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Corrugated panels Profile 8 for façade cladding EFASAL  
Draft Edition January 2007



## Installation instructions

Corrugated panels manufactured from Portland cement and water, reinforced with natural and synthetic fibres are environmentally friendly fibre cement.

### Quality

The quality of corrugated panels EFASAL Profile 8 complies with European product standard EN 494 requirements for Class B1X - the highest standard available.

### Application

Corrugated panels Profile 8 can be installed on timber or steel sub framing.

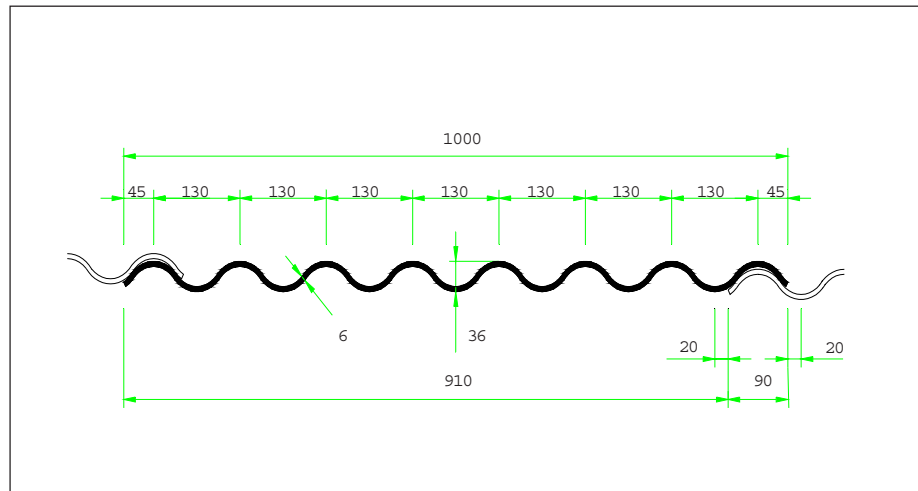
Corrugated panels Profile 8 are available in standard lengths of 1250 mm, 2000 mm, 2500mm and 3000 mm. Corrugated panels can be supplied also in project specific lengths up to 3000 mm.

### Project specific ordering

The characteristics of the raw materials determine properties and appearance of fiber cement panels Profile 8. Subtle visual differences may occur between production batches. Orders should make allowance for this by itemizing quantities accordingly, so that panels for connected/adjacent surfaces on the same job can be supplied from identical production batches. This is of particular importance for large projects.

### Wind load

Local specific wind exposures, the bulk/dimensions of a building and all the relevant by-laws must be considered when establishing type and spacing of sub-framing and fixing method. Design wind loads (both positive and negative) must distinguish between normal wall areas and those adjacent to corners and parapets (fringe areas).



### Rear ventilation

The ventilated cavity between the cladding and the layer behind it should be at least 20 mm and increases with the height of cladding.

Building tolerances must be allowed for. The specified rear ventilation must not be interrupted/reduced by horizontal profiled or any stray objects, such as loosely installed insulation elements or wind proofing.

### Air-intake and exit openings

These must have a clear cross section of at least half the cross section of the cavity behind the cladding. Reductions of the clear cross sections, e.g. by insect screen, must be compensated for.

### Expansion joints

Structural expansion joints must be applied to the cladding and sub framing, in the identical position and to the same extent as in the load bearing wall.

### Façade engineering

Structural engineer/contractor shall assume overall responsibility for the façade engineering, including:

- choice of material and type of sub framing
- determine sizes of all structural members
- determine all fastening details to subframing and panels.

Number and spacing of fastening points as set out in this installation instructions correspond for non exposed façades of building heights up to 8 m (wind load 0,9 kN/m<sup>2</sup>)

### Sub framings

Profiles and battens must be installed without restraint, especially between sub-framing and cladding. The detailing and installation must allow for any wooden components of the subframing to be protected from dampness.

### Thermal insulation

The insulation elements must be mechanically fastened to the installation base, so that they can not detach themselves and obstruct the ventilation cavity behind the cladding.

# EFASAL

## Mitring

To avoid four thicknesses of panels at the junction of side and end laps, it is necessary that two of the panels are mitred at each junction at the corners so that they lie in the same plane.

Mitre or diagonal cut is defined by the width of the side lap and by the length of the end lap as shown. Ideally the gap between mitres should be 5 -10 mm.

Mitres should not be cut in situ, at the façade.

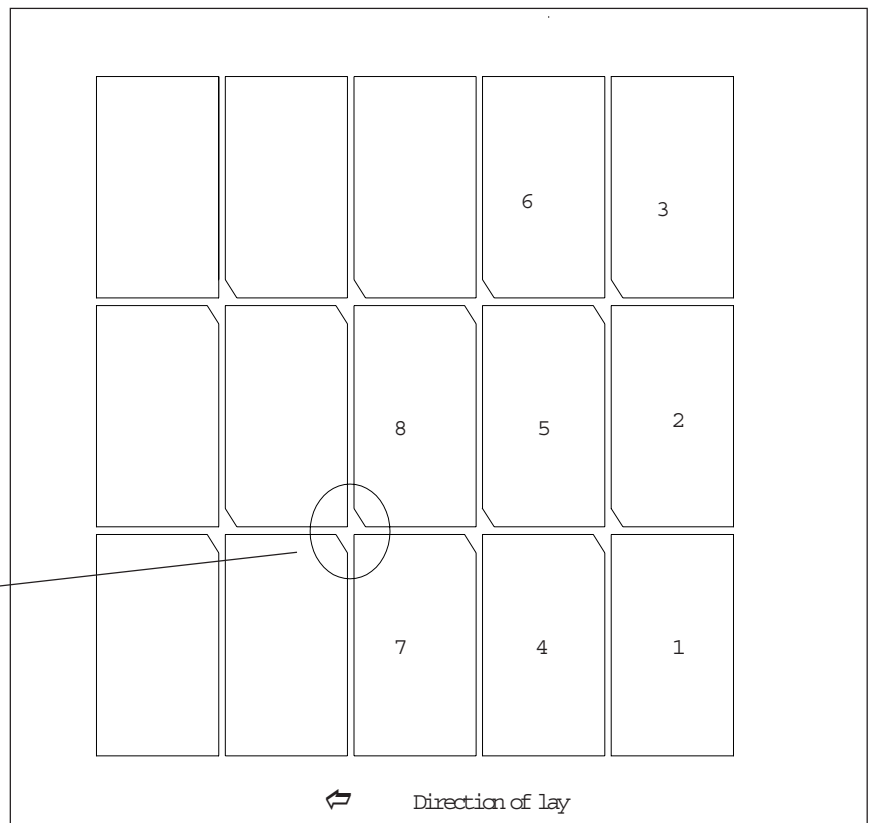
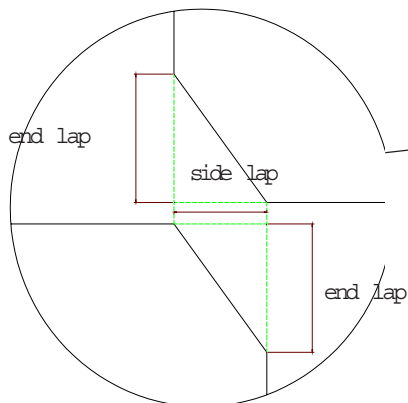
Side lap is 90 mm.  
End lap is min.100 mm.



## Laying the panels

Façade cladding should start from one end of the building at the bottom level rising vertical rows, one panel wide, from the bottom to the top of the façade.

The mitring plan depends on the direction of lay.



Mitring plan and installation sequence for the direction of lay - right to left.

Installation instructions

**Setting out plan**

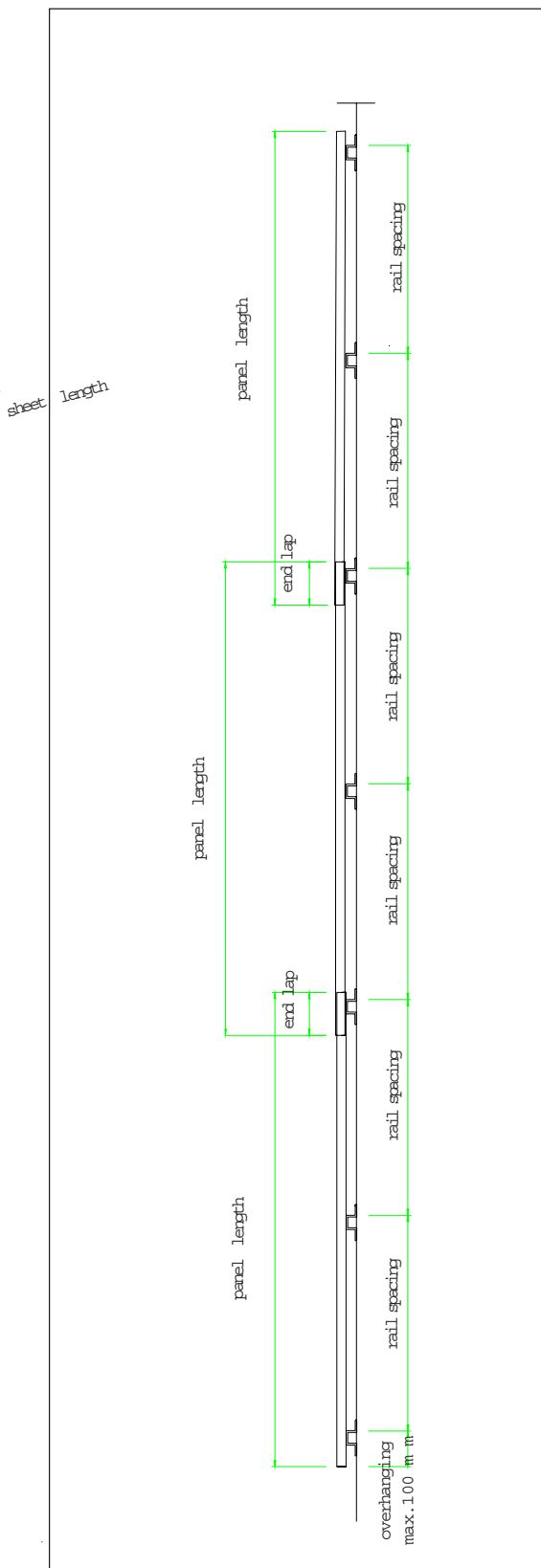
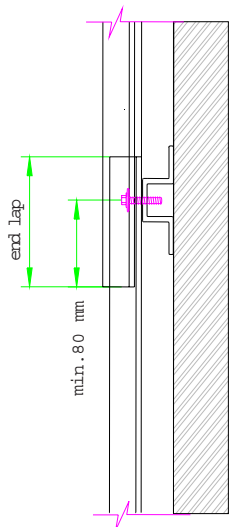
Corrugated panels Profile 8 can be screwed onto load-bearing rails made of steel or wood.

Before sheeting is commenced the structure should be checked to ensure that the rails are plane, correctly spaced and securely fixed. Allowable deflection ratio is L/300 between supports and has to be respected for the whole façade construction.

The position of the panels should be properly marked on the surface with the use of stringline.

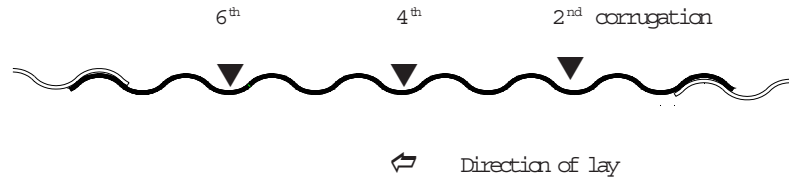
Rail spacing depends on the façade height, the length of the panels and the end lap, the detail at the top and at the bottom of the façade. Where the façade height does not accommodate an exact number of horizontal panel courses, at least one course of corrugated panels will have to be cut to size.

Location - specific wind exposures and all the relevant by-laws must be considered when establishing type and spacing of sub framing and fixing methods. For non exposed façades of the building heights up to 8 m the rail spacing for corrugated panel Profile 8 façade should be maximum 1200 mm.



## Fixing instructions - general guidance

Required number of screws per panel should be determined taking into account wind load that depends on the location of a building and height of building above ground, position the panel on the façade and load-bearing strength of one fastener.



## Relative position and location of fixing

Normally three screws per rail per panel are required. The correct position of the screws is in the bottom of the 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> corrugation of the panel.

## Panel fixing method

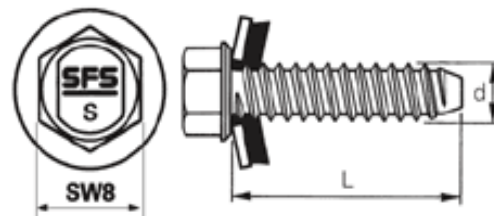
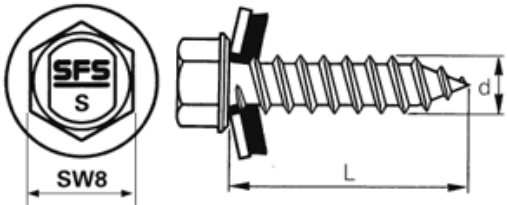
ESAL warranty only applies if panels EFASAL are fastened with screws supplied by ESAL.

## Fixing

All fixing holes should be drilled, not punched with diameter of 10 mm. Care must be taken to ensure that drills are kept perpendicular to the surface of the panels. We recommend to use power tools with depth gauge. Predrilling of sub framing is mandatory. The pilot hole diameter in the framing depends on the thickness of the rails, has to comply with SFS's instructions.

### Fastening into timber and steel up to 3 mm thick

### Fastening into steel 3.1 mm and above



TDA -S - S19 - 6,5 X 51 mm (39 mm)  
TDA -S - S19 - 6,5 X 64 mm (52 mm)

Fastener  
Austenitic stainless steel, grade 304

Washer  
Stainless steel, grade 304  
with vulcanised EPDM



TDB -S-S19- 6,3 x 38 mm (28 mm)  
TDB -S-S19- 6,3 x 45 mm (35 mm)

Fastener  
Austenitic stainless steel, grade 304

Washer  
Stainless steel, grade 304  
with vulcanised EPDM

Type	diameter washer	thread diameter	overall length	effective thread length (KL)
TDA -S - S19	- 6,5	x	38 mm	( 26 mm)

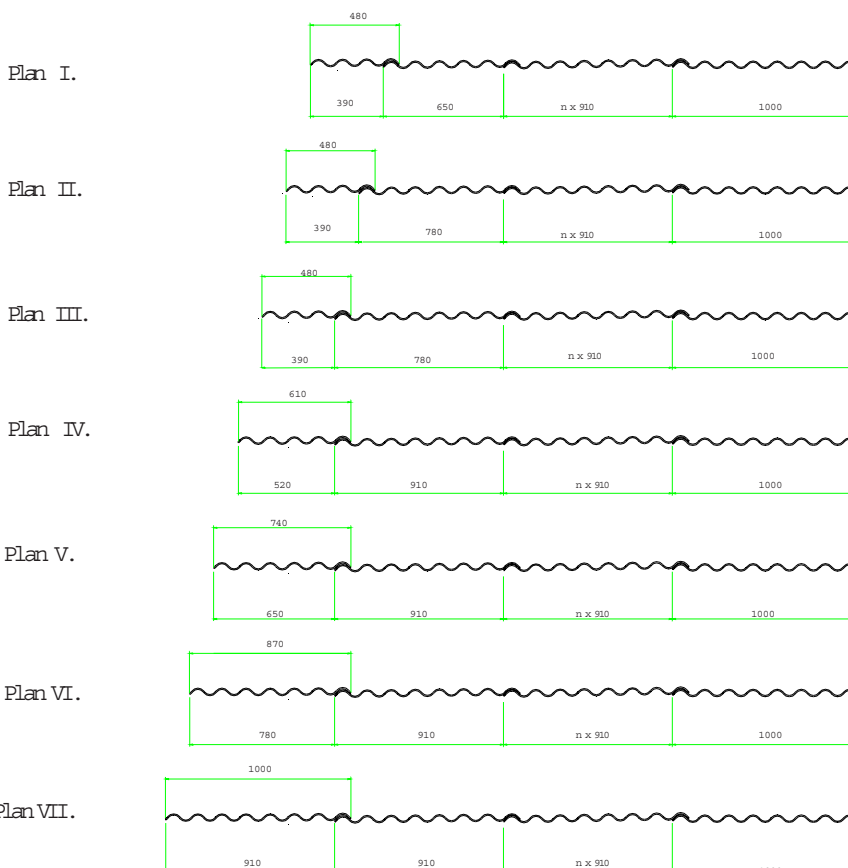


### Guideline on estimating material quantities

The number of sheets in one horizontal row is defined in the table below for façade up to 17 m wide. The required number of panels for wider façade is simply calculated taking into account that one net covering width of the panel is 910 +/- 2 mm.

Number of panels in one horizontal							
row	Plan I.	Plan II.	Plan III.	Plan IV.	Plan V.	Plan VI.	Plan VII.
2	1130	1260	1390	1520	1650	1780	1910
3	2040	2170	2300	2430	2560	2690	2820
4	2950	3080	3210	3340	3470	3600	3730
5	3860	3990	4120	4250	4380	4510	4640
6	4770	4900	5030	5160	5290	5420	5550
7	5680	5810	5940	6070	6200	6330	6460
8	6590	6720	6850	6980	7110	7240	7370
9	7500	7630	7760	7890	8020	8150	8280
10	8410	8540	8670	8800	8930	9060	9190
11	9320	9450	9580	9710	9840	9970	10100
12	10230	10360	10490	10620	10750	10880	11010
13	11140	11270	11400	11530	11660	11790	11920
14	12050	12180	12310	12440	12570	12700	12830
15	12960	13090	13220	13350	13480	13610	13740
16	13870	14000	14130	14260	14390	14520	14650
17	14780	14910	15040	15170	15300	15430	15560
18	15690	15820	15950	16080	16210	16340	16470
19	16600	16730	16860	16990	17120	17250	17380
20	17510	17640	17770	17900	18030	18160	18290

**Important**  
Minimum panel width is 4 corrugations.



## Processing corrugated panels Profile 8 at the fabricators shop or on the building site

Cutting to size, mitring and pre-drilling of the panels.

### Stacking

- Always stack the corrugated panels flat.
- Individual stacks should not be more than 500 mm high, with max. five stacks on the top of each other.
- Stack the panels always with the protective foam foil between the corrugated panels.
- Always lift the sheets off the stack.

### On site storage

Corrugated panels Profile 8 must be protected from dampness, weather and direct sunlight. If stored for more than two months, corrugated panels must be stacked between battens.

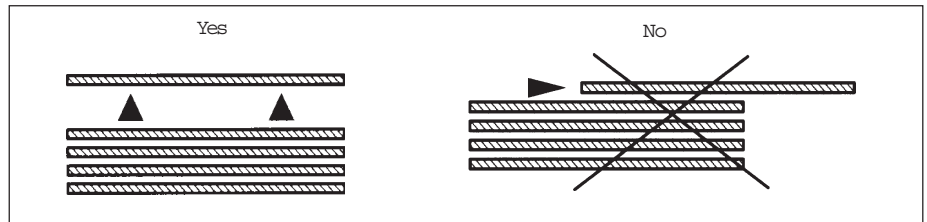


*Stacks must be stored out of dampness and direct sunlight. The polythene cap, the Profile 8 are supplies in, is not sufficient!*

### Cutting and drilling

To be carried out to the customer's specification in a suitably equipped workshop.

- Drills and saws  
Tool which produce fine dust must be avoided.
- Pre-drilling  
If panels need to be pre-drilled on site, observe the following steps:
  - Always work out of weather
  - Rig up a work bench
  - Use HHS or HM drills with the correct diameter.
  - Always drill perpendicularly to the panel surface



*When handling panels, lift by the ends only.*

- Use a jig-saw with suitable blade for cutouts.
- Cutting to size  
On site cutting should be executed with a FESTO circular saw with hard metal blade, straight edge and dust-extractor. Use a jig-saw with suitable blade for cutouts.

### Cleaning procedures

- Dust from drilling and cutting must be removed immediately.
- Dry dust  
to be removed with a vacuum cleaner or with a clean, dry cloth.
- Wet dust  
Results in staining of the panels surface; it must be removed immediately, using plenty of water and a sponge or a soft brush. Keep a vinegar-based cleaner ready for spot cleaning.

### Preliminaries

During the installation of corrugated façade panels Profile 8 some dust from drilling, cutting and mitring, as well as dirt from scaffolding and from the air will settle on the cladding. These deposits may consist of coarse grainy and/or fine dusty particles. Calcium-based particles convert to water insoluble calcium carbonate after a short exposure to humidity and carbon dioxide. If it should be attempted to clean such stains with dry method, both the coarse and the fine particles, and calcium carbonate will spread over the cladding, leave a whitish veil on the surface and scratch the coating as well.

For this reasons cleaning of corrugated panels Profile 8 with a dry method is not recommended.

### Cleaning of newly installed cladding

Calcium-based stains

1. Apply a mist spray of cleaning vinegar (9.5%) to the stained surface, by using a garden sprayer. Prevent cleaning liquid from contaminating soil and ground water.  
(Note: cleaning liquid must not spill onto unprotected metal surfaces).
2. Allow to react a few minutes but do not let dry out.
3. Use a water blaster to rinse the cladding with clean cold water. Working pressure 40- 80 bar, the pressure level must be tested on an inconspicuous part of the cladding.
4. Repeat steps 1 to 3 on obstinate stains.

Non calcium-based stains

Use water water blaster to thoroughly wash down the cladding with clean cold water. Working pressure 40- 80 bar, the pressure level must be tested on an inconspicuous part of the cladding.

### Safety at work

*Always observe the relevant provisions of the Health and Safety at Work legislation currently in force.*

Installation instructions

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