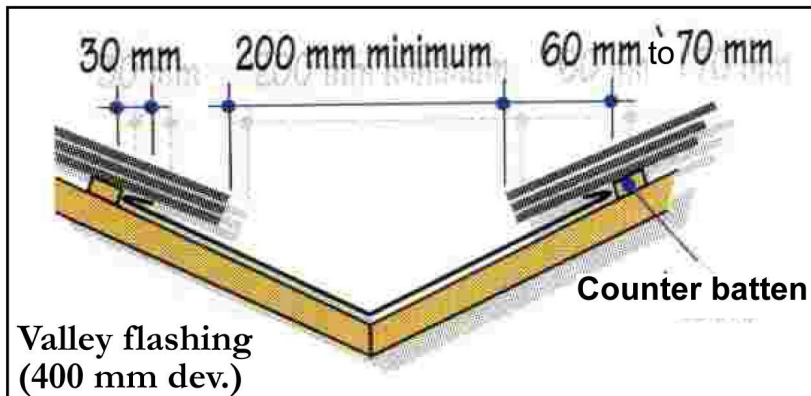
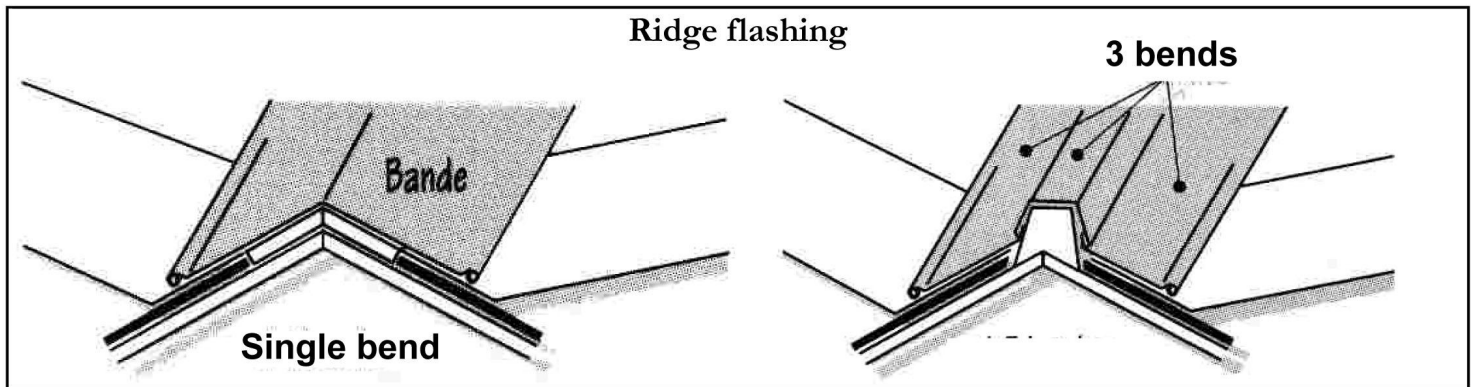


TABLE 1
Covering capacity with screw or clip fixing

ROOF PITCH		Number of slates/m2 (min.)								
		REGION I			REGION II			REGION III		
		Horizontal projection m			Horizontal projection m			Horizontal projection m		
%	degrees	0 to 5,50	5,50 9,00	9,00 12,00	0 to 5,50	5,50 9,00	9,00 12,00	0 to 5,50	5,50 9,00	9,00 12,00
25	14°	28,5	28,5	28,5	28,5	28,5	28,5	28,5	-	-
27,5	15°1/3	25	25	28,5	25	28,5	28,5	28,5	28,5	-
30	16°2/3	22	25	25	25	25	28,5	25	28,5	28,5
32,5	18°	22	25	25	25	25	28,5	25	28,5	28,5
35	19°1/3	22	25	25	22	25	25	22	28,5	28,5
37,5	20°1/2	22	22	25	22	25	25	22	25	28,5
40	21°2/3	22	22	25	22	22	25	22	25	28,5
45	24°	22	22	22	22	22	25	22	25	28,5
50	26°1/2	22	22	22	22	22	22	22	22	25
55	29°	22	22	22	22	22	22	22	22	25
60	31°	22	22	22	22	22	22	22	22	25
>70	>35°	22	22	22	22	22	22	22	22	22
Vertical cladding		22								
Vertical cladding "claire-voie"		14								

IMPORTANT:

- The number of slates on the table is provided for normal locations with normal weather conditions. On exposed sites subject to adverse wind effects, it is advisable to increase the number of slates/m2 reducing the batten gauge. It is also recommended that high performance roofing felts should be used.
- For roof pitches longer than 12m, further advice should be obtained.
- Should you need any further information, please call our Technical Services Department.

Size mm	Slates/m2	Gauge mm	Clip Lenght mm	Weight/m2 (approx.)	Battens required m/m2
400x250	22	180	50	40	5,6
	25	160	90	45	6,3
	28,5	140	130	51	7,2

Region I: Hinterland areas. Altitude: below 200 m.

Region II: Altitude: between 200 m and 500 m.

Region III: Altitude: between 500 m and 900 m.

Wind loadings/Tile fixing

In deciding on the fixing method (screwing or clipping) and the number of slates/m2, reference should be made to a map showing the country divided into zones on the basis of windspeeds. Clip fixing brings greater resistance to tile dislodgment where roofs are subjected to severe wind conditions.

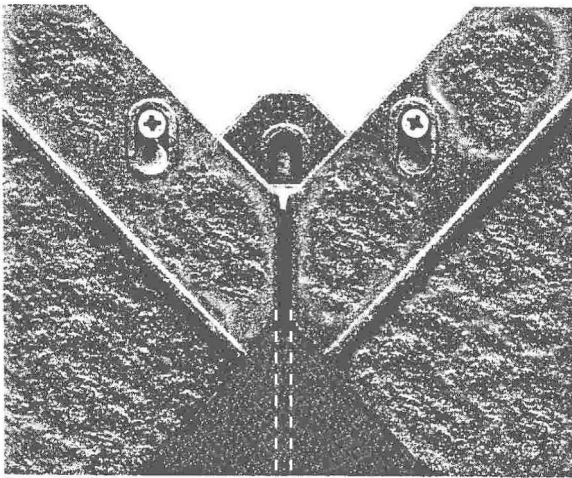
Sitework

Ardogres ceramic slates should be laid and fixed to comply with the local Code of Practice for Slating and Tiling (i.e. BS 5534 or I.C.P.2.) and Code of Practice for Workmanship on Building Sites (i.e. BS 8000).

The performance of the finished roof is dependent on quality of workmanship, and Ardogres recommend the use of experienced roof tiling contractors.

Installation Instructions
400 x 400 mm Size

The majority of instructions given for the 400x250 mm size are valid, with the necessary adjustments, for the 400x400 mm size as well.



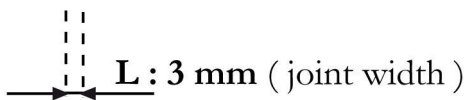
Every slate is individually screwed using only 2 of its 3 pre-drilled holes.
The top hole is used only for cut slates.

IMPORTANT:

In order to prevent ruptures and enable easy replacement, slates must not be held to rigidly in place.
To obtain that, the head of the screws should just touch the slate and screws should not be driven too far or not driven far enough.

Ardogres supplies stainless steel 4x40 mm screws, partially threaded (see Fig. 2B) to enhance breaking resistance.

FIG. 3



Laying is even faster using our special template (see Fig. 4) which enables roofers to place all the screws first and fix the slates afterwards.

With our adjustable template, the joint width can be increased when using snow guards.

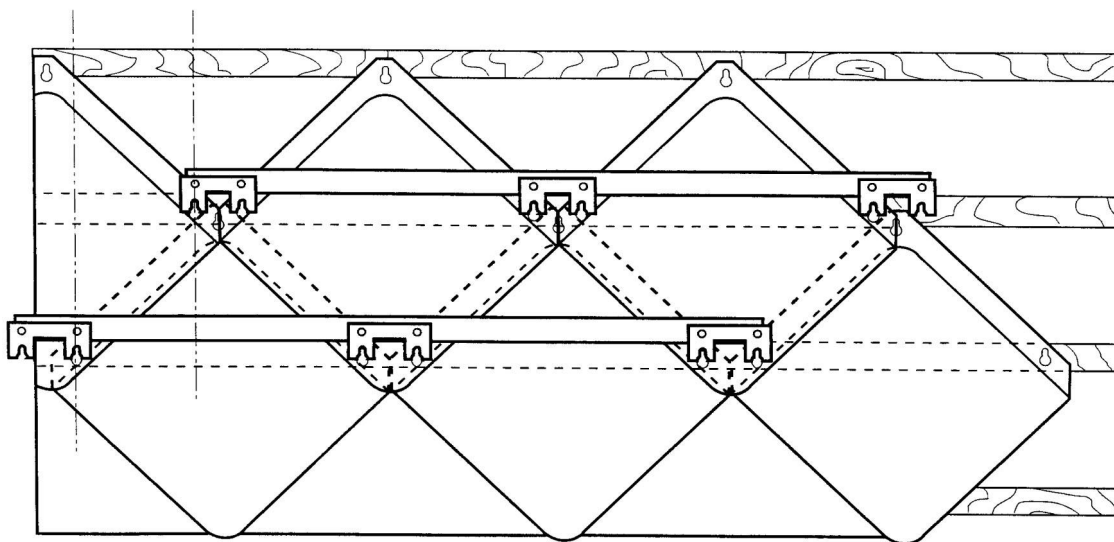
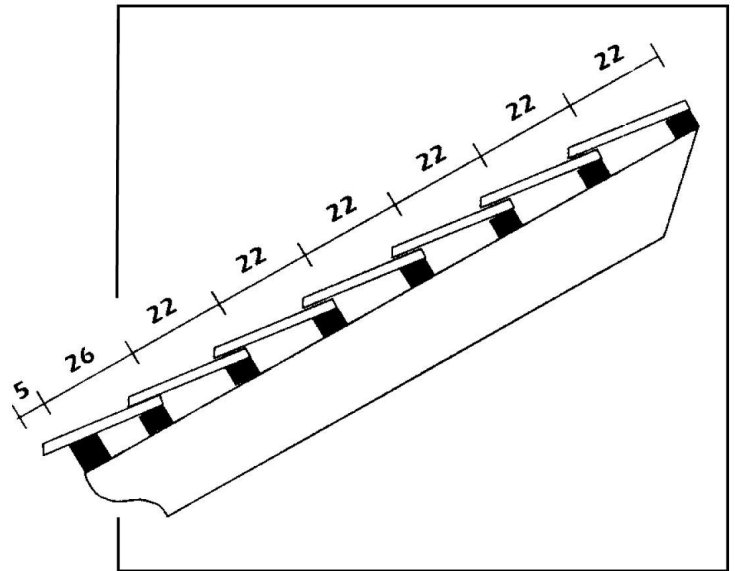
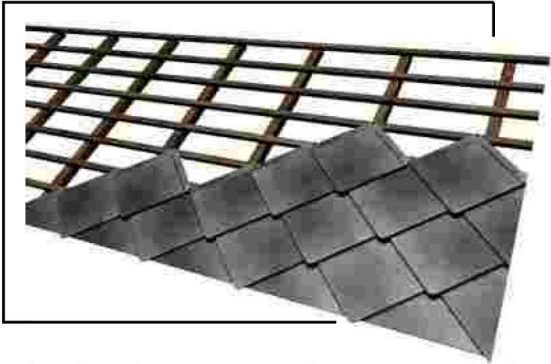


FIG. 4

Installation Instructions
400 x 400 mm Size

Batten section:

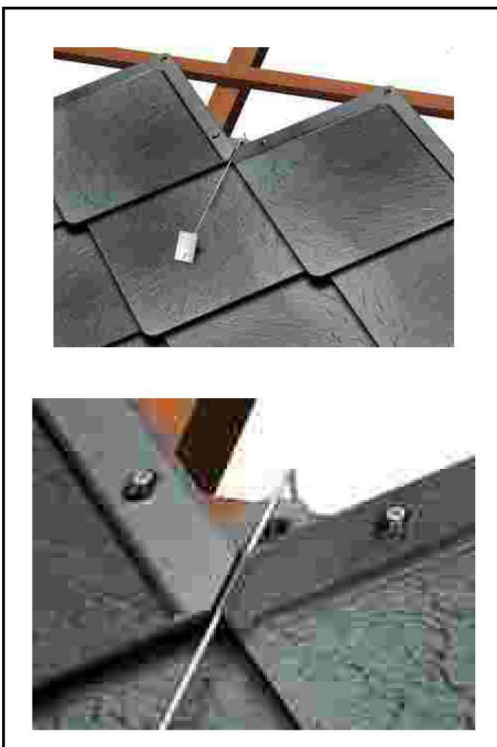
Length: 40 mm
 Thickness: between 25 and 28 mm
 Spacing of counter battens (fixed through to the rafters and not to the boarding alone) should not exceed **60 cm.**



The first batten must be 10 mm higher to ensure the alignment of the bottom course slates

Batten gauge: 220 mm
 Cover capacity: 8,5 pieces/sqm
 Minimum pitch: 35%/20°
 It is possible to decrease the gauge till 205 mm to achieve a more rustic appearance.

Snow guard fixing



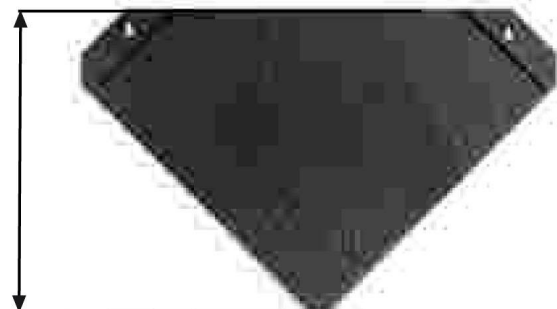
Finishing

310mm



Eaves cut

340mm



Top cut

Underlayment

The satisfactory performance of roofs depends upon the complementary function of the slates and the roofing underlay.

The principal factors to be considered in deciding on the necessity for underlayment are the exposure and location of the site, the height of the roof, the roof pitch and wind loadings.

For low slopes the risk of leakage due to water back-up from ice dams or wind-driven rains is higher and consideration should be given to the use of waterproofing underlayment or base sheet or asphalt impregnated roofing felt.

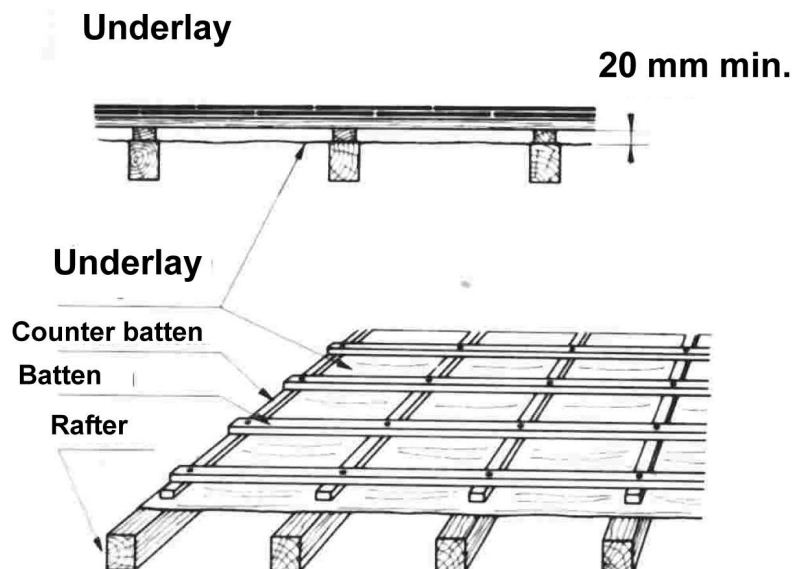
Base sheet or felts should be doubled on rough surfaces, hips, valleys and ridges.

When slating to a timber framed construction a suitable breather membrane or vapour barrier must be provided as appropriate.

All roofs should be designed to avoid harmful condensation and be properly ventilated.

Battens on boarded roofs must be supported on counter battens to increase ventilation under the slates and allow free drainage of any water that may reach the underlay.

The figure below illustrates an example of underlayment.



Warranty Certificate



Ardogres guarantees that the quality characteristics of the products supplied correspond with the quality requirements laid down in acceptance regulations for roofing tiles.

Ardogres also **GUARANTEES** that if within 50 (fifty) years of delivery the fine fully vitrified stoneware roofing tiles known as PIETRA CERAMICA should prove to be frost sensitive or permeable to water, the company shall replace free

of charge any material which is shown to be defective, and shall make the material immediately available to the customer free at works.

This guarantee shall not apply when roofing tiles have been used in a manner not in accordance with the technical instructions given in the catalogue and on the Pietra Ceramica technical papers, which are enclosed.