STENI PROTEGO

Installation Guide RS300

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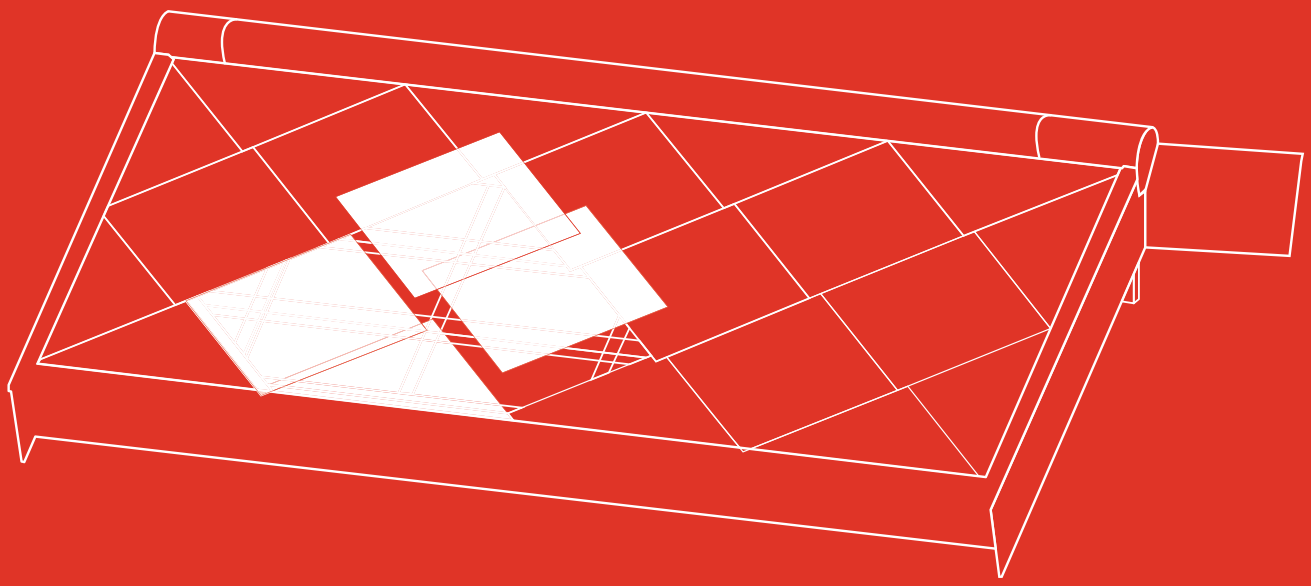


LASTING EXPRESSIONS

Our roofing panel consists of a fiberglass-reinforced and hardened stone composite with a core of crushed natural stone. This type of material is increasingly used in the automotive, marine, and aerospace industries to achieve unique and durable properties.

Aesthetics
Steni Protego has a flat and smooth surface with cured acrylic lacquer. Steni Protego Sand has a coarse surface with natural sand.

Format
Takplatene kommer i 595 x 595 mm og 1195 x 1195 mm. Hel - og halvformat.

Rules and provisions
Recommended roof angle from 18° to 60°. The underroof must be waterproof with a sufficient drop and made in such a way that any water can be freely directed out and away from the building.
Battens and counter-battens. Minimum quality C18, NS-INSTA 142 or EN 338. Pressure impregnated wood class AB, NTR Document no.1 (UC3 EN 335-1) or NP5 EN 351-1. It is assumed that fixing points will be checked in relation to local wind conditions. For gutters, downpipes and fittings, consult a sheet metal company. For snow guards, consult an approved supplier For other roof safety equipment, consult the local laws and regulations, as well as the fire and chimney service.

Some on-site adaptations will always be requried! Personal and essential safety equipment must always be used.
The choice of battens, counter-battens and practical installation are critical for the product's intended function and safety in use. (Steni is not responsible for accidental use and unforeseeable damage to the product).

Minimum requirements for batten/counter-batten installation (tolerance)
Installation of counter-batten ± 2 mm (maximum 6 mm total tolerance deviation).

Warranty
40 year product warranty against frost weathering and delamination.

Test / classification
Fire: B(Roof)t2 EN 13501-5 Impact: Approved to DS 1133 (Annex A) Wind: Euro Class, see table "project planning and design" Rain: Approved to DS/CEN/TR 15601:2012

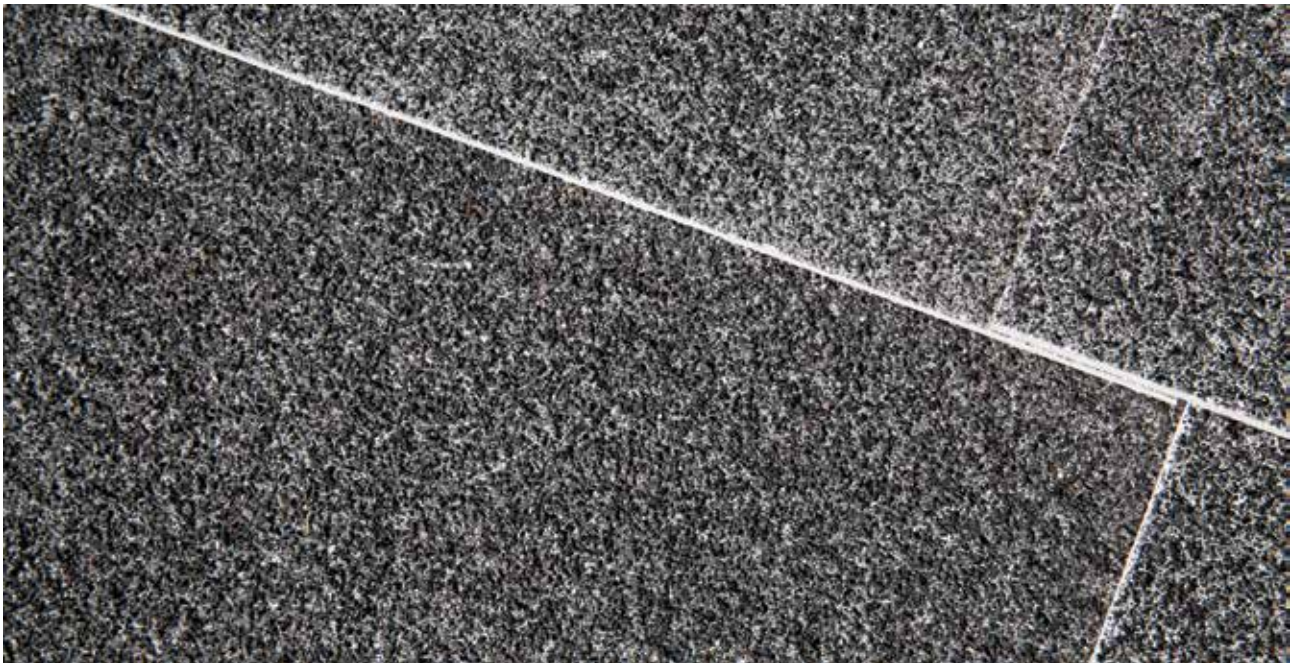
References
Product catalouge
Health, safety and environment, (HSE)
Reception, storage, transport and handling
Customisation
Maintenance and cleaning
Product description
Technical data sheet
www.steni.com

Calculation
To ensure minimal wastage of the various panel formats, a level roof surface with a rectangular or square shape that is suited to the system's module dimension is assumed.

Roofs with deviating module dimensions require on-site adaptation with varying degrees of material loss.
The number of half formats is calculated based on the length, width and symmetry. The area is then adjusted for calculating the number of full-format panels. Half formats are only delivered in pairs (if half formats are ordered for fascia boards, they will also be supplied for both ridges and sides). Formats other than full formats and half formats must be adapted on site.

Materials	Unit	395 x395	595 x 595	1195 x 1195	Notat
Panel area (gross)	m^2	0,156	0,35	1,43	Full format
Number of panels per m^2 roof surface (net)	stk	7,95	3,25	0,75	Full format
Number of screws (4.8*51 mm)	m^2	8,0	3,3	3,0	Used for 2 and 3 panel thicknesses, visible
Number of screws (4.8*51 mm)	m	6	3	3	Edge finish (circumference), visible
Number of roofing nails (2.5 x 40 mm)	m^2	23,9-	10,2	3,8	Use for 1 panel thickness, hidden

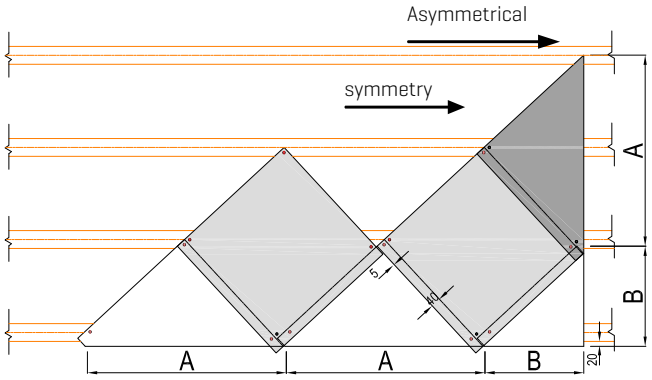
Project planning and design	Unit	STENI Protego			STENI Protego Sand		
		395 x 395	595 x 595	1195 x 1195	395 x 395	595 x 595	1195 x 1195
Thickness	mm	6,0	6,0	6,0	5,5	5,5	5,5
Self-weight per panel	kg	1,9	4,2	17,1	1,7	3,9	15,7
Self-weight per m^2	kg	14,9	13,7	12,9	13,6	12,5	11,8
Drill hole diameter when drilling in panel	mm	6,5	6,5	6,5	6,5	6,5	6,5
Maximum wind load (suction)	kN/m^2	1,2	1,2	2,0	1,2	1,2	2,0
Maximum wind load (suction)	kg/m^2	120	120	200	120	120	200



Module dimension
For asymmetrical designs with minimal wastage, a level roof surface with a rectangular or triangular shape is assumed. The length and width must increase in module dimension A. (Length / A)

For asymmetrical designs with minimal wastage, a level roof surface with a rectangular or triangular shape is assumed. Length and width must increase in module dimension A + (1 pc. B)

For asymmetrical designs, quarter formats must be cut and drilled on site. It is possible to combine, for example, symmetry in length (fascia board) with asymmetry in width (roof side). This will then result in a quarter format above both sides of the roof surface against the ridge.



Description	Enh.	395 x 395	595 x 595	1195 x 1195
Module dimension A	mm	534	817	1665
Module dimension B	mm	266	407	831

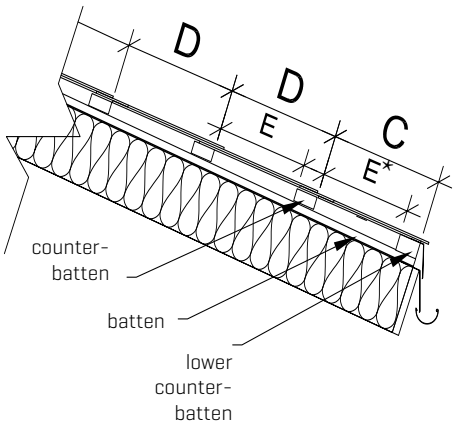
Battens and counter-battens
Battens should be from 21 to 28 mm. Battens are usually installed above all underlays from the fascia board to the ridge in order to ensure good ventilation and draining of condensation water on the underroof. Check anchoring of counter-battens in relation to local strain.
The counter-batten quality is critical for safe anchoring and a good result. Counter-batten dimensions (C and D) are critical for easy installation and a good result.

The lower counter-batten should be 6 mm thicker than the upper counter-batten in order to achieve an equal drop on all panels. The lower counter-batten can be split from a larger dimension or supplemented by a 6 mm spacer panel.

! Make spacer blocks (E) and use these when installing the counter-battens.

Description	Unit	Format
Batten dim. (vertical)	mm	(21 - 28) x 45 (DEN) (21 - 28) x 48 (NOR) (21 - 28) x 48 (SWE)
Lower counter-batten dim. (horizontal)	mm	(38 + 6) x 73 (DEN) (36 + 6) x 73 (NOR) (36 + 6) x 70 (SWE)
Counter-batten dim. (horizontal)	mm	38 x 73 (DEN) 36 x 73 (NOR) 36 x 70 (SWE)

Description	Unit	395 x 395	595 x 595	1195 x 1195
Counter-batten dim. C, (20 mm eaves)	mm	239	380	395
Counter-batten dim. D	mm	235	377	401
Spacer block E/E (73 mm batten)*	mm	162/166	304/307	322/328
Distance from top of panel to center of batten	mm	0	0	+6mm



Installation instructions
For overlapping fastening points, use roofing nails. For visible fastening points, use Steni screws with washers and gaskets On-site drilling should take place for extra fastening of sectioned full formats.

1: Start with half panels (quarter panels in case of asymmetry). Distribute and install the bottom row (eaves) completely. Install from right to left. The distance between the panels should be 5 mm (use a spacer block).

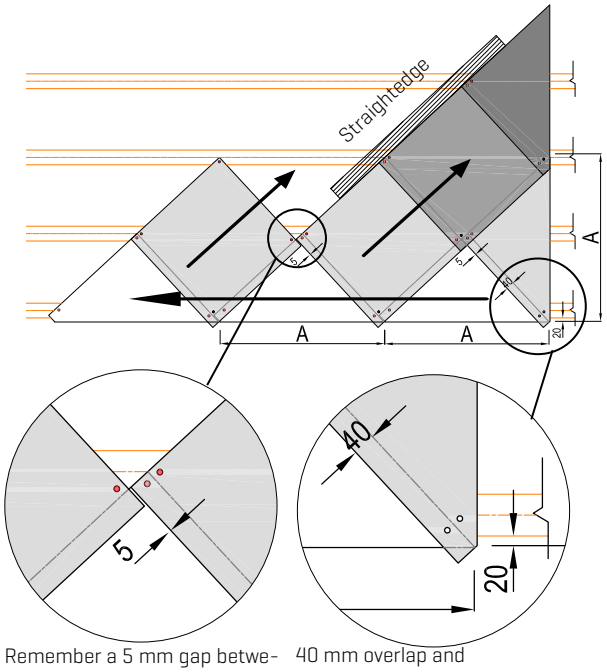
The distance from the top point of the panels to the center of the batten must always be the same (see table at the bottom of p. 4).

The overhang (drip edge) should be approximately 20 mm.
If the overhang is larger, batten measurement C must be adjusted accordingly.

Be precise when distributing the panels and aligning the bottom panel edge.
Install using a string line or straightedge. Sight along the bottom panel edge for alignment control.

2: Continue the installation diagonally from the left and up to the right. Overlapping panels must always be down and to the right. In order to ensure good lines from panel to panel, it is an advantage to use a long straight edge during installation.

For 1,196 x 1,195 format, add a 6 mm furring strip to the counter-batten (spacer panel) approx. 70 x 300 mm beneath the fastening point in the middle of the panel.



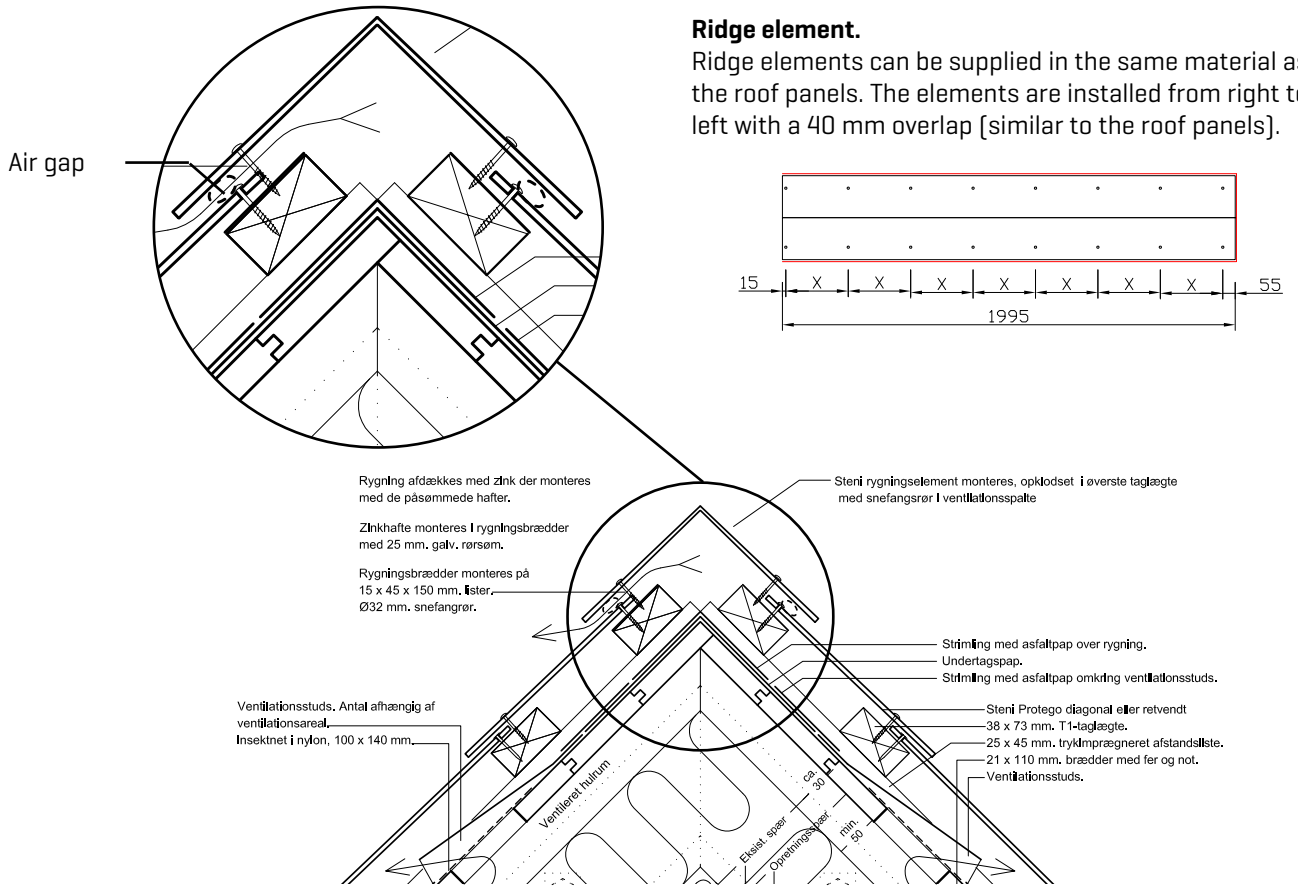
Remember a 5 mm gap between panels.
Use a spacer block.

40 mm overlap and
20 mm drip edge

Installation instructions continue

3: The final row of panels at the ridge should be trimmed in height so that the top edge of the panel aligns with the center of the top batten. If necessary, new mounting holes must be drilled in the top edge of the panel, following the drilling guidelines shown in the diagram on page 8. The distance from the top edge of the panel to the center of the hole should be 15 mm. Also follow the instructions in points 1 and 2.

4: Installation of the ridge element follows the same principle as the roof panels. Begin installation from the left side of the roof and place the elements with a 40 mm overlap. The final element on the right side should be cut to length, and new holes drilled as described in points 1 and 2.
When using a ridge element, it is important that the top batten is positioned to match the size of the element.
When installing the ridge elements, it is also important to create an air gap between the element and the rest of the roof surface. See figure below.



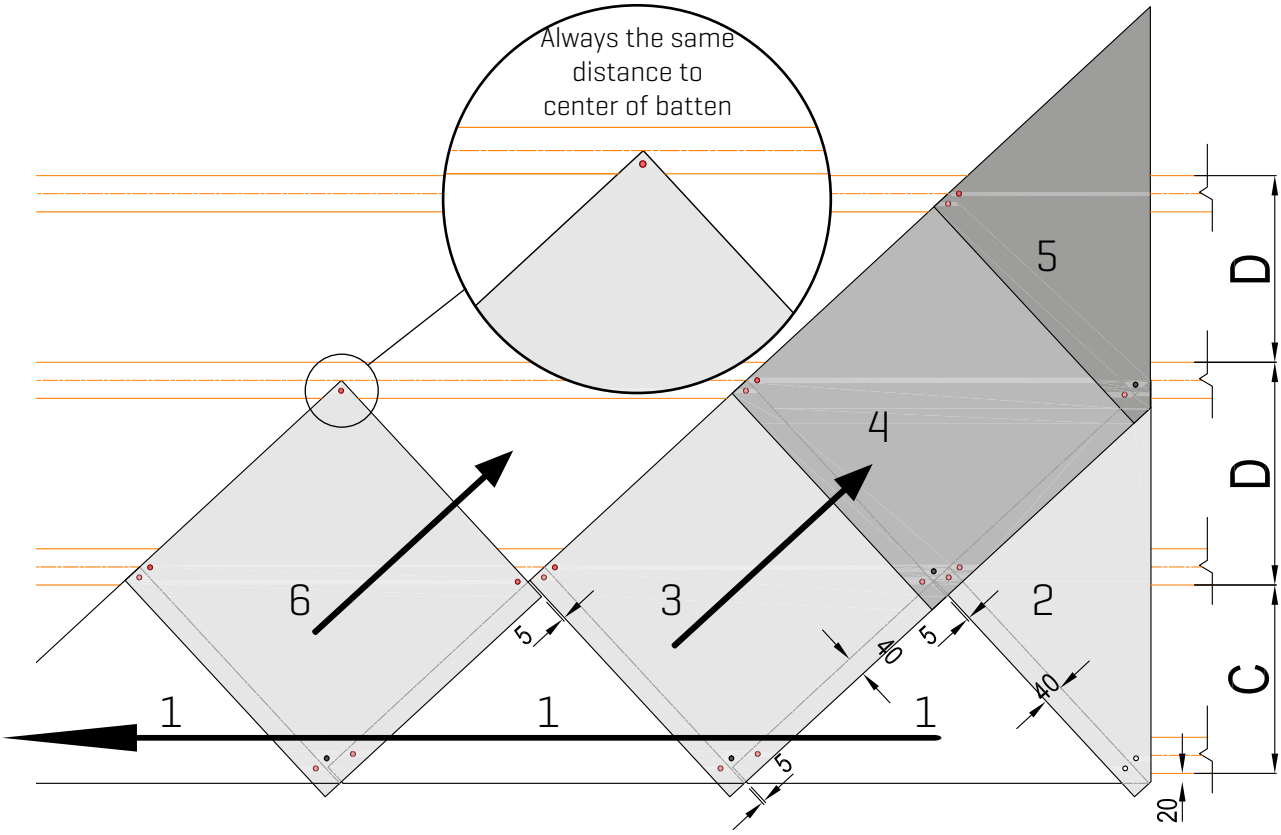
Ridge element.
Ridge elements can be supplied in the same material as the roof panels. The elements are installed from right to left with a 40 mm overlap (similar to the roof panels).

5: For penetrations, roof windows, skylights, valleys, and similar areas, narrow and/or short panels may need to be fastened.

Panels shorter than 100 mm must be secured with two fasteners. For panels longer than 100 mm, a minimum of four fasteners must be used. Otherwise, follow the drilling template shown on page 8.

Mechanical fastening is the general rule.
Holes for mechanical fastening must always be placed at least 15 mm and no more than 60 mm from the edge of the panel.

If sufficient mechanical fastening is not possible, the panels may be glued. Use Danalim Cool Tack 286.
When gluing, surfaces must be clean, dry, and free of dust. Follow the adhesive manufacturer's instructions carefully. Where possible, adhesive should be supplemented with mechanical fastening.



Accessories

Screw with washer 4.8 x 50 mm,
TX-20, fibre cut, A2 quality

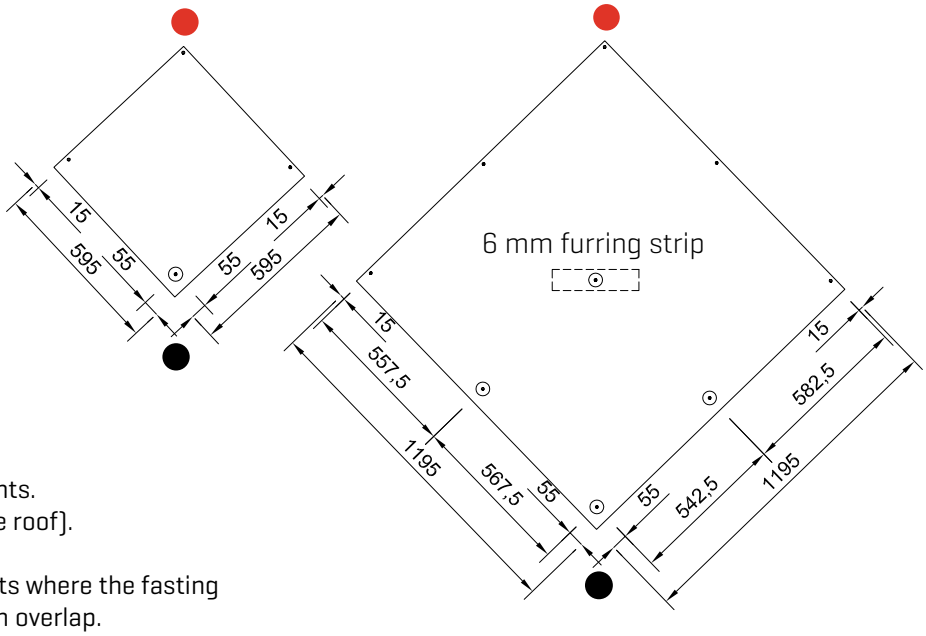
Copper roofing nails
2.8 x 40 mm

Multicut drill bits, 6.5 mm

Diamond cutting disc,
continuous rim for best cut

Full format

- Must always be up
- Must always be down
- Visible fastening point



Full format 595 x 595 mm. og
Full format 395 x 395 mm.
4 pre-drilled holes for fastening points. (1 fastening point is visible on the roof).

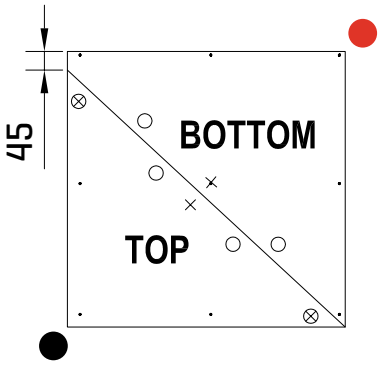
Full format 1,195 x 1,195 mm.
9 pre-drilled holes for fastening points.
(4 fastening points are visible on the roof).

Use screws with washers and gaskets where the fasting point is visible and not covered by an overlap.

Half format, top (ridge) and base (fascia board)
The full format is split in the half format for the fascia board (installation start) and for the ridge (installation end).

595 x 595 og 395 x 395: Four additional holes must be drilled onsite in the panels during installation (X).
1,195 x 1,195. 6 additional holes must be drilled onsite in the panels during installation (○).

Use screws with washers and gaskets where the fasting point is visible and not covered by an overlap.

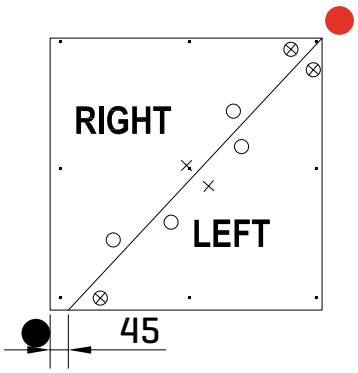


Half format, sides
Full format is split in the half format for the edge on the left side and the edge on the right side.

595 x 595. Four additional holes must be drilled locally in the panels during installation (X).

1,195 x 1,195. 7 additional holes must be drilled locally in the panels during installation (○).

Use screws with washers and gaskets where the fasting point is visible and not covered by an overlap.



MAINTENANC

Environmental factors such as pollution, temperature fluctuations, and weather contribute to roof wear. Steni Protego roofing panels require annual visual inspection to maintain optimal durability and an exclusive appearance year after year.

The warranty conditions require regular and necessary maintenance of the roof. It is expected that the builder establishes a maintenance program for periodic maintenance tailored to the building.

- Check for dirt buildup. Joints and areas around penetrations are particularly vulnerable.
- Ensure panels are intact and free of cracks/damage.
- Check fastenings to ensure screws remain secure.
- Confirm sufficient roof ventilation to prevent moisture-related issues.

CLEANING

CHOICE OF CLEANING AGENT

All Steni panels can be cleaned with most cleaning agents available on the market, intended for use on buildings (e.g., house cleaning solutions).
Power washing should not be used, as it will dull the surface. Choose a cleaning product based on what needs to be cleaned off. The instructions for the cleaning product should be followed carefully. If unsure, we recommend performing a test in a small, inconspicuous area, or contacting a professional cleaning company.
Steni Protego Sand can be primed and impregnated to make the surface easier to keep clean.

PRESSURE WASHING

Steni panels can withstand cleaning with a pressure washer up to 100 bar and temperatures up to 80°C. The nozzle should be kept at a distance of at least 20-30 cm from the surface.
Pressure washing with high temperature provides good results, saves the environment, and is preferred over extensive use of chemicals.
When using a pressure washer on Steni Protego Sand, there is always a risk that some surface stone may loosen. Exercise caution.

POST-INSTALLATION CLEANING

Cutting and drilling dust should be removed immediately with compressed air and a soft dry brush. Dust that cannot be brushed off should be wiped with a damp microfiber cloth with an alkaline cleaning solution added.
All labels, etc., should be removed immediately after installation. Any adhesive residues should be removed with a suitable cleaning agent. Once the roofing work is completed, the roof should be cleaned with an alkaline cleaning solution for general house cleaning. Use a pressure washer and plenty of water.

CUTTING/DRILLING DUST

Always use tools with dust extraction when cutting and drilling Steni panels. Dust that is not extracted must be removed immediately. Use compressed air/dust extraction and a soft dry brush. Dust residues should be removed with a damp microfiber cloth with an alkaline cleaning solution added.

OIL, GREASE, SOOT, ETC.

Use petrochemical degreasers or similar products intended for use on painted surfaces (e.g., car surfaces). Follow the instructions carefully. Rinse the roof with a pressure washer, preferably in combination with warm water. Use plenty of water.

ALGAE GROWTH, MOSS, DIRT, ETC.

Use an alkaline or pH-neutral cleaning agent designed for the task. Follow the instructions carefully. Rinse thoroughly with a pressure washer. Use plenty of water.

ACIDIC CLEANING AGENTS

Bør ikke anvendes på hverken glatte eller ru overflader. Steni Protego Sand kan indeholde kalksten som kan misfarves ved brug af syreholdige rengøringsmidler.

LASTING EXPRESSIONS

Steni façade, roof and interior solutions offer unique, durable and high quality architectural expression. A sea of available surfaces, from colourful and smooth in different gloss levels, to surfaces of crushed stone in a variety of shades and grades – and printed surfaces so you can make your own custom designs. With Steni, you can design your façade exactly the way you want it!

Since its establishment in 1965, Steni has delivered more than 55 million square metres of façade, roof and interior panels around the world.