



EFASAL

Corrugated panels Profile 8
for façade cladding EFASAL

Installation instructions

December 2008

ADVANTAGES

Installation on ventilated façade

Remarkable façade panels for elegant buildings with high-end architecture

Worldwide most innovative production technology for base sheets and coloration

Outstanding quality

Long term colour fastness and consistency

Designed to match Swisspearl® panels

High resistance to severe weather conditions and frost

Non-flammable

Wide support and services for the planners and installers, also for individual solutions

Nearly maintenance free

Environmentally friendly, 100 % recyclable

COLOUR RANGE

Dark Grey, Vulcanit F+ 6512

Grey, Vulcanit F+ 6326

Brown, Broncit F+ 2012

Red, Koralit F+ 1325

General information

Corrugated panels EFASAL Profile 8 is environmentally friendly fibre-cement, manufactured from Portland cement and water, reinforced with natural and synthetic fibres.

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, 2500 mm and 2800 mm. Corrugated panels can be supplied also in project specific lengths up to 3000 mm.

Project specific ordering - colour

The characteristics of the raw materials determine properties and appearance of fibre-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

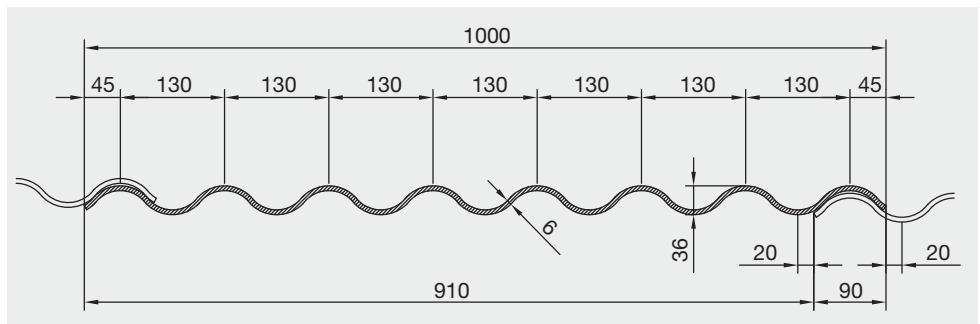
Local specific wind exposures, the bulk/dimensions of a building and all the relevant by-laws must be considered when establishing type and spacing of sub-framing and fixing method. Design wind loads (both positive and negative) must distinguish between normal wall areas and those adjacent to corners 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 profiles 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 these installation instructions correspond for non exposed façades of building heights up to 8 m (wind load 0,9 kN/m²).

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.

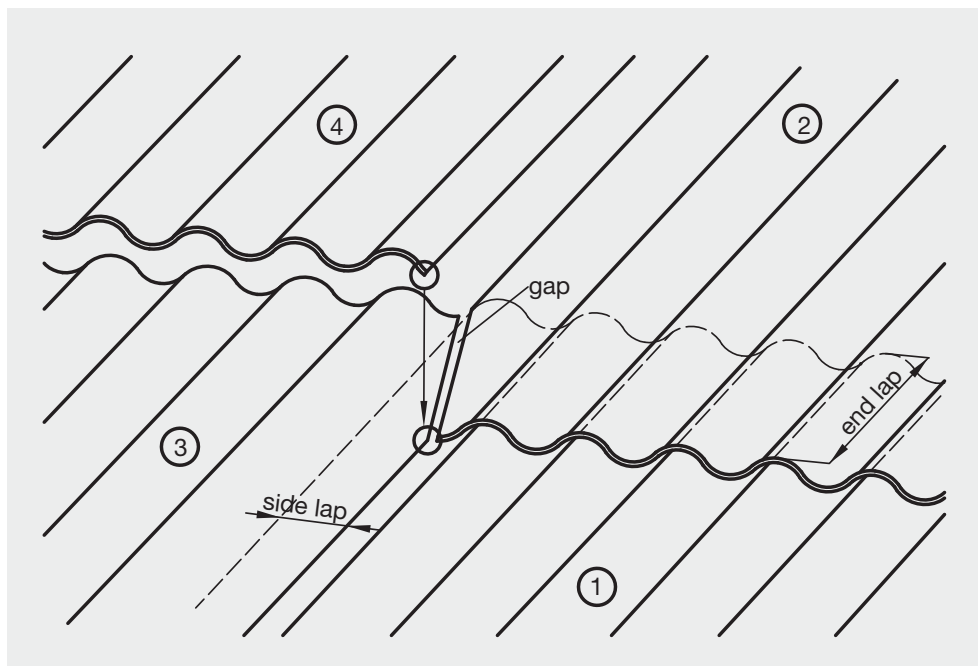
Mitring

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.



Setting

Setting out plan

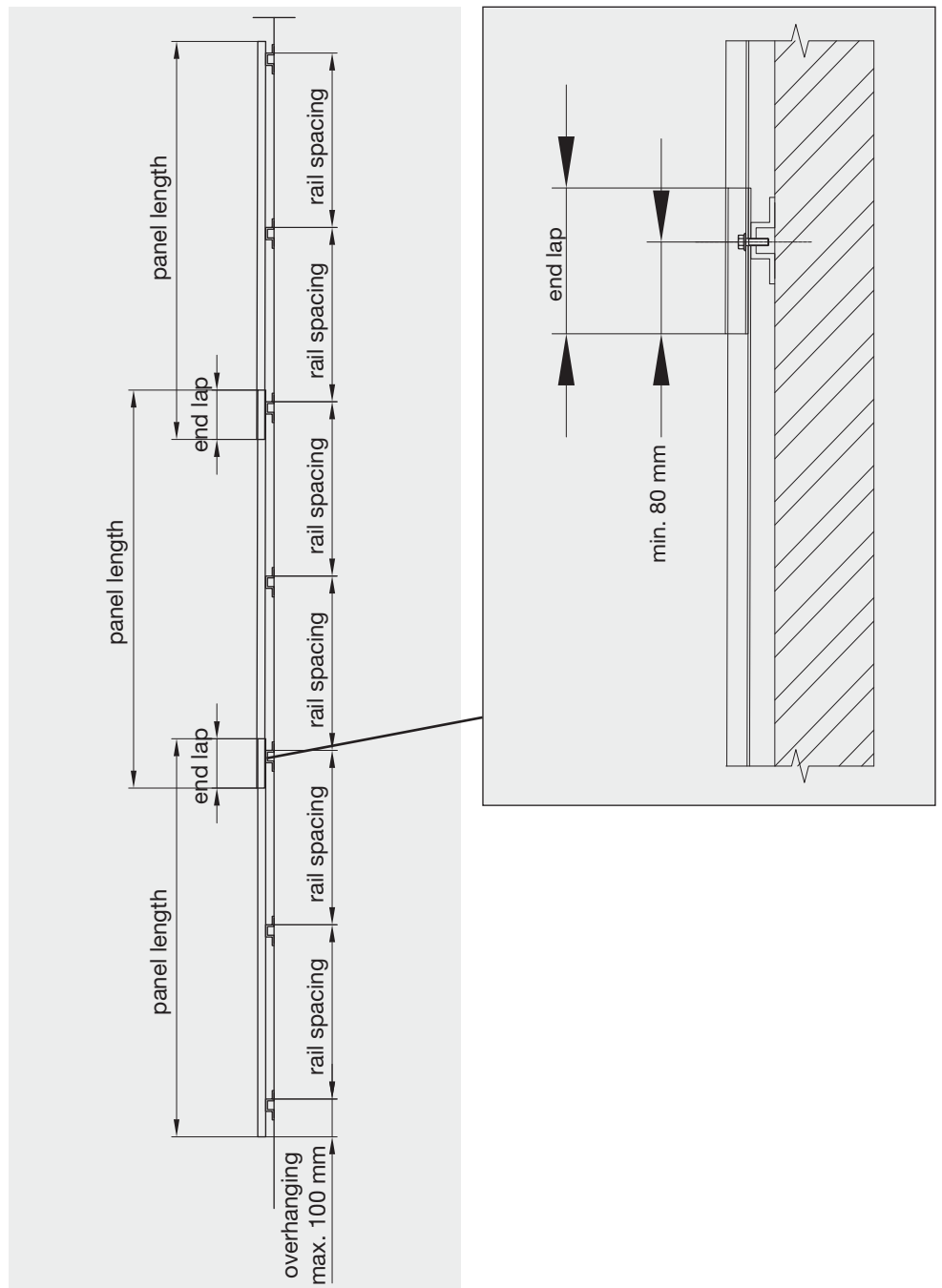
Corrugated panels Profile 8 can be screwed onto load-bearing rails made of steel or wood.

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 string line.

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.

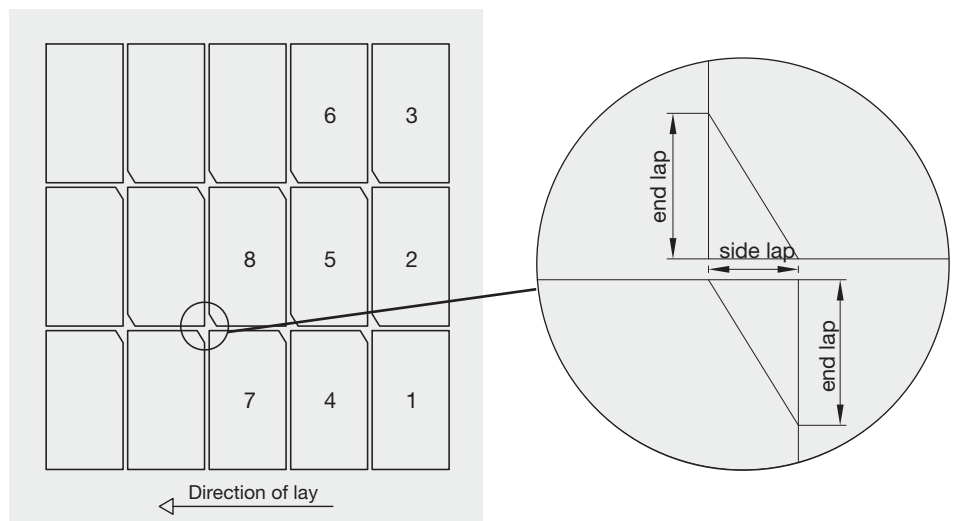


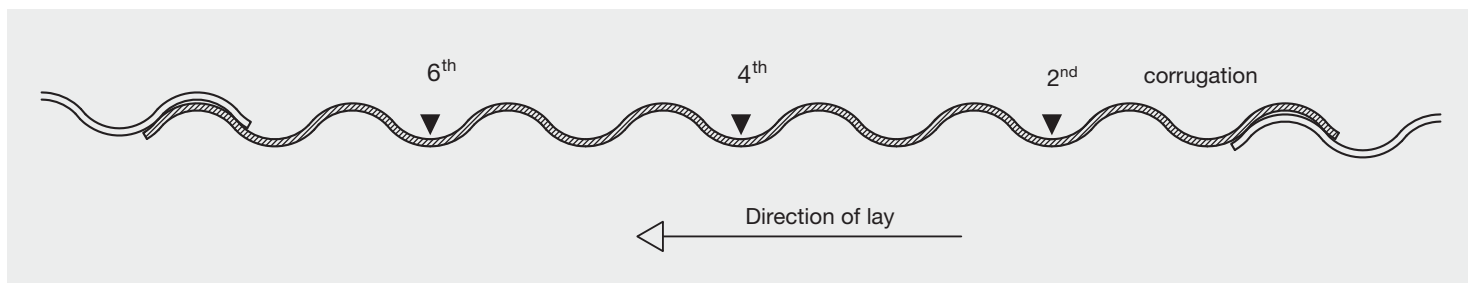
Laying the panels

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





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 2nd, 4th and 6th corrugation of the panel.

Panel fixing method

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

Fixing

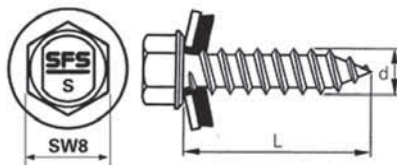
All fixing holes in the panels should be drilled with diameter of 10 mm. Care must be taken to ensure that drills are kept perpendicular to the surface of the panels. We recommend to use power tools with depth gauge. Predrilling of sub framing is mandatory. The pilot hole diameter in the framing depends on the thickness of the rails.

Technical information TD-S

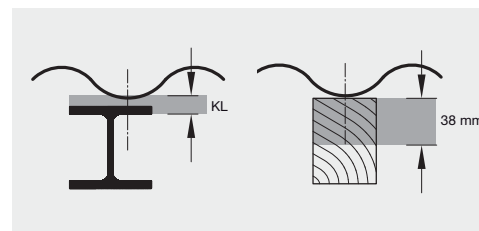
Fastening into timber and steel up to 3 mm thick
TDA-S



TDA-S-S19-6.5x51 mm (KL=39 mm)
TDA-S-S19-6.5x64 mm (KL=52 mm)



Effective thread length KL (mm)

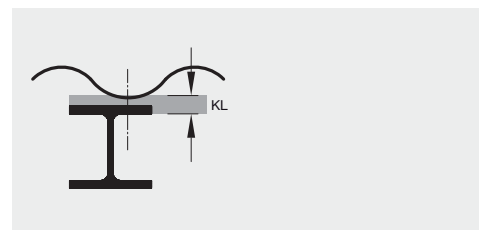
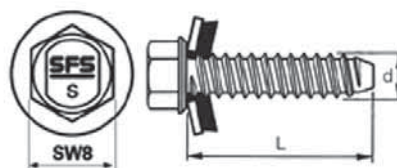


Determining the overall fastener length L: Thickness of all the materials fastened KL + 12 mm

Fastening into steel 3.1 mm and above
TDB-S



TDB-S-S19-6.3x38 mm (KL=28 mm)
TDB-S-S19-6.3x45 mm (KL=35 mm)



Determining the overall fastener length L: Thickness of all the materials fastened KL + 12 mm

Material:

Fastener: TD-S: Austenitic stainless steel, grade 304
(European Standard 1.4301)

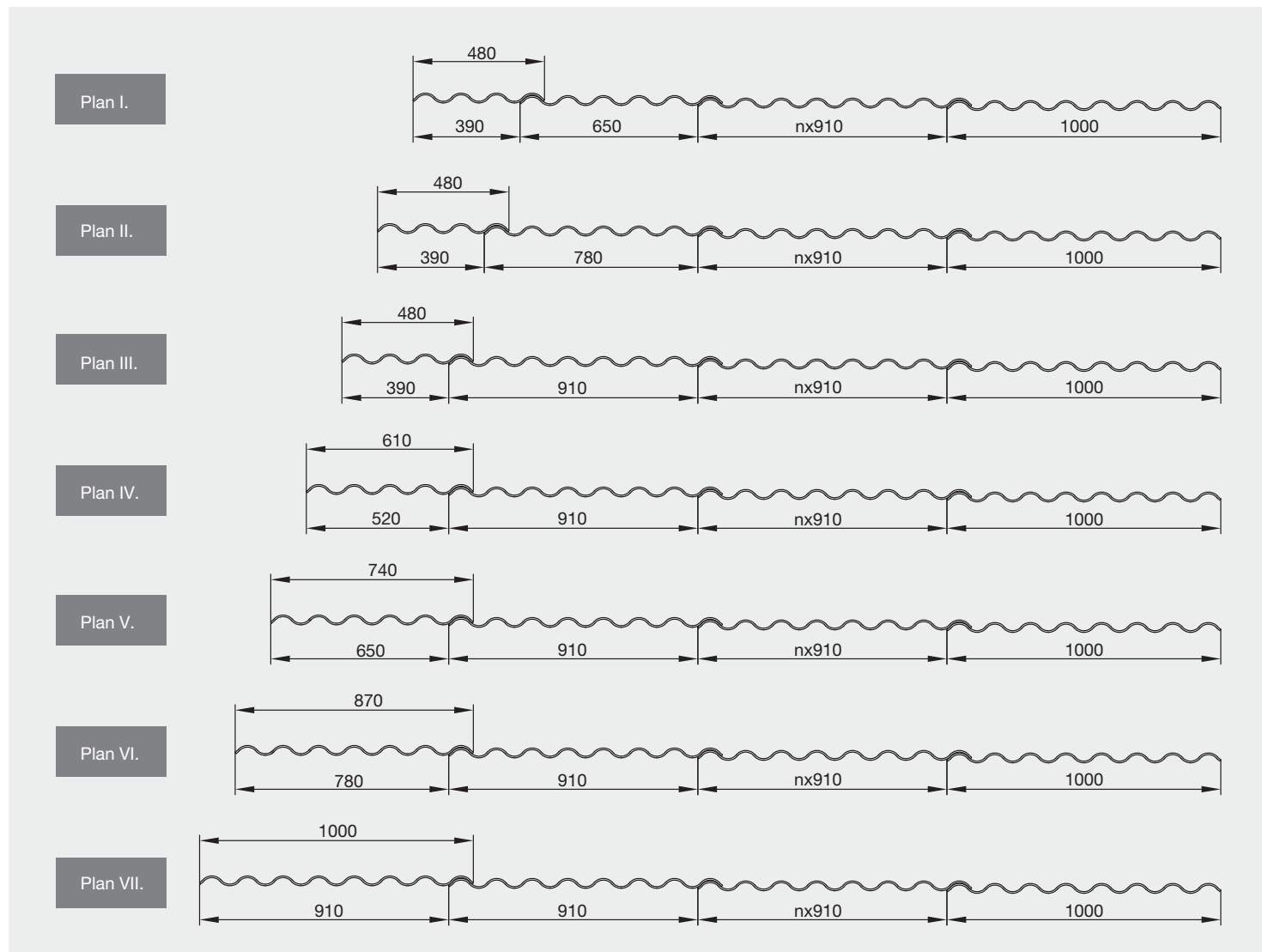
Washer: S = Stainless steel, grade 304 with vulcanised EPDM

Guideline on estimating material quantities

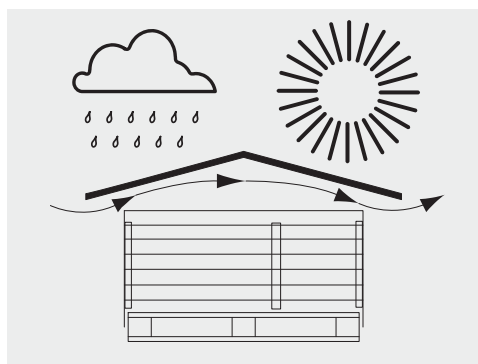
The number of sheets in one horizontal row is defined in the table below for façade up to 17 m wide. The required number of panels for wider façade is simply calculated taking into account that one net covering width of the panel is 910 +/- 2 mm.

Minimum panel width is four corrugation

Number of panels in one horizontal row	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



Handling on site



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

On site storage

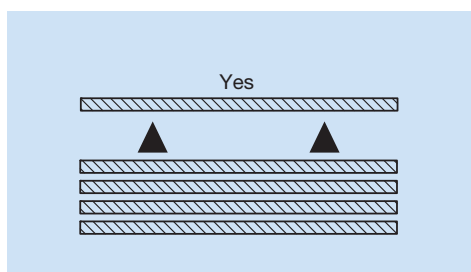
Corrugated panels Profile 8 must be protected from dampness, weather and direct sunlight under a roof. Where this is not possible, store under tarpaulin to avoid permanent staining. If panels stored for more than two months, corrugated panels must be stacked between battens.

Stacking

- Always stack the corrugated panels flat.
- Stack the panels always with the protective foam foil between the corrugated panels.
- Always lift the panels off the stack.

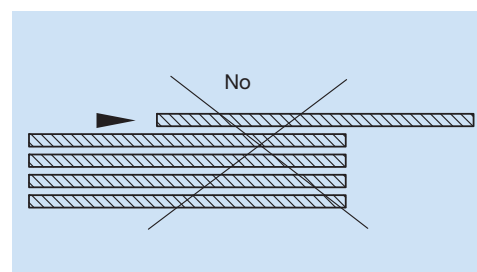
Fabricating corrugated panels at local fabricators or on building site

- Avoid tools which produce fine dust.
- Always work out of the weather.
- Ring up work bench (e. g. using saw horses and planks or pallets).
- Always drill/cut perpendicularly to the panel surface.
- Cut panel to size: use circular saw with straight edge and dust extraction. Blade diamond tipped or carbide metal blade with staggered teeth (trapezoidal/flat).
- Cut outs in panel: use jig saw with suitable blade.
- Dust from fabricating on site must be removed immediately.



Correct

Always lift panels off the stack.



Wrong

Panels shall not be pulled from the stack

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 and soft cloth or brush.
- 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.

Cleaning of newly installed cladding

Non calcium based stains

Use water blaster to thoroughly wash down the cladding with clean cold water. Working pressure 40 - 80 bars, the pressure level must be tested on an inconspicuous part of the 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 reacting a few minutes but do not let dry out.
 3. Use a water blaster to rinse cladding with clean cold water. Working pressure 40 - 80 bars, the pressure level must be tested on an inconspicuous part of the cladding.
 4. Repeat steps 1 to 3 on obstinate stains.
- Do not use glass cleaning detergents!
 - Never wash warm façades in direct sun light with alkaline or acid cleaners, as the detergent may cause irreversible stains.

Safety at work

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

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