



# Sapolis® roofing



*Technical Notebook*

**AT cold roof 5/15-2443**

**AT warm roof 5.2/19-2649\_VI**

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# Description

## • Product description

Sapisol® sandwich panels come in the form of **self-supporting** and insulating beams intended to form a **continuously insulated** roof support. They consist of a graphite expanded polystyrene core, glued between two **wooden boards offering a useful width of 205 mm**. The panels **can receive a finish**, paint or stain according to colour chart, in one or more coats according to shade.

## • Composition

### Sapisol®

Wood 20 mm or 27 mm  
Spruce

Graphited EPS

Wood 20 mm or 27 mm  
Spruce, Old-wood spruce,  
Larch, Oak, ...

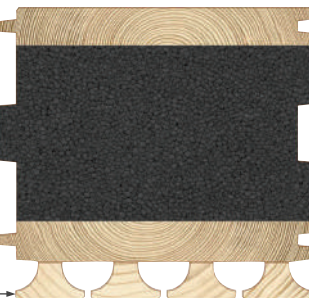


### Sapisol® acoustic facing

Wood 20 mm or 27 mm  
Spruce

Graphited EPS

Wood 20 mm or 27 mm  
Spruce, Oak, ...



The Sapisol® acoustic underside panel is available in 3 thicknesses :

- SP 108 mm
- SP 158 mm
- SP 200 mm



Composition of packages  
by slope



Curved installation - Profile n°2  
Grey saturator

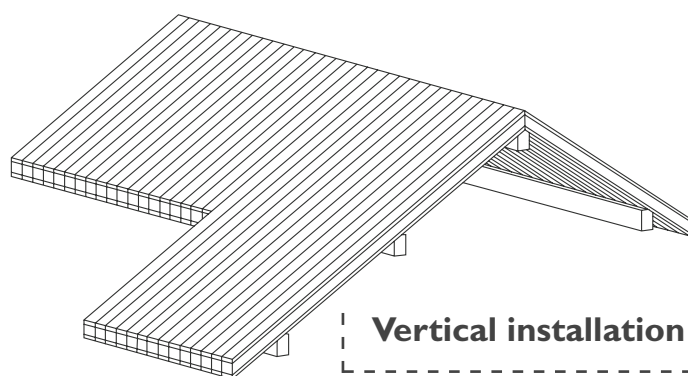


Use in refurbishment



# Applications

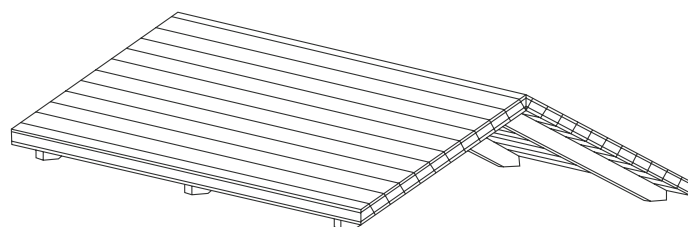
## New and refurbishment



**Vertical installation**



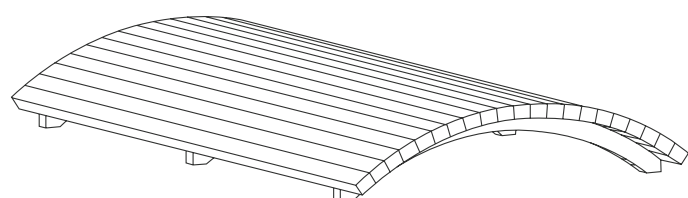
Spruce - Profile n°2 - Natural



**Horizontal installation**



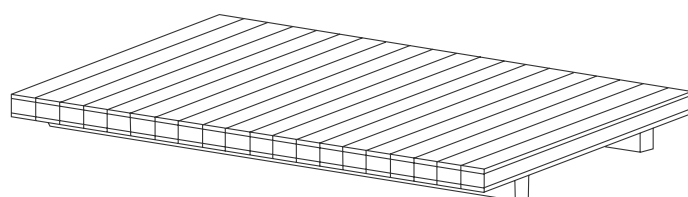
Spruce - Profile n°1  
2 coats of white stain



**Curved roof installation**



Spruce - Profile n°2  
Colourless stain



**Flat roof installation**



Green roof support and ceiling



# Advantages

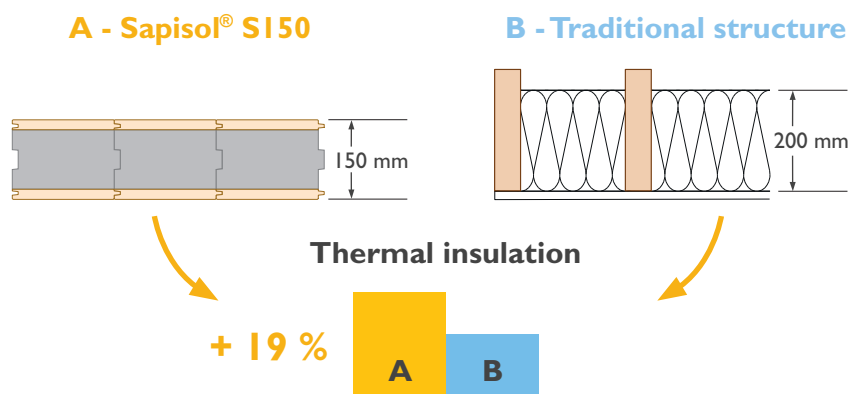
- Insulation without any thermal bridge
- No deformation and doesn't settle over time (**reliability**)
- Large span between supports (**structural saving**)
- Lightness and speed of installation (**carried by hand**)
- Custom manufacturing and cutting (**no waste on site**)
- Easy assembly of panels (**without joint, without glue**)
- Clearance of volumes (**gain of living space**)
- Wood soffit fully finished in factory (**see colour chart p14**)

# Our experience

The references for Sapisol® relate to more than 35 years of experience on all continents : Europe, North America, South America, Africa (...), in the islands : Reunion Island, Tahiti, Canary Islands, (...) and in any type of buildings : residential houses, leisure, industrial, sports, maturing cellar, wine cellar, swimming pool, school, multipurpose room, library, social center, church, hotel restaurant... and at altitudes from 0 to 3000 m including Antarctica.

# Thermal insulation

Sapisol® assembled by triple tongue and groove, avoids thermal bridges. It insulates both cold and warm. Insulation coefficient (U) of Sapisol® SI50 (27 mm wood + 96 mm polystyrene + 27 mm wood) is 19% higher than a traditional structure with 200 mm of carefully laid rock wool (test result CSTB).



# Safety of installers

Sapisol® panel constitutes a real solid plate on which people can work in complete safety.



Larch - Profile n°1  
Colourless stain



Installation of a Sapisol® roof



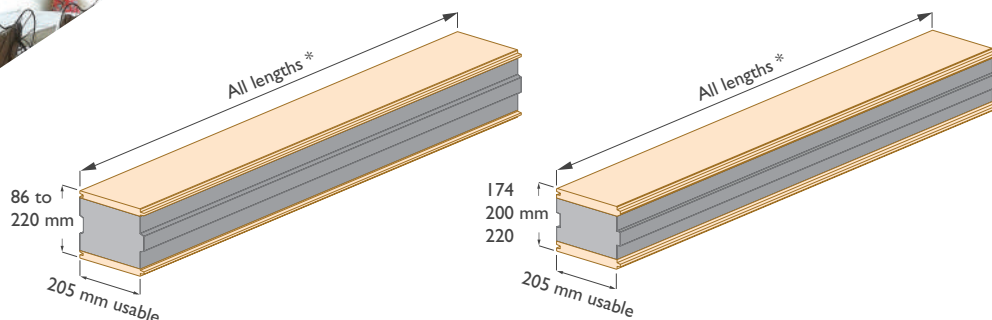
Installation of a Sapisol® roof

# Dimensions

2 families

20 mm  
thick boards

27 mm  
thick boards



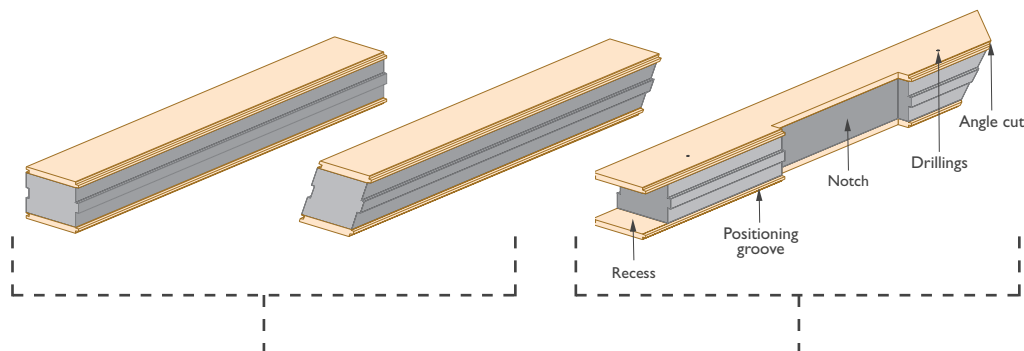
\* All lengths = standard lengths up to 13.5 ml (possible up to 17 ml)

Sapisol® is supplied either with :

• Square cut

• Angle cut

• Various milling



Included in standard price  
According to your cutting list

Service on demand  
With installation plans

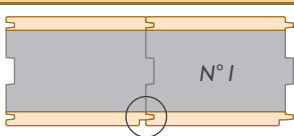
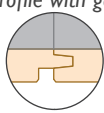

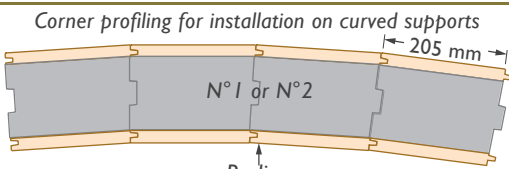
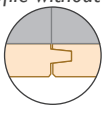
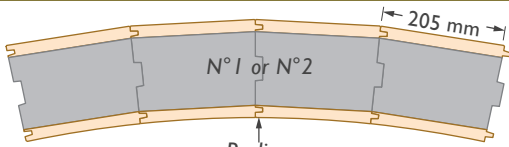


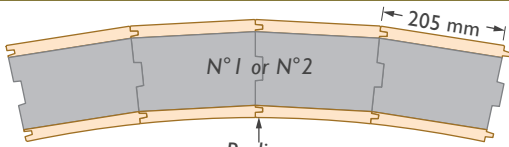



Spruce - Profile n° 1  
Chestnut stain



Spruce - Profile n° 2  
Sanded - White paint









Profile type	SAPISOL® type		Visible finish side
 N°1	 Profile without gap	 S 86 to S 220 f S 100 to S 220 e	SANDED (standard) or BRUSHED (on demand)
 N°1 or N°2	 Profile without gap		
 N°1 or N°2	 Profile without gap	 EPS : in touch Wood : expansion gap	PLANED only
 N°1 or N°2	 Profile without gap	Underside machined according to the radius of curvature - Recommended for radius < 1.50 m S 86 to S 220 f S 100 to S 220 e (The top side can also be machined according to the radius)	









# Characteristics

## • Sapolis® with board thickness 20 mm (Dwelling)

Total thickness type (mm)		S 86	S 106	S 136	S 160	S 186	S 220 f
							
Composition (mm)	spruce	20	20	20	20	20	20
	graphite-enhanced polystyrene subject to ACERMI - Density : 25 kg/m³ minimum	46	66	96	120	146	180
	spruce	20	20	20	20	20	20
Usable width (mm)		205	205	205	205	205	205
Length	(Available in standard length of 5,50 clear ml with tongue and groove at the ends)	All lengths within transportable limits					
		yes	no	yes	yes	yes	no
Weight (kg/m²)		18,70	19,3	20,20	20,90	21,70	22,70
Temperature values $U_c$ (W/m² x K)   $R^*$ (m² x K/W)		0,50   1,79	0,38   2,44	0,28   3,40	0,23   4,18	0,19   5,02	0,16   6,11
Coefficient $U_c$   $R^*$ with acoustic underlay	35 mm	0,36   2,59	0,29   3,23	0,23   4,20	0,19   4,97	0,17   5,81	0,14   6,91
	60 mm	0,31   3,15	0,25   3,80	0,20   4,76	0,17   5,54	0,15   6,38	0,13   7,48
Reaction to fire classification		D-s1, d0					
Hot-dip galvanized nails (with or without lifting)		5,1 x 150 mm	5,5 x 180 mm	6 x 200 mm	7 x 225 mm	7 x 250 mm	7 x 300 mm
Carpentry screws (with lifting or without)		8 x 160 mm	8 x 180 mm	8 x 220 mm	8 x 240 mm	8 x 260 mm	8 x 300 mm

\* Doesn't take account of surface thermal resistances.

## • Sapolis® with board thickness 27 mm (with B-s1, d0)

Total thickness type (mm)		S 100	S 120	S 150	S 174	S 200	S 220 e
							
Composition (mm)	spruce	27	27	27	27	27	27
	graphite-enhanced polystyrene subject to ACERMI - Density : 25 kg/m <sup>3</sup> minimum	46	66	96	120	146	166
	spruce	27	27	27	27	27	27
Usable width (mm)		205	205	205	205	205	205
Length		All lengths within transportable limits					
Weight (kg/m <sup>2</sup> )		24,60	25,20	26,10	26,80	27,60	28,20
Temperature values $U_c$ (W/m <sup>2</sup> x K)   $R^*$ (m <sup>2</sup> x K/W)		0,48   1,90	0,36   2,54	0,27   3,51	0,22   4,29	0,19   5,13	0,17   5,77
Coefficient $U_c$   $R^*$ with acoustic underlay	35 mm	0,34   2,69	0,28   3,34	0,22   4,31	0,19   5,08	0,17   5,92	0,15   6,57
	60 mm	0,29   3,26	0,24   3,91	0,20   4,88	0,17   5,65	0,15   6,49	0,14   7,13
Reaction to fire classification		D-s1, d0 (B-s1, d0 on demand)					
Hot-dip galvanized nails (with or without lifting)		5,5 x 180 mm	6 x 200 mm	7 x 225 mm	7 x 250 mm	7 x 300 mm	7 x 300 mm
Carpentry screws (with or without lifting)		8 x 180 mm	8 x 200 mm	8 x 240 mm	8 x 260 mm	8 x 280 mm	8 x 300 mm

\* Doesn't take account of surface thermal resistances.

The thermal resistance measured is significantly higher than the result of the purely theoretical calculation.

The Sapolis® process is without thermal bridge and without setting.



# Spans and loads



## • Sapolis® with board thickness 20 mm

3 supports (A) 2 supports (B) roof overhangs (C)		Sapolis® with 20 mm boards																	
		S86 or SPI08			S106			S136 or SPI58			S160			S186			S220 f		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Distributed downward load (daN/m²)	100	4,00	3,20	1,00	4,50	3,60	1,20	5,00	4,00	1,40	5,50	4,40	1,60	6,00	4,80	1,80	6,00	4,80	1,80
	150	4,00	3,20	1,00	4,50	3,60	1,20	5,00	4,00	1,40	5,50	4,40	1,60	6,00	4,80	1,80	6,00	4,80	1,80
	200	3,60	2,90	0,90	4,00	3,20	1,20	4,45	3,55	1,30	5,10	4,10	1,50	5,90	4,70	1,80	5,90	4,70	1,80
	250	3,30	2,65	0,85	3,60	2,90	1,10	4,05	3,25	1,20	4,70	3,75	1,40	5,40	4,30	1,60	5,40	4,30	1,60
	300	3,00	2,40	0,80	3,25	2,60	1,00	3,70	2,95	1,10	4,30	3,45	1,30	4,90	3,90	1,50	4,90	3,90	1,50
	350	2,75	2,20	0,75	3,00	2,40	0,90	3,40	2,70	1,00	3,90	3,10	1,20	4,40	3,50	1,30	4,40	3,50	1,30
	400	2,60	2,10	0,70	2,80	2,25	0,85	3,20	2,55	0,95	3,70	2,95	1,10	3,80	3,05	1,15	3,80	3,05	1,15
	500	2,40	1,90	0,65	2,60	2,10	0,80	3,00	2,40	0,90	3,30	2,65	1,05	3,40	2,70	1,10	3,40	2,70	1,10
	600	2,10	1,70	0,60	2,40	1,90	0,75	2,80	2,25	0,80	3,10	2,50	1,00	3,20	2,55	1,05	3,20	2,55	1,05
	700	1,90	1,50	0,50	2,20	1,75	0,70	2,50	2,00	0,70	2,80	2,25	0,90	3,00	2,40	1,00	3,00	2,40	1,00
	750	1,70	1,35	0,45	2,00	1,60	0,55	2,30	1,85	0,65	2,50	2,00	0,80	2,80	2,25	0,90	2,80	2,25	0,90

## • Sapolis® with board thickness 27 mm

3 supports (A) 2 supports (B) roof overhangs (C)		Sapolis® with 27 mm boards																	
		S100			S120			S150			S174 or SP200			S200			S220		
		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Distributed downward load (daN/m²)	100	5,30	4,25	1,30	5,80	4,65	1,50	6,00	4,80	1,70	6,00	4,80	1,80	6,00	4,80	2,00	6,00	4,80	2,00
	150	4,35	3,50	1,15	4,75	3,80	1,30	5,35	4,30	1,60	5,75	4,60	1,75	6,00	4,80	1,90	6,00	4,80	1,90
	200	3,75	3,00	1,00	4,10	3,30	1,15	4,60	3,70	1,40	5,30	4,25	1,60	6,00	4,80	1,80	6,00	4,80	1,80
	250	3,35	2,70	0,95	3,70	2,95	1,00	4,15	3,30	1,25	4,80	3,85	1,45	5,50	4,40	1,65	5,50	4,40	1,65
	300	3,10	2,50	0,85	3,35	2,70	0,95	3,80	3,05	1,15	4,40	3,50	1,30	5,00	4,00	1,50	5,00	4,00	1,50
	350	2,85	2,30	0,80	3,10	2,50	0,90	3,50	2,80	1,05	4,00	3,20	1,20	4,50	3,60	1,35	4,50	3,60	1,35
	400	2,65	2,10	0,75	2,90	2,30	0,85	3,30	2,65	1,00	3,60	2,90	1,10	3,90	3,10	1,20	3,90	3,10	1,20
	500	2,45	1,95	0,70	2,70	2,15	0,80	3,10	2,50	0,95	3,40	2,70	1,05	3,70	2,95	1,15	3,70	2,95	1,15
	600	2,25	1,80	0,65	2,50	2,00	0,75	2,90	2,30	0,90	3,20	2,55	1,00	3,50	2,80	1,10	3,50	2,80	1,10
	700	2,10	1,70	0,60	2,30	1,85	0,70	2,70	2,15	0,85	3,00	2,40	0,95	3,20	2,55	1,05	3,20	2,55	1,05
	750	1,90	1,50	0,55	2,10	1,70	0,65	2,50	2,00	0,80	2,80	2,25	0,90	3,00	2,40	1,00	3,00	2,40	1,00

Maximum admissible span (m) in descending loads (cover + normal snow according to NV 65 modified - February 2009).



# Spans and loads

## • Span verification procedure (example)

### Permanent loads (daN / m<sup>2</sup>)

- Mechanical tiles :	45 kg/m <sup>2</sup>
- Battens and counterbattens :	4 kg/m <sup>2</sup>
- Wood fiber 35 mm :	9 kg/m <sup>2</sup>
- Various :	5 kg/m <sup>2</sup>

**Total** **63 kg/m<sup>2</sup>**

Roof slope 31°

### Calculation of the load per m<sup>2</sup> with slope

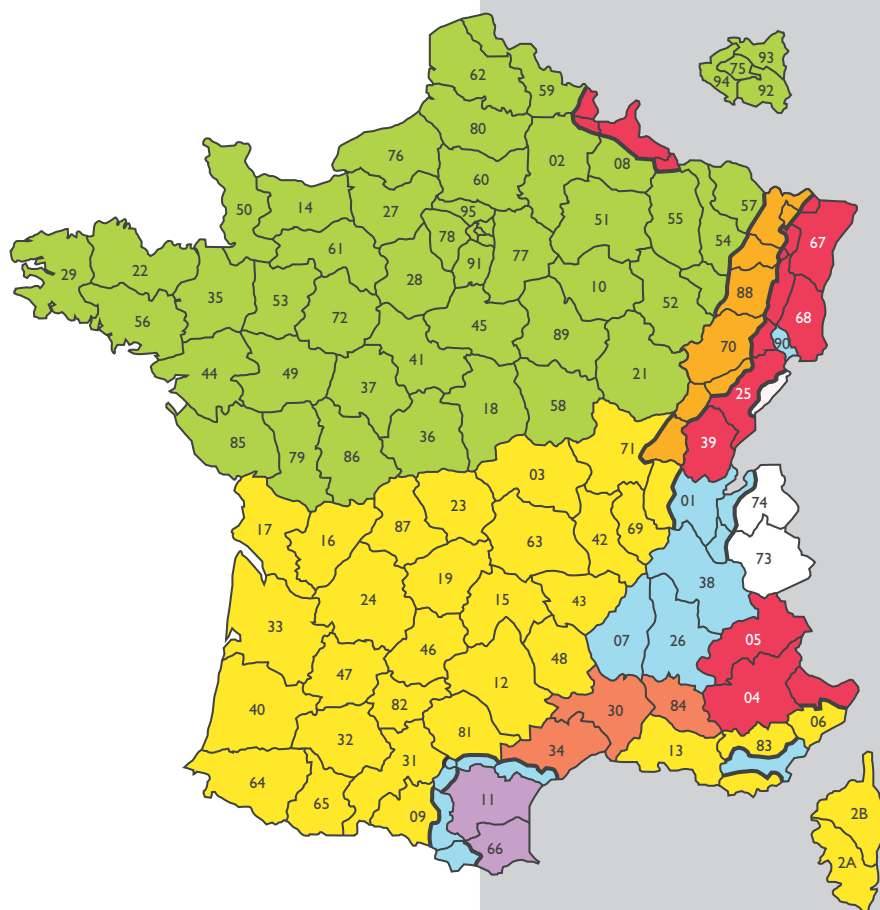
Permanent load + (normal snow load Proj. Horiz. x cos slope °)  
 63 daN/m<sup>2</sup> + (220 daN/m<sup>2</sup> x cos 31°)  
 63 + (220 x 0,857) = **251 daN/m<sup>2</sup>**

### Reading in table for an S186 :

- A** - Installation on 3 supports, 5.40 m span or 10.80 m beams to be laid
- B** - Installation on 2 supports, 4.30 m span or beams of 4.30 m maximum
- C** - Overhang 1.60 m

Alti.	Zones							
	A1	A2	B1	B2	C1	C2	D	
200	35	50	50	70	55	70	90	115
250	40	50	50	70	60	70	90	120
300	45	50	55	70	65	70	90	125
350	50	60	70	70	70	95	130	
400	55	65	70	75	100	135		
450	60	70	80	105	140			
500	65	75	85	110	145			
550	78	88	98	123	158			
600	90	100	110	135	170			
650	103	113	123	148	183			
700	115	125	135	160	195			
750	128	138	148	173	208			
800	140	150	160	185	220			
850	153	163	173	198	233			
900	165	175	185	210	245			
950	178	188	198	223	258			
1000	190	200	210	235	270			
1050	203	213	223	248	283			
1100	215	225	235	260	295			
1150	228	238	248	273	308			
1200	240	250	260	285	320			
1250	253	263	273	298	333			
1300	265	275	285	310	345			
1350	278	288	298	323	358			
1400	290	300	310	335	370			
1450	303	313	323	348	383			
1500	315	325	335	360	395			

Normal snow loads according to NV 65 of February 2009  
 (§ 2.1-2.2-2.3) in horizontal projection



### Live loads (Snow, maintenance, climatic loads)

Location : Montlebon (25) → Region E

Altitude : 800 m → Snow load in horizontal projection 220 daN/m<sup>2</sup>

# Destination

## Dwelling

- SAPI SOL® with 20 mm or 27 mm boards
- Profile n°1 or n°2



Curved installation - White paint - 1 coat of primer and 1 coat of finish

## Buildings open to the public Multipurpose room - Sports building - Library ...

- SAPI SOL® with 27 mm boards
- Profile n°2
- With flame retardant stain B-s1, d0 \*

*Subject to the local regulations. \* B-s1, d0 The flame retardant treatment is carried out on request according to the category of the room with regard to fire risks.*



Spruce - Profile n°2 - Colourless stain B-s1, d0



## Industrial building

- SAPI SOL® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- If fire resistance required :  
27 mm board + Profile n°2 + flame retardant treatment B-s1, d0 \*

*\* B-s1, d0 Flame retardant treatment is carried out on request according to the category of the room with regard to fire risks.*



Industrial quality spruce - Profile n°2 - Colourless stain

## Winery

- SAPI SOL® with 20 mm or 27 mm boards
- Profile n°2

*The glue used is without pentachlorophenol  
Generally without any treatment.*

*For any use in a food environment, contact our technical services or your sales representative.*



Spruce - Profile n°2 - Sanded - Without treatment - Without finish





## Maturing cellar

- Sapolis® with 20 mm or 27 mm boards
- Profile n°2

The glue used is without pentachlorophenol.

Generally without any treatment or on request treatment carried out with product in aqueous phase :

1 layer class 2 (under green label) + 1 layer translucent finish to make the support inert (under green label).



## Office

- Sapolis® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- If required for fire resistance :  
27 mm board + Profile n°2 + flame retardant treatment \*

\* B-s1, d0 Flame retardant treatment is carried out on request according to the category of the room with regard to fire risks

Spruce - Profile n°2 - Brushed - B-s1, d0 - White



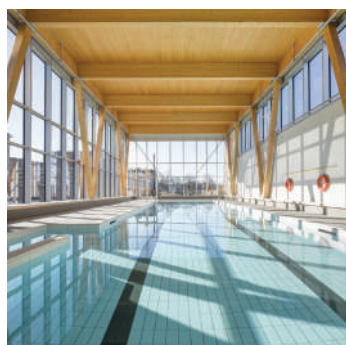
## Restaurant - Hotel

- Sapolis® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- B-s1, d0 with 27 mm boards + Profile n°2

\* B-s1, d0 Flame retardant treatment is carried out on request according to the category of the room with regard to fire risks.



Profile n°2 - Colourless



## Swimming pool

- Sapolis® with 20 mm or 27 mm boards
- Profile n°1 or n°2

Swimming pool : building considered at average humidity with appropriate ventilation (DTU 43, watertightness of annex roofs 1).

Prescription in the technical file of the TA - Art. 1.1 page 6.

Spruce - Profile n°2 - Colourless stain



## Place of worship

- Sapolis® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- B-s1, d0 with 27 mm boards + Profile n°2

\* B-s1, d0 Flame retardant treatment is carried out on request according to the category of the room with regard to fire risks.



Spruce - Profile n°2 - Sanded - Colourless stain B-s1, d0



# Sapisol<sup>®</sup> acoustic facing known as "Sapiphone"

## • The range

Ideal for buildings whose interior soundscape needs to be corrected (swimming pool, media library, library, restaurant, gym ...).






Sapisol<sup>®</sup> acoustic facing panel is available in 3 thicknesses

- SP 108 mm
- SP 158 mm
- SP 200 mm

Sabine absorption coefficient :  
**Sound absorption value**  
index  $\alpha_w = 0.25$

## • Characteristics

Models	SP 108	SP 158	SP 200
			
Wood + EPS + Wood (mm)	20+22+46+20	20+22+96+20	26+28+120+26
Usable width (mm)	205	205	205
Weight kg/m <sup>2</sup>	23.97	25.47	33.80
Theoretical thermal resistance R* (m <sup>2</sup> x K/W)	1.79	3.40	4.29
Coefficient theoretical insulation U <sub>c</sub> (W/m <sup>2</sup> x K)	0.50	0.28	0.22
Coefficient U <sub>c</sub> ; R* with acoustic underlay 35 mm	0.36 ; 2.59	0.23 ; 4.20	0.19 ; 5.08
Coefficient U <sub>c</sub> ; R* with acoustic underlay 60 mm	0.31 ; 3.15	0.20 ; 4.76	0.17 ; 5.65
Reaction to fire classification	D-s1, d0		D-s1, d0 (B-s1, d0 on demand)

\* Doesn't take into account the surface thermal resistances.

## • Load / span table



3 supports (A) 2 supports (B) roof overhangs (C)		SP 108			SP 158			SP 200		
		A	B	C	A	B	C	A	B	C
Distributed downward load (daN/m <sup>2</sup> )	100	4,00	3,20	1,00	5,00	4,00	1,40	6,00	4,80	1,80
	150	4,00	3,20	1,00	5,00	4,00	1,40	5,75	4,60	1,75
	200	3,60	2,90	0,90	4,45	3,55	1,30	5,30	4,25	1,60
	250	3,30	2,65	0,85	4,05	3,25	1,20	4,80	3,85	1,45
	300	3,00	2,40	0,80	3,70	2,95	1,10	4,40	3,50	1,30
	400	2,60	2,10	0,70	3,20	2,55	0,95	3,60	2,90	1,10

Permissible spans in meters.



Spruce - Acoustic profile  
Sanded - Grey Saturator



Oak - Acoustic profile  
Sanded - Natural



Spruce - Acoustic profile  
Sanded - B-s1, d0 - White



# Sapiliège®


## • Natural cork insulation

Cork is made of agglomerated cork oak bark granules. Cork is rot-proof, it doesn't fear rodents or termites. It's a good thermal and acoustic insulation material.

Cork agglomerate is electrically neutral and is difficult to ignite.

*Installation, appearance and finish are identical to Sapisol®*

## • Characteristics

Total thickness type (mm)		SL 136
		
Wood + Cork + Wood (mm)		20+96+20
Usable width (mm)		205
Length		All lengths
Weight (kg/m²)		39
Insulation coefficient $R^*$ ( $m^2 \times K/W$ )		2,40
Insulation coefficient $U_c$ ( $W/m^2 \times K$ )		0,39
Insulation coefficient $U_c$   $R^*$ with 35 mm wood fibre underlay		0,313   3,19
Insulation coefficient $U_c$   $R^*$ with 60 mm wood fibre underlay		0,253   3,76

\* Doesn't take into account surface thermal resistances.

## • Load / span table



Spruce - Profile n°2 - Sanded Natural

Placed on 3 supports



Sapiliège SL 136		
Placed on 3 supports		Spans A (m)
Distributed downward load (daN/m²)	100	4,70
	150	3,80
	200	3,20
	250	2,90
	300	2,60
	350	2,30

Maximum permissible spans (m) in descending loads.

\* placed on 2 supports = span A/1,25

\* roof overhang limited to 30% of the above table





# Finishes of the undersides

## • Wood species



Spruce



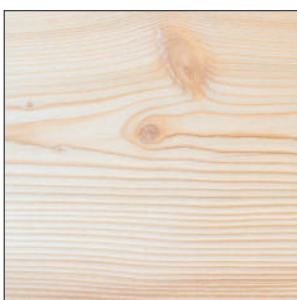
Spruce - Profile n°1 - Sanded - Natural



Spruce old-wood



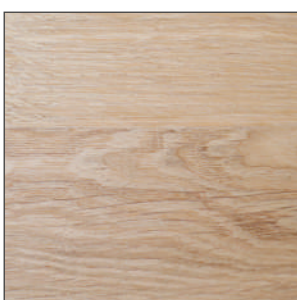
Spruce old-wood - Profile n°2 - Brushed - Natural



Larch



Larch - Profile n°2 - Sanded - Natural



Oak



Oak - Profile n°2 - Sanded - Chalk white



## • Textures



Sanded

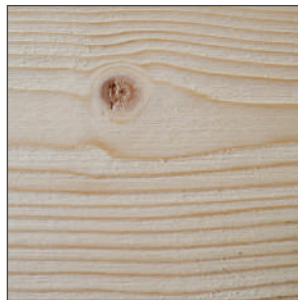


Brushed

## • Finishes



Natural



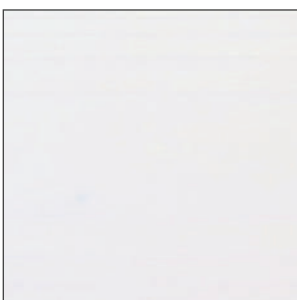
Colourless



Spread of flame



White stain



White paint



OTHERS COLOURS  
ON REQUEST

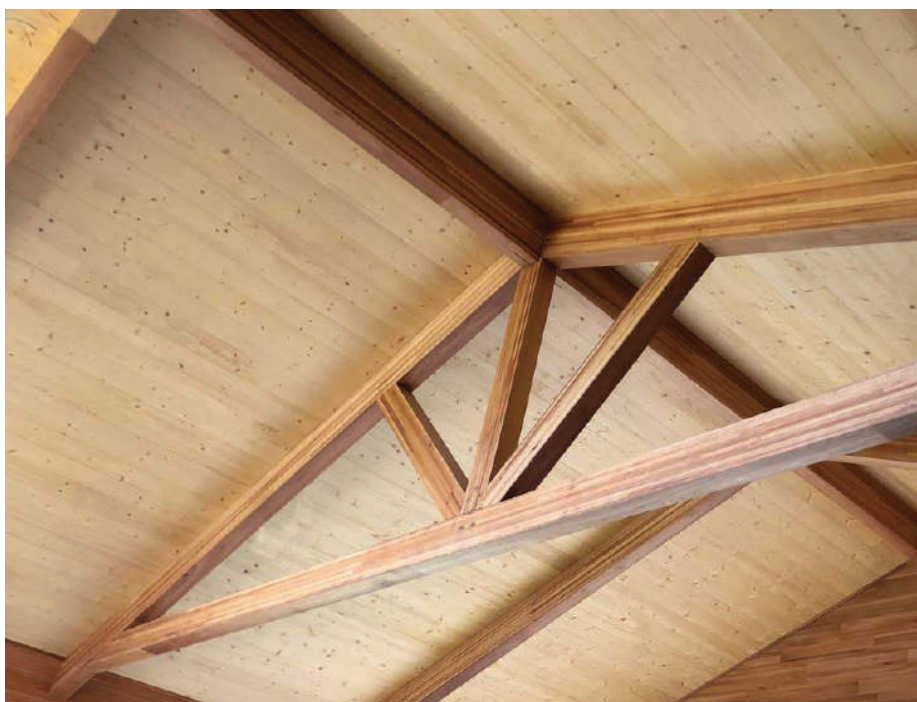




Spruce - Profile n°2 - Sanded  
White stain



Spruce - Profile n°2 - Sanded - Spread of flame B-s1,d0 - Red wine painting



Spruce - Profile n°2 - Sanded - Natural



Spruce - Profile n°1 - Sanded  
Natural

# Installation principles

SAPISOL® is installed either :

- **On a cold roof** (ventilated) - **AT - 5/I5 - 2443**  
(SAPISOL® with 20 mm or 27 mm boards)
- **On a warm roof** (non-ventilated roofing support) - **AT - 5.2/I9 - 2649\_VI**  
(SAPISOL® with 20 mm or 27 mm boards)

- **Ventilated roof :** ( p18 to 20)



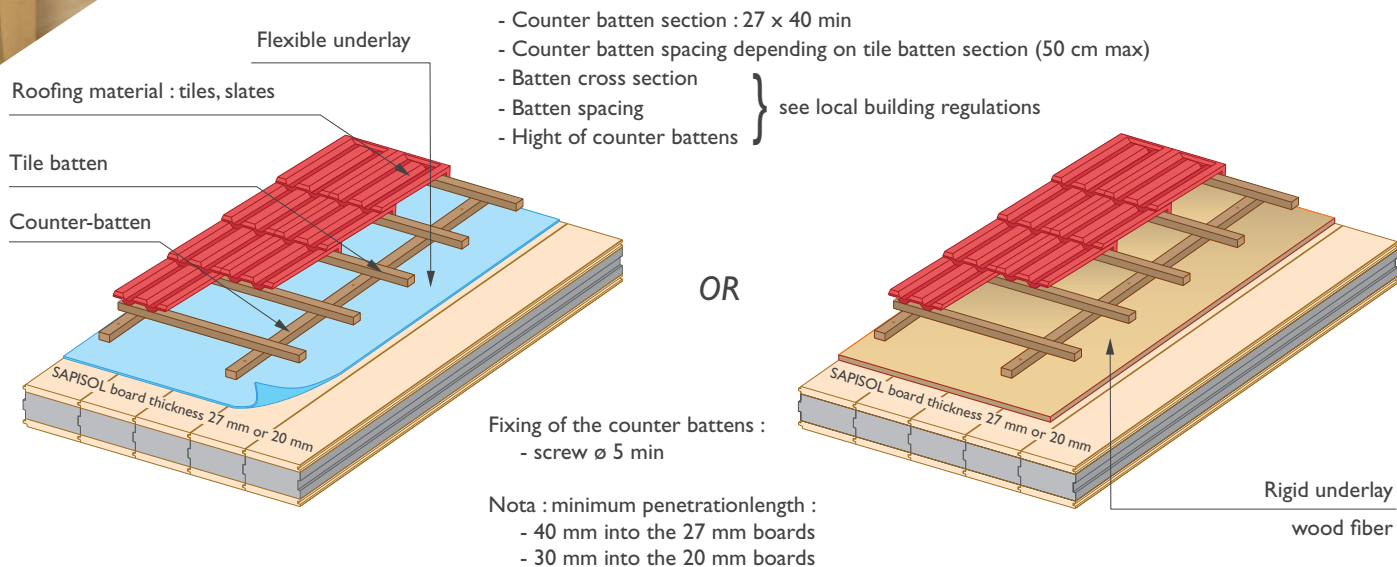
- **Unventilated roof :** ( p21 to 22)



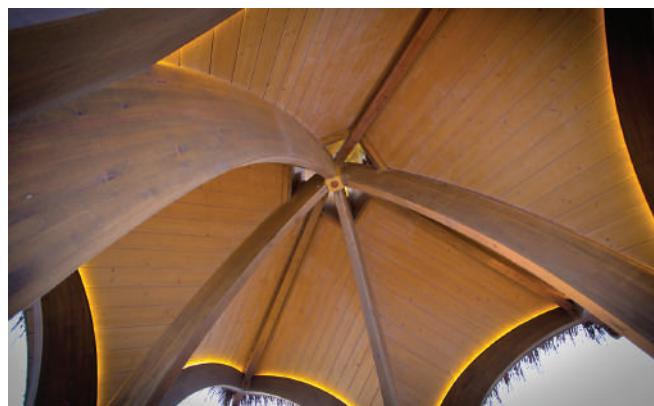
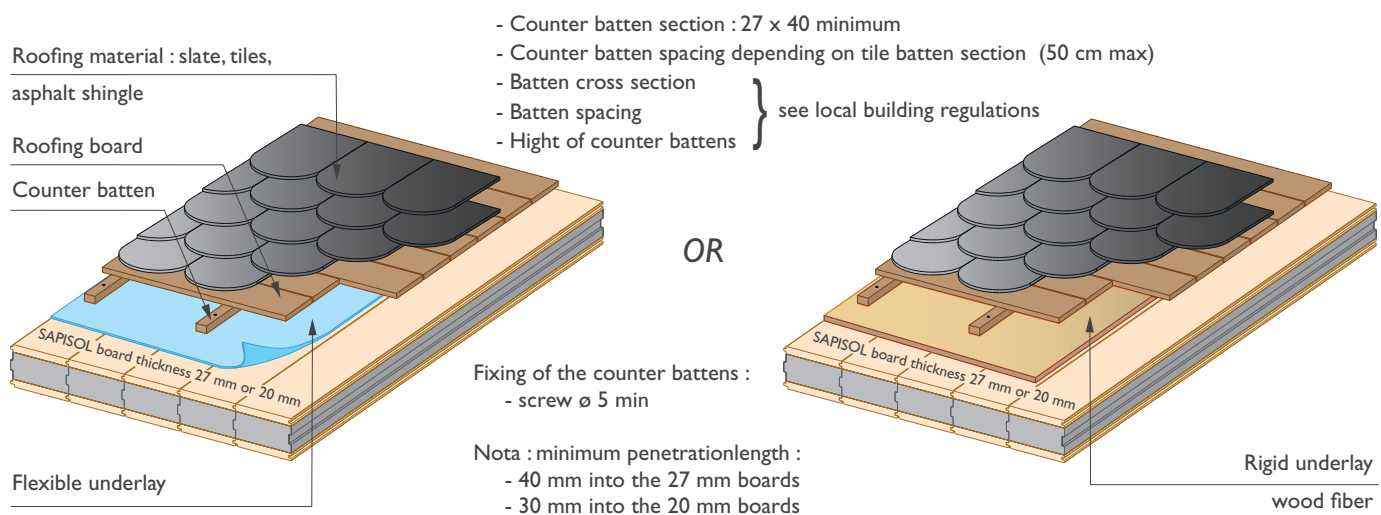


# Installation principles Ventilated roofs

## Tiles or slates - Roofing on battens



## Slate or channel tiles - Roofing on battens or panels





# Ventilated roofs

## Corrugated steel or, aluminum sheets, fiber cement - Roofing and profiles on joists

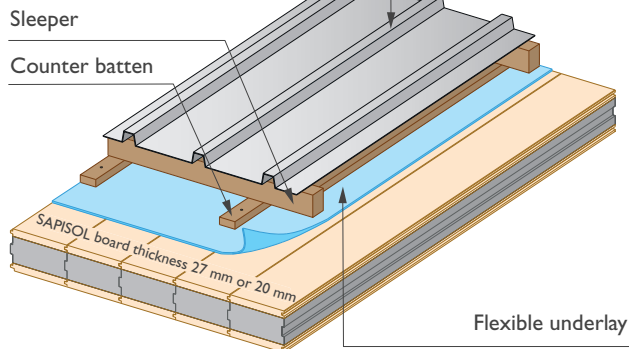
### Roofing :

- Corrugated steel sheets
- Corrugated aluminium sheets
- Wavy fibre cement sheets
- Wavy fibre cement sheets support for canal tiles

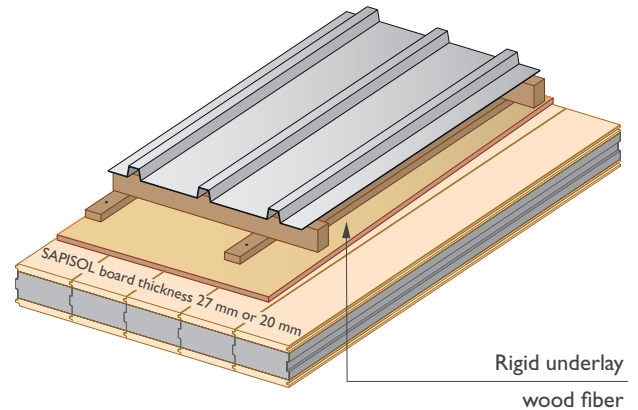
- Section of counter-battens : 27 x 60 mini
  - Counter battens spacing depending on the tile batten section (50 cm max)
  - Batten cross section
  - Batten spacing
  - Hight of counter battens
- } see local building regulations

### Fixing the counter battens :

- screw  $\varnothing$  6 minimum
- Nota : minimum penetrationlength :
  - 40 mm into the 27 mm boards
  - 30 mm into the 20 mm boards



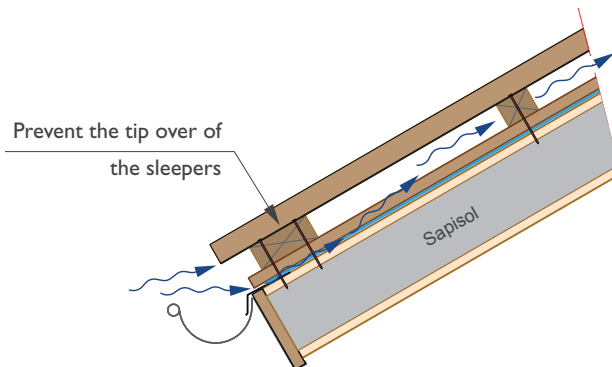
OR



### Attachment of joists:

- $\varnothing$  6 minimum depending on uplift
- quantity depending on uplift
- through the counter battens

Roofing solution to be used only for buildings without any needs of acoustic performance



## Zinc, stainless steel, copper, lead - Metal roofing on battens or panels

### Metallic sheet roofing :

- Zinc
- Stainless steel
- Copper
- Lead

- Section of the counter battens : 27 x 40 min
  - Counter batten spacing depending on the tile batten section (50 cm max)
  - Batten cross section
  - Hight of counter battens
- } see local building regulations

### Fixing of the sleepers :

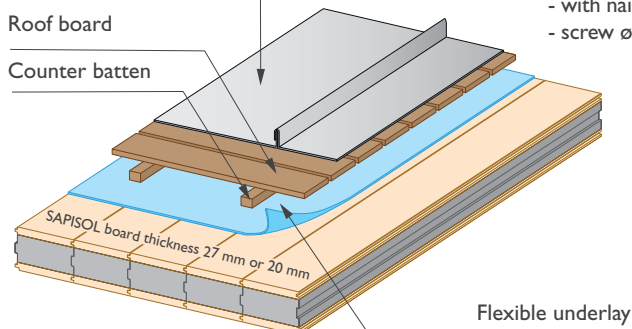
- with nails
- screw  $\varnothing$  6 minimum depending on uplift

### Fixing of the counter battens :

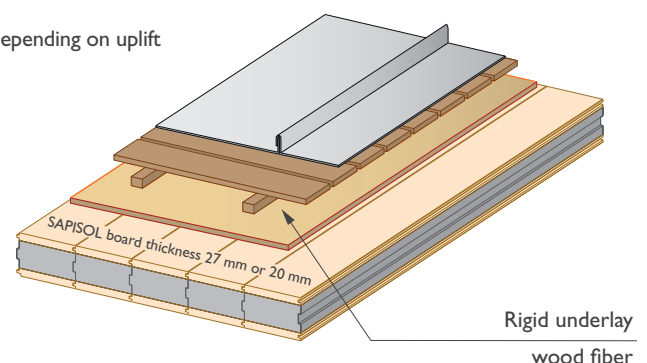
- screws  $\varnothing$  6 minimum

### Nota : minimum penetrationlength :

- 40 mm into the 27 mm boards
- 30 mm into the 20 mm boards



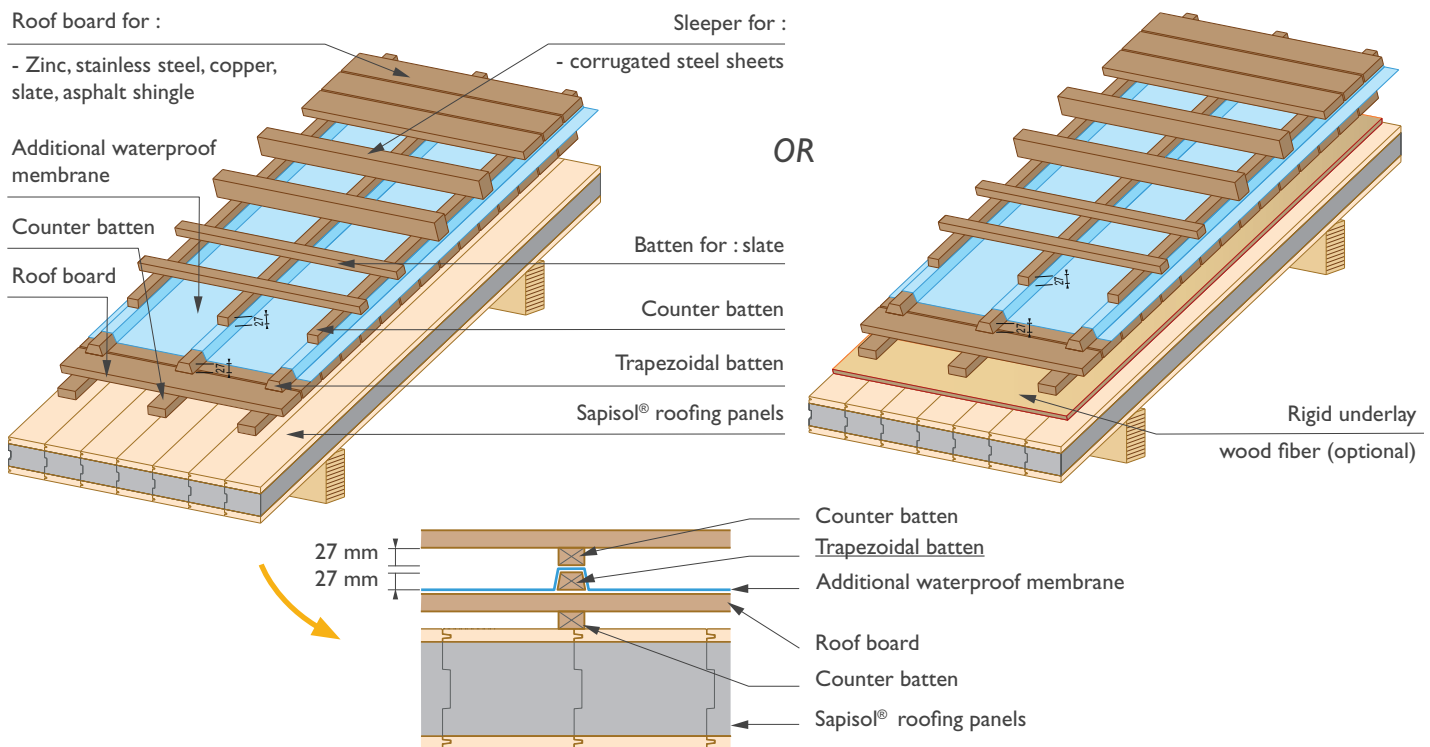
OR



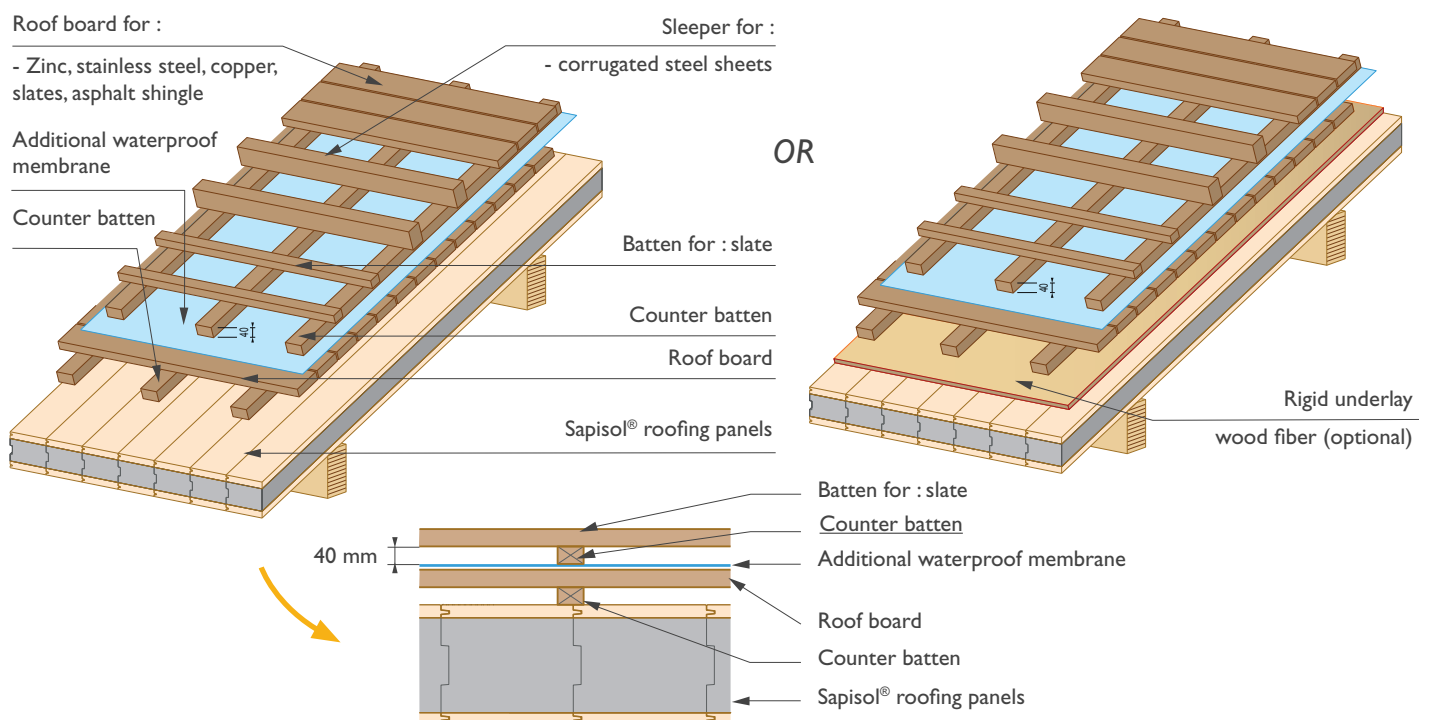
# Ventilated roofs (Mountain climate)

**Altitude > 900 m** - Additional sealing on trapezoidal edges or under extensions prepared in accordance with the 2011 CSTB Guide to mountain climate cover

## On trapezoidal edges



## Raised





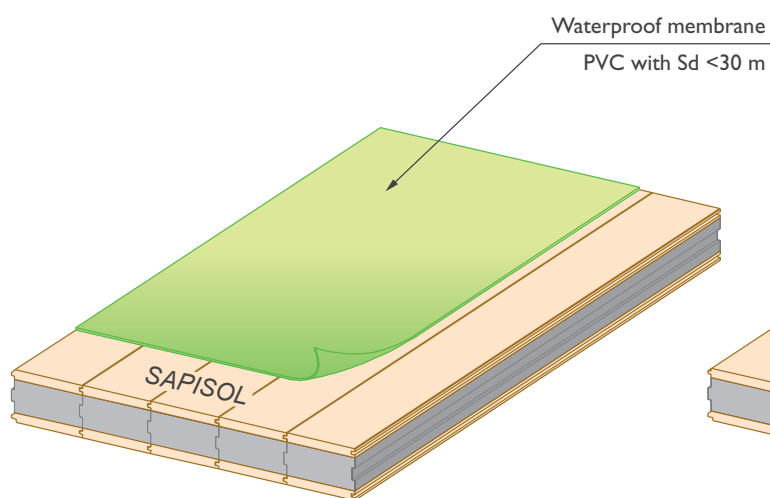
# Installation principles

## Unventilated roofs without additional insulation

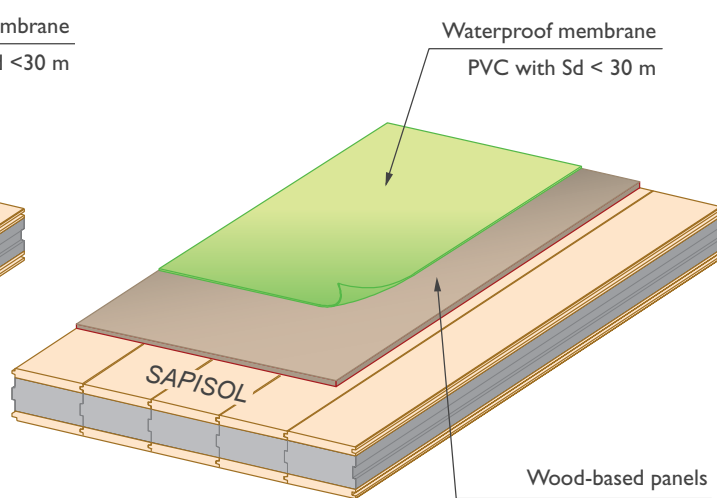
**Without additional insulation, only PVC membranes with an  $S_d \leq 30$  m fixed mechanically or independently are tolerated.** Below are some examples of possibilities.

### Direct installation

TYPE A

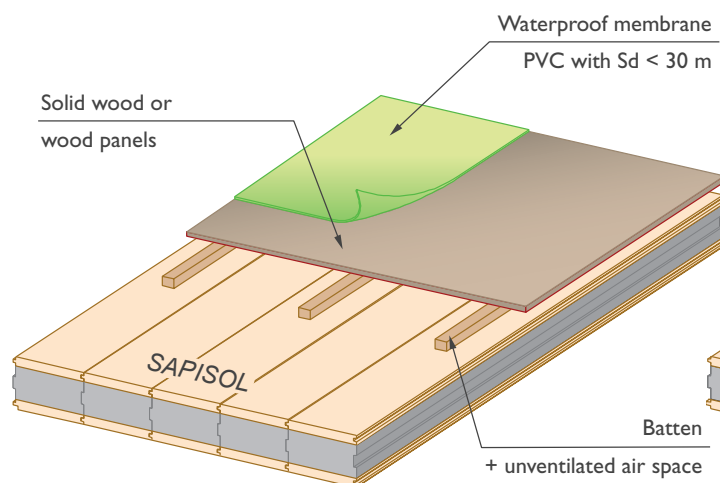


TYPE B

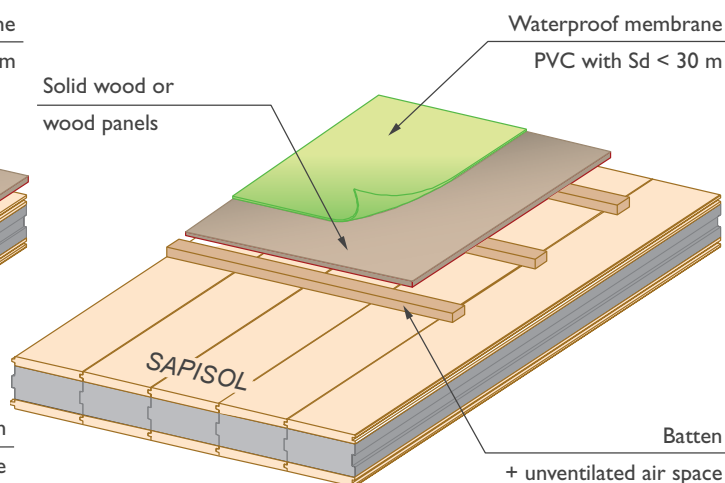


### Installation with non-ventilated air space

TYPE C.1



TYPE C.2



Refer to local regulations for details and slopes



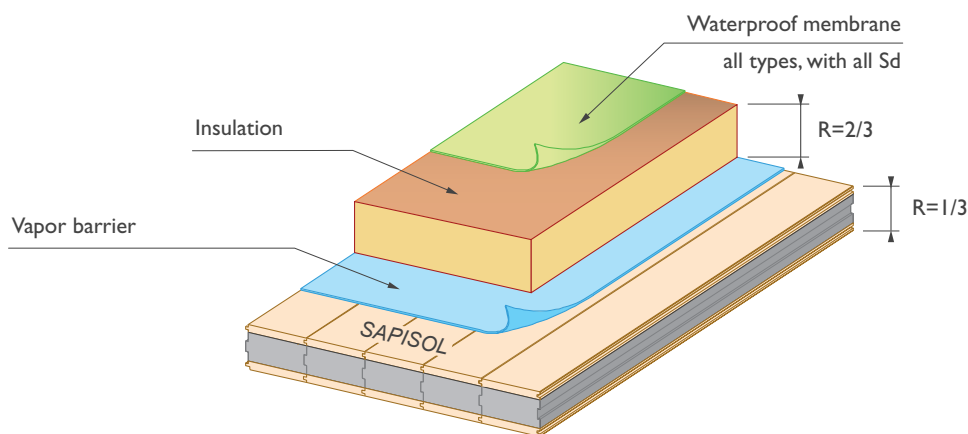


# Unventilated roofs with additional insulation ( $1/3 - 2/3$ rule)

**With additional insulation, all types of waterproofing will be possible respecting the rule of  $1/3$  and  $2/3$ .** This implies a vapor barrier on Sapisol® and an additional insulation providing a thermal resistance R twice that of Sapisol®.

## Direct installation

### TYPE D



### • SAPI SOL + VAPOR BARRIER + INSULATION with $1/3 - 2/3$ rule

		Sapisol® with 20 mm boards				Sapisol® with 27 mm boards			
Models		S 86	S 106	S 136	S 160	S 100	S 120	S 150	S 174
R Sapisol alone = $1/3$ R total		1.79	2.44	3.40	4.18	1.90	2.54	3.51	4.29
R Insulation minimum = $2/3$ R total		3.58	4.87	6.81	8.36	3.80	5.09	7.02	8.57
R total minimum theoretical		5.37	7.31	10.21	12.54	5.70	7.63	10.54	12.86
With additional insulation		1.79	2.44	3.40	4.18	1.90	2.54	3.51	4.29
PIR : $\lambda$ 0,023	Thickness (mm)   R ( $m^2 \times K/W$ )	90   3,91	120   5,65	160   6,96	200   8,70	90   3,91	120   5,65	170   7,39	200   8,70
	R total real	5.70	8.09	10.36	12.87	5.81	8.20	10.90	12.98
Polystyrene : $\lambda$ 0,030	Thickness (mm)   R ( $m^2 \times K/W$ )	110   3,67	150   5,67	210   7,00	260   8,67	120   4,00	160   5,67	220   7,33	260   8,67
	R total real	5.46	8.10	10.40	12.85	5.90	8.21	10.85	12.95
Mineral wool : $\lambda$ 0,040	Thickness (mm)   R ( $m^2 \times K/W$ )	150   3,75	200   5,75	280   7,00	340   8,50	160   4,00	210   5,50	290   7,25	350   8,75
	R total real	5.54	8.19	10.40	12.68	5.90	8.04	10.76	13.04

# Installation details

- **Installation tips** (p24)
- **Installation and fixing of panels** (p25)
- **Ridge** (p26)
- **Valley and hip** (p27)
- **Eave - Rake** (p28)
- **Wall plate** (p29)
- **Gables** (p30)
- **Crosswall between flats** (p31)
- **Roof windows** (p32)
- **Opening reinforcement** (p33)
- **Chimney** (p34)
- **Overhang reinforcement** (p35)
- **Sapisol® acoustic facing** (p36-37)
- **Electric wire installation inside Sapisol®** (p38)



# Installation tips

## • Storage of Sapisol®

Keep SAPI SOL® sheltered from bad weather.

Keep packages or loads in their packaging in good condition.

Protect loads on site with an additional tarpaulin.

After unloading, the loads will be immediately covered to the ground and the original packaging must be cut at the bottom of the load to avoid condensation.

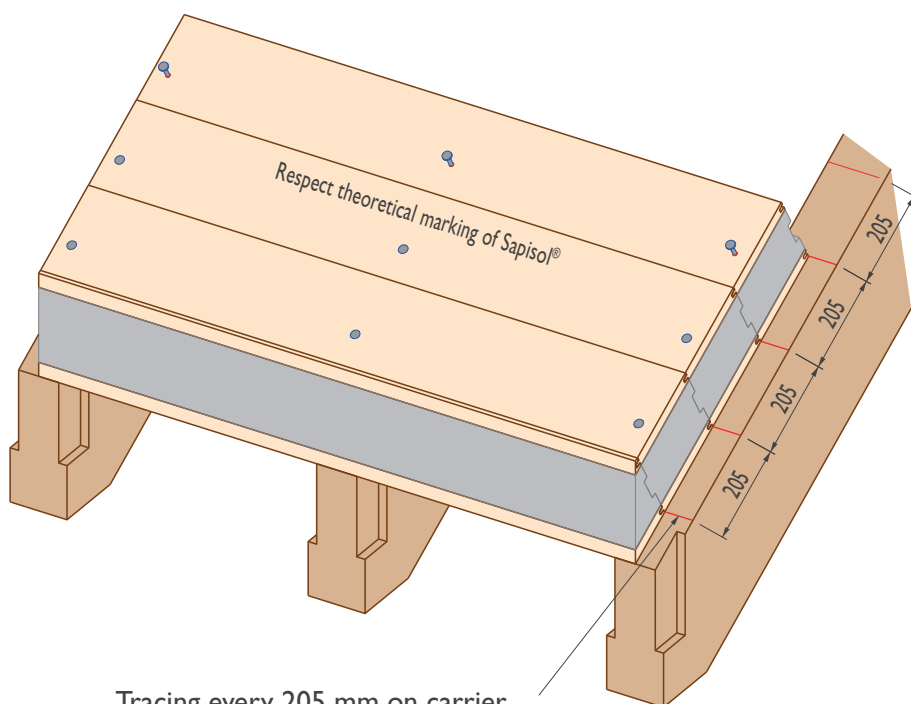
In case of heavy rain, plan storage inside a warehouse.

Immediately cover the installed surfaces.



Any increase in humidity can cause problems during assembly and discoloration of the faces.

## • Set up



Tracing every 205 mm on carrier



Peoples' safety



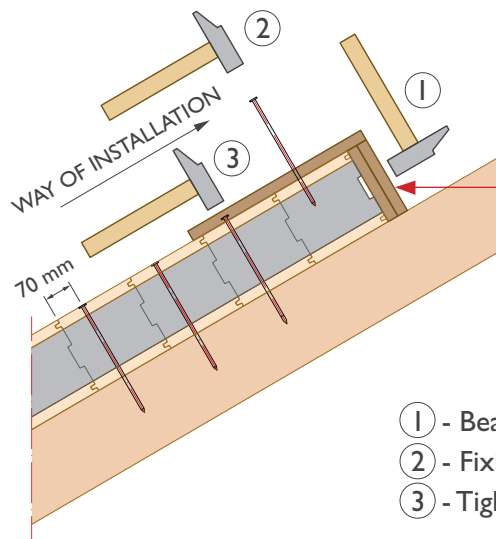
Continuous insulation  
Finished overhang underside



Roof and finished underside  
in one operation



# Installation and fixing of panels

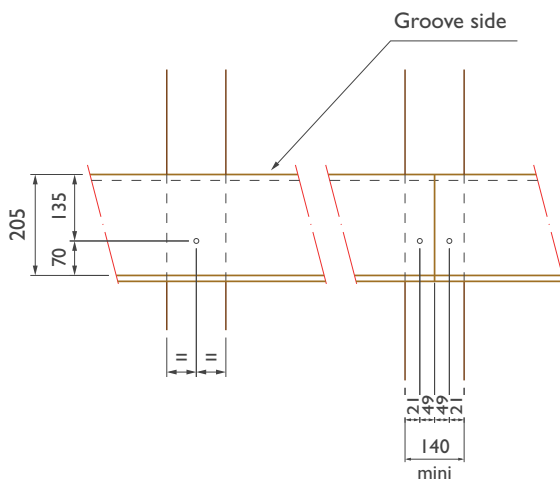


- **Nails** : Mandatory pre-drilling
- **Screw** : Pre-drilling recommended

Wooden block with :  
 I hardwood on Sapolis® side  
 I soft wood on hammer side

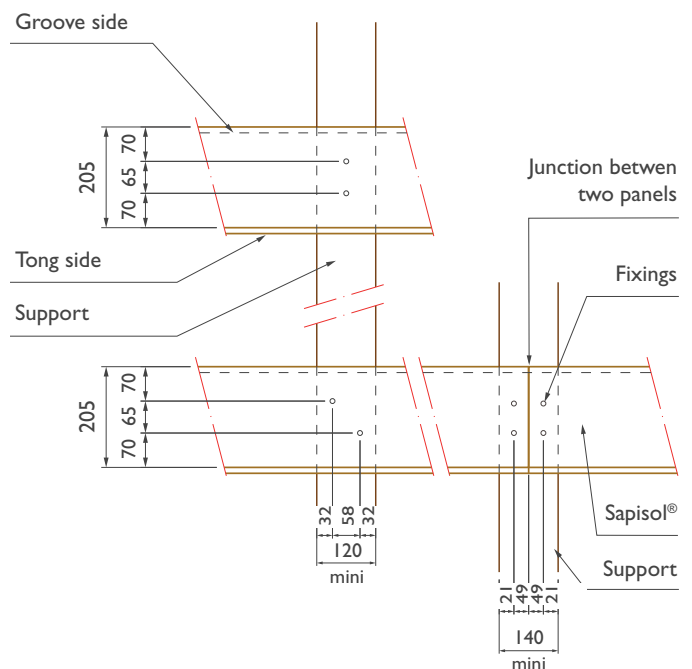
- ① - Beam engagement
- ② - Fixing without tightening
- ③ - Tightening of the previous fastening

## • Standard fixing

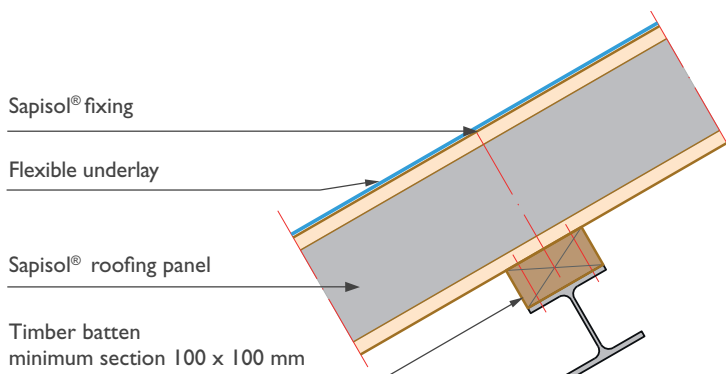


**Important : (overhang, windy or cyclonic zone ...) Contact us.**

## • Reinforced fixing (high wind regions)



## • Installation on steel supports

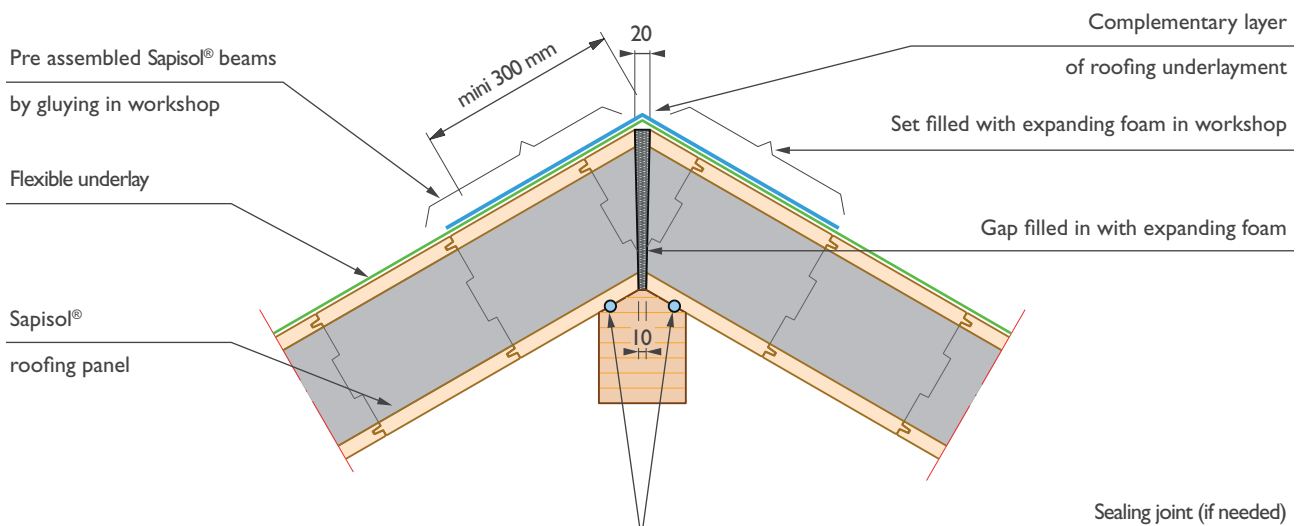
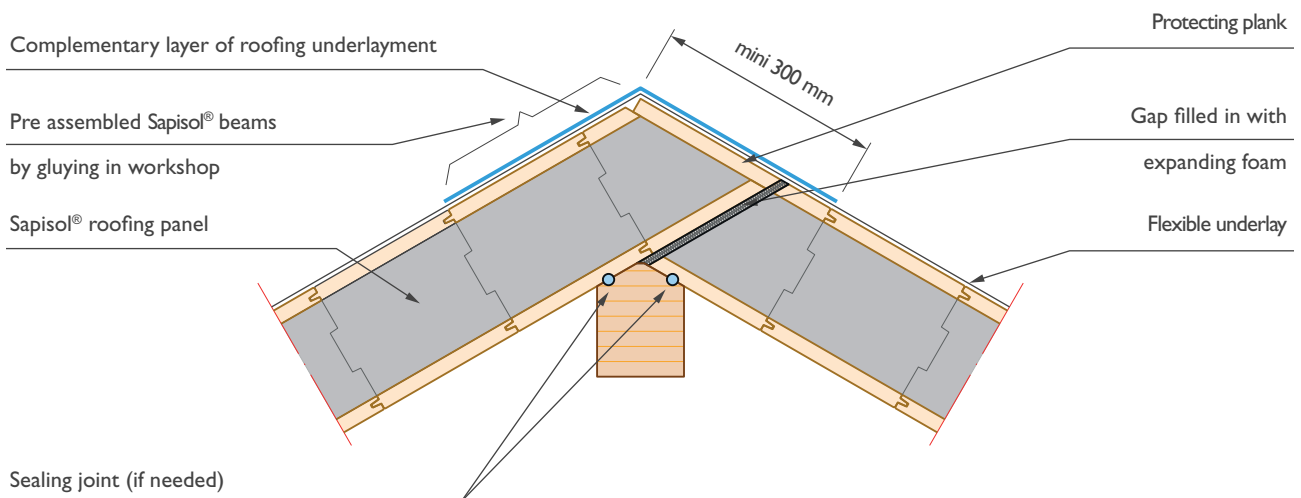
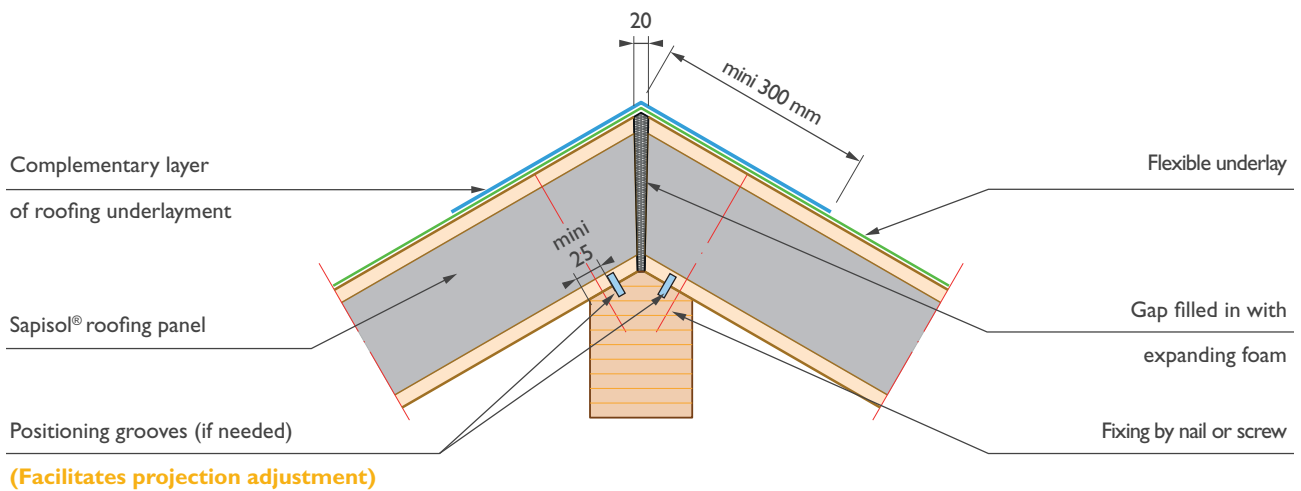




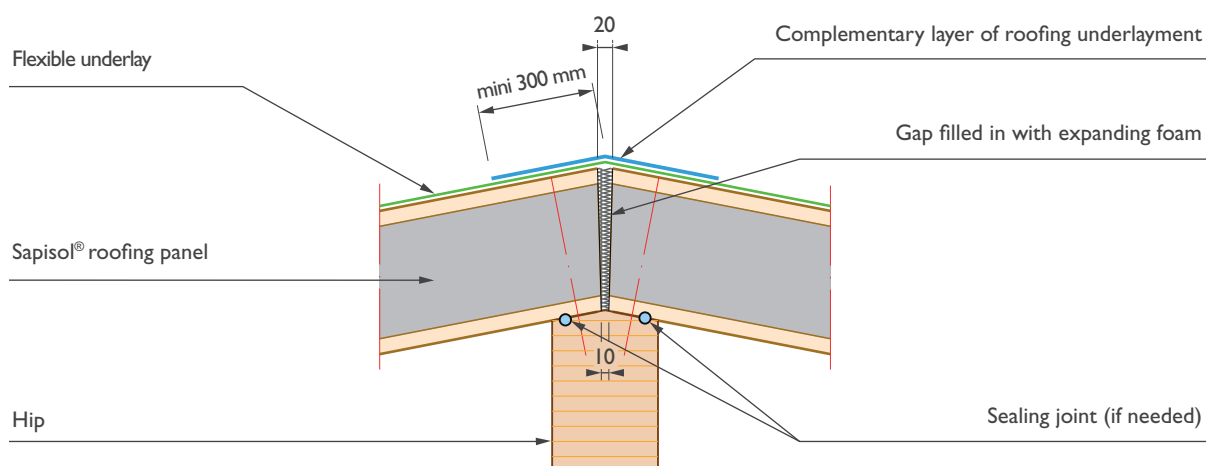
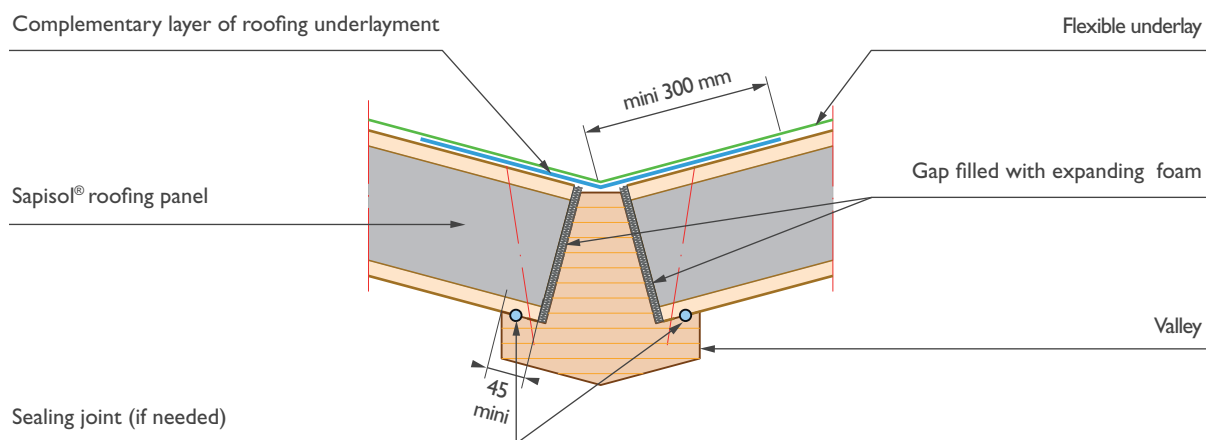
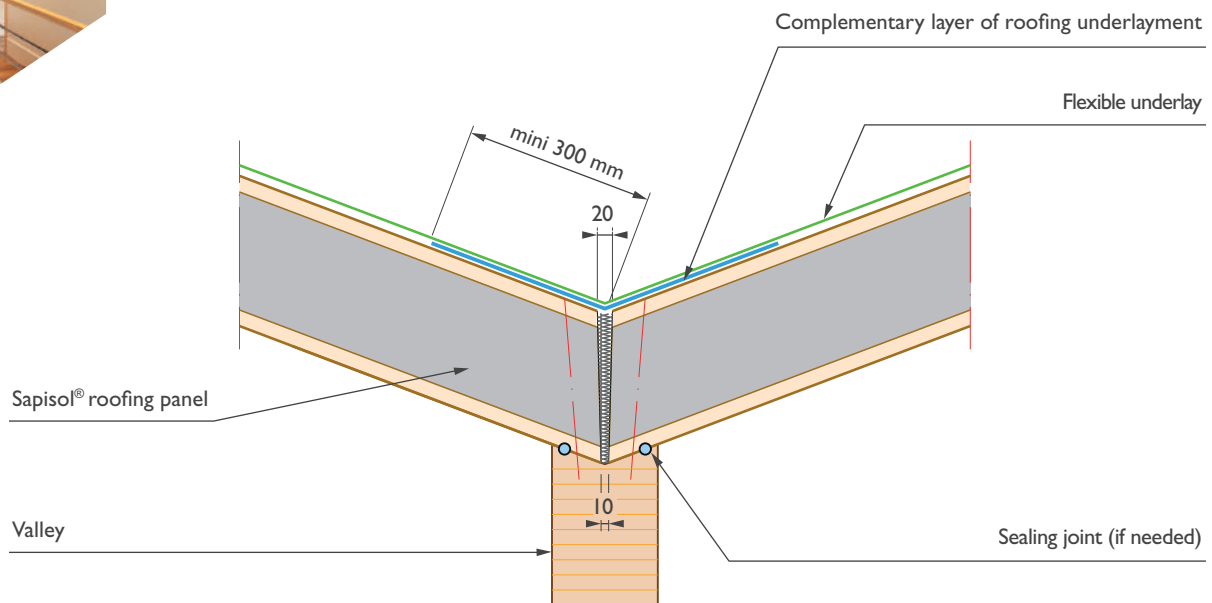
# Installation details

## Ridges

In all the figures, for the plain climate, the under-roof screen is **"CSTB approved"** or **"CSTB certified"** , SdI.



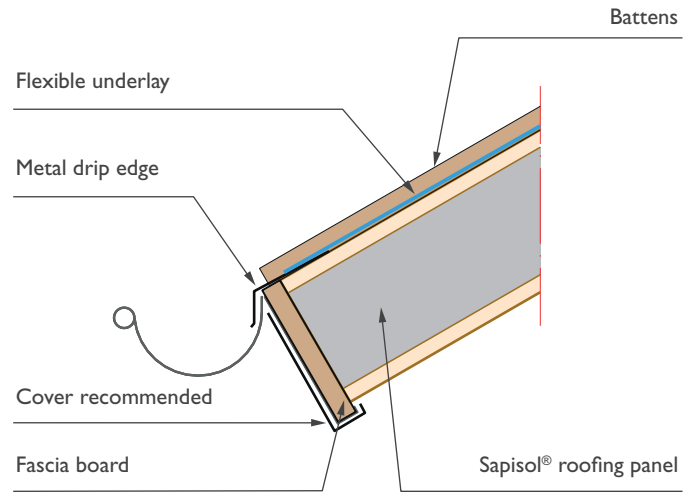
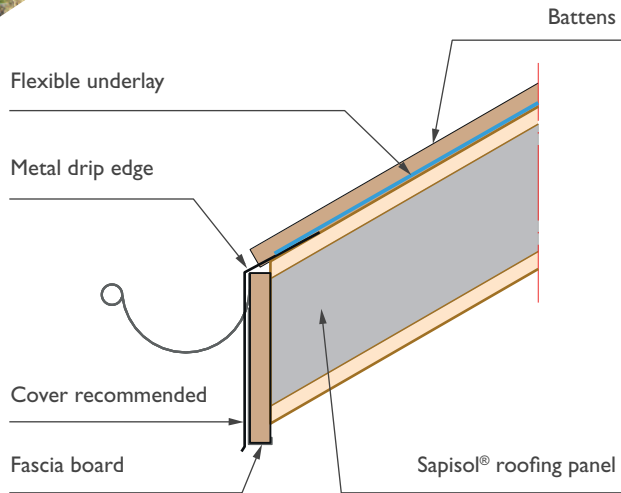
# Valley / Hip





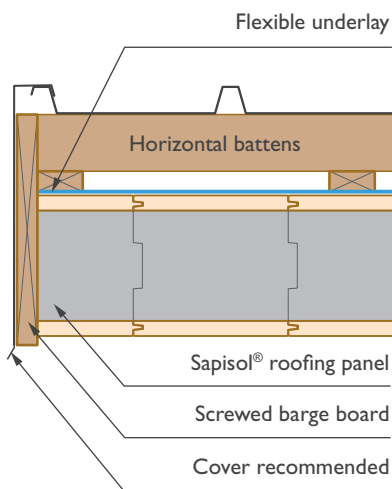


## Eave : Principle

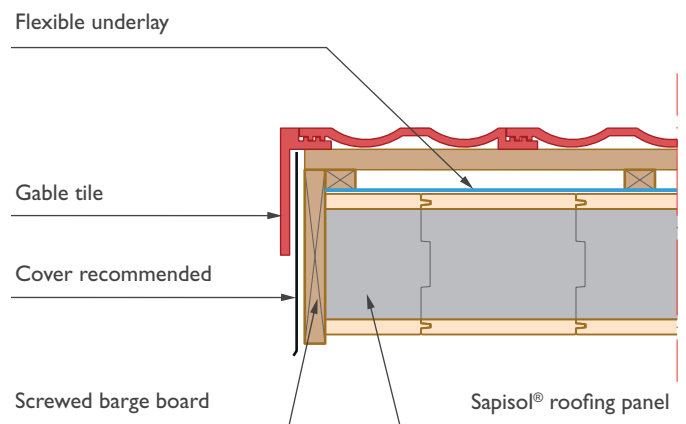


## Rake banks : Principle

### • Steel or fiber cement sheeting

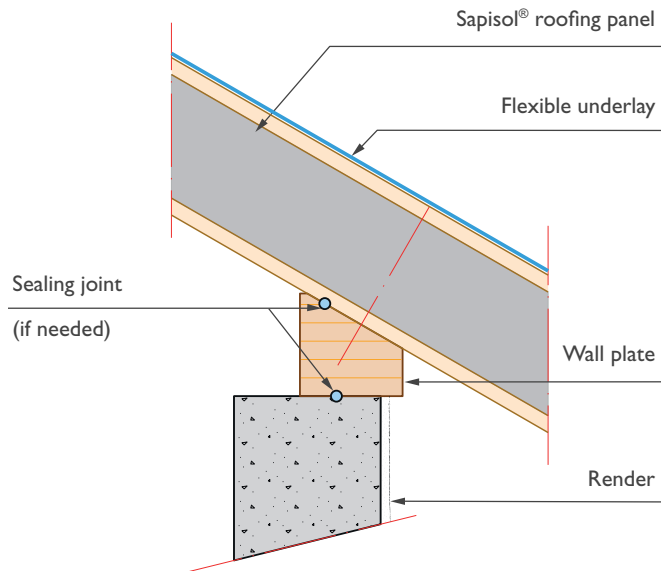


### • Roof tile

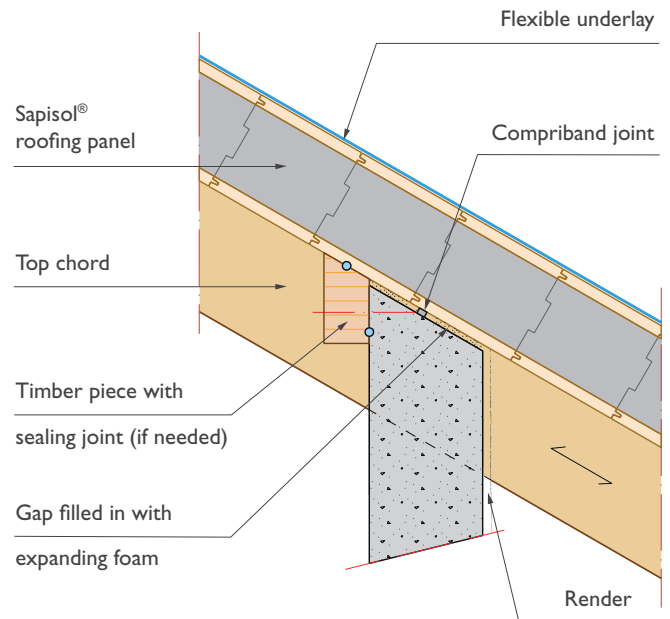


## Wall plate

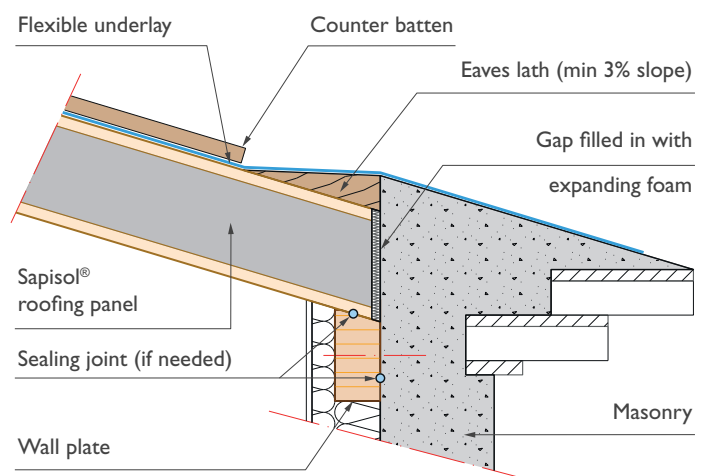
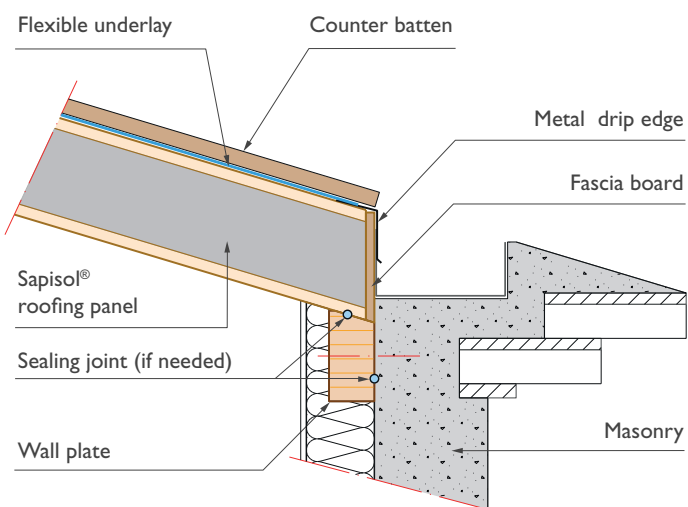
- Installation parallel to the gable



- Installation parallel to the ridge



## Wall plate Mediterranean

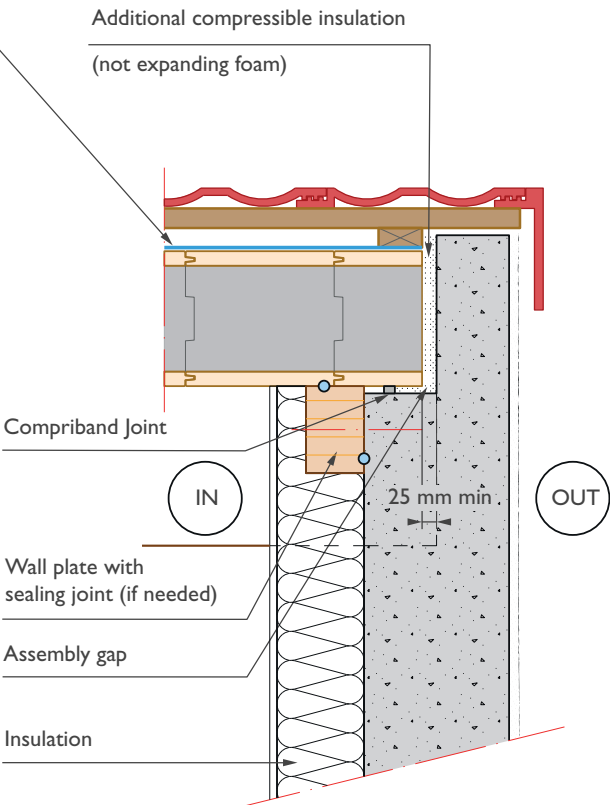
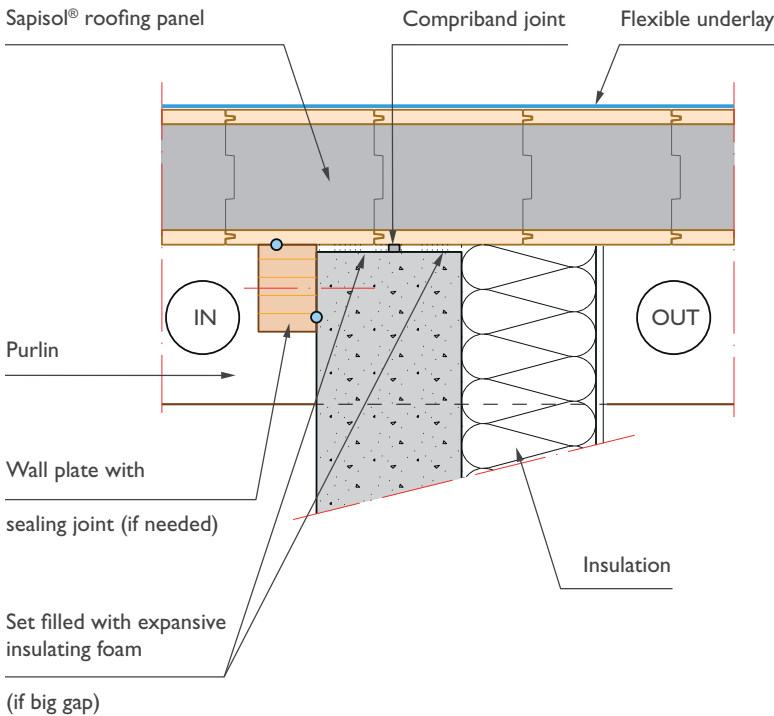
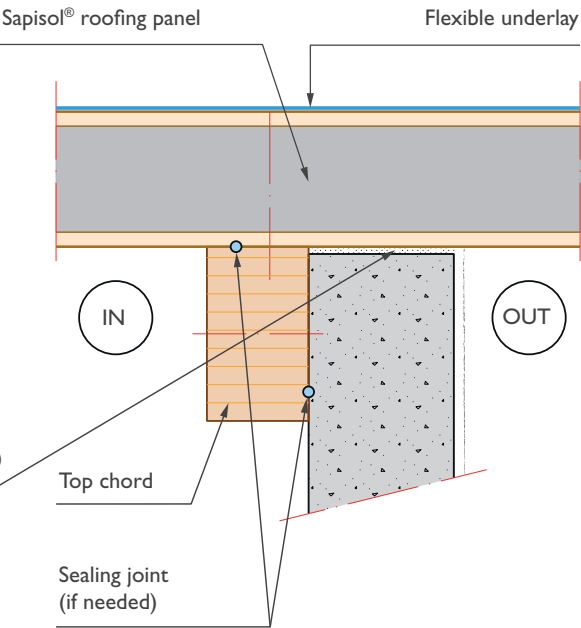
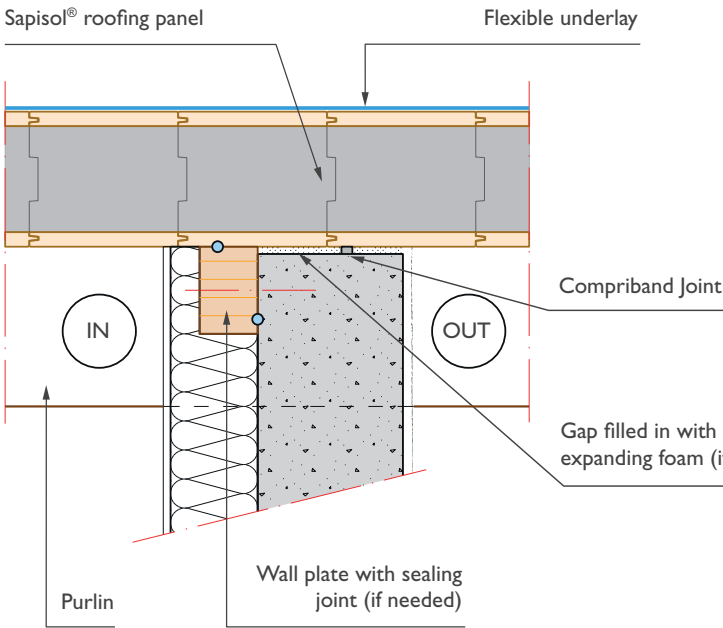




# Gables

• Parallel to the gable

• Parallel to the ridge

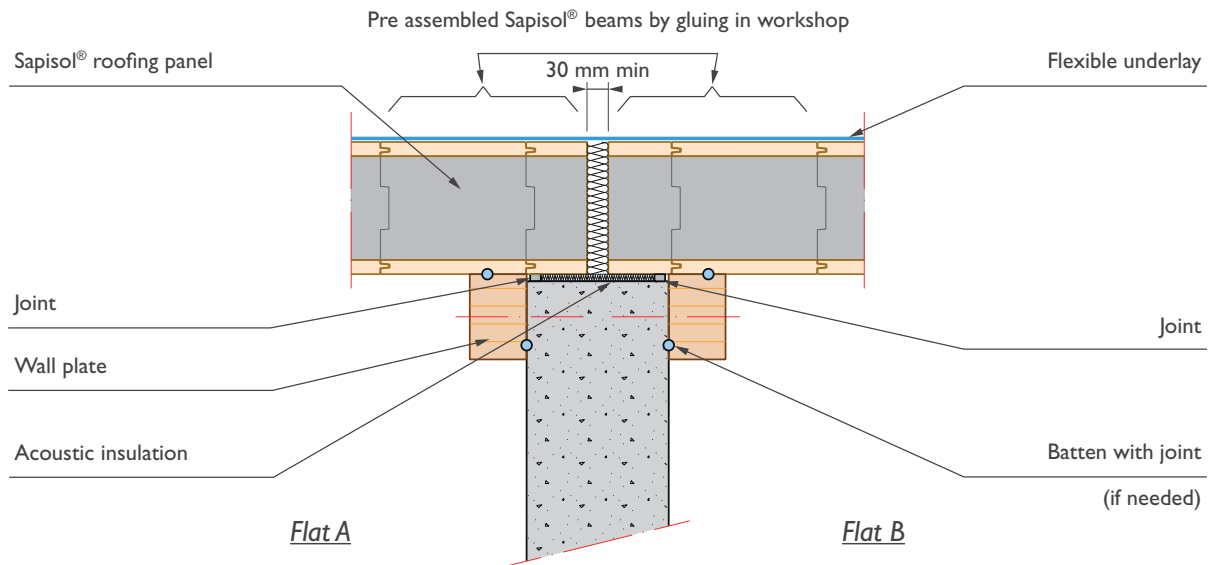




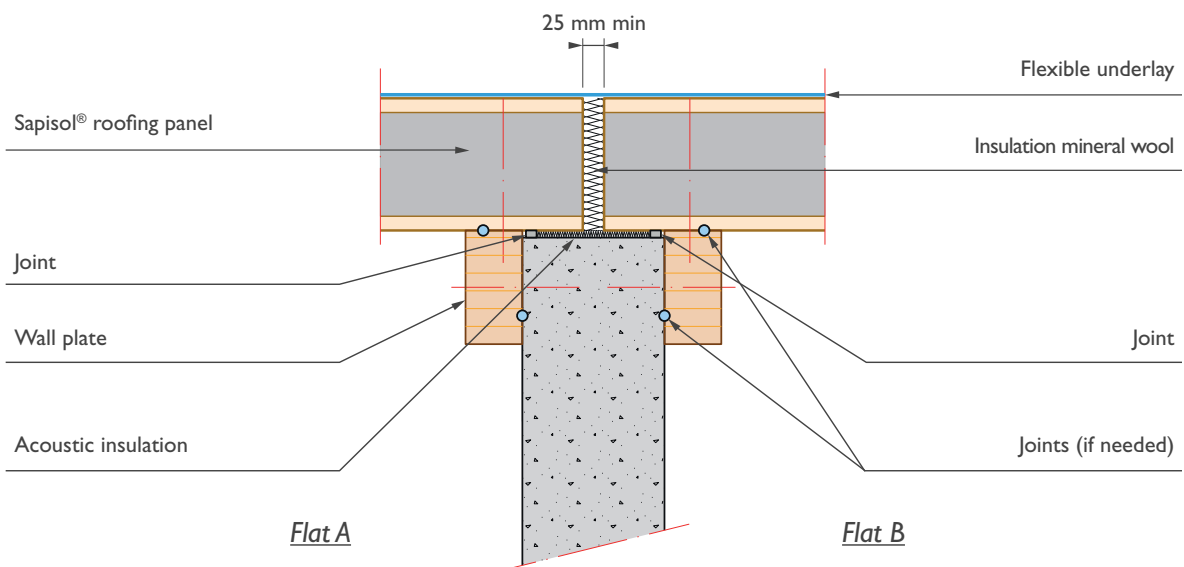
# Crosswall between flats

## Phonic bridge break

- Installed parallel to the crosswall

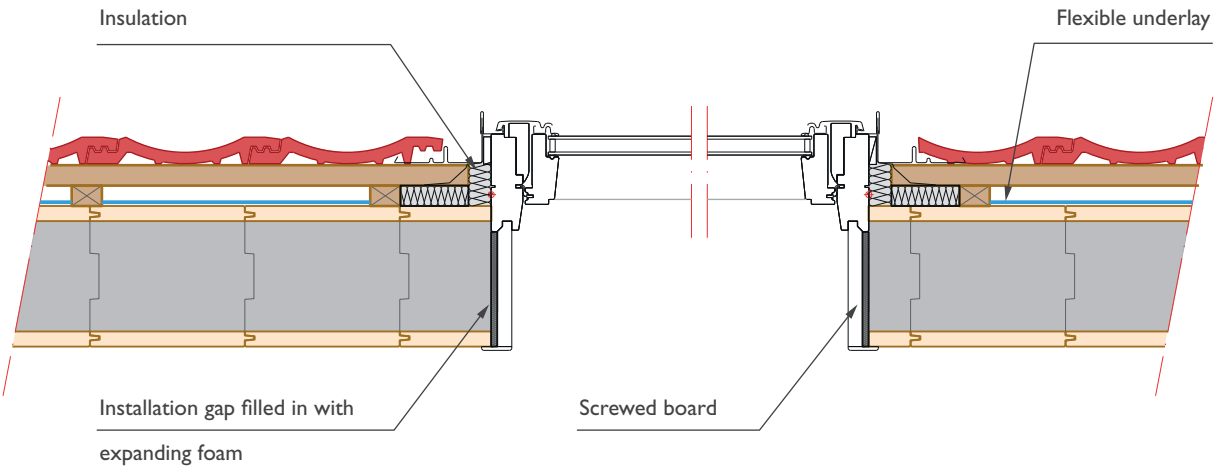
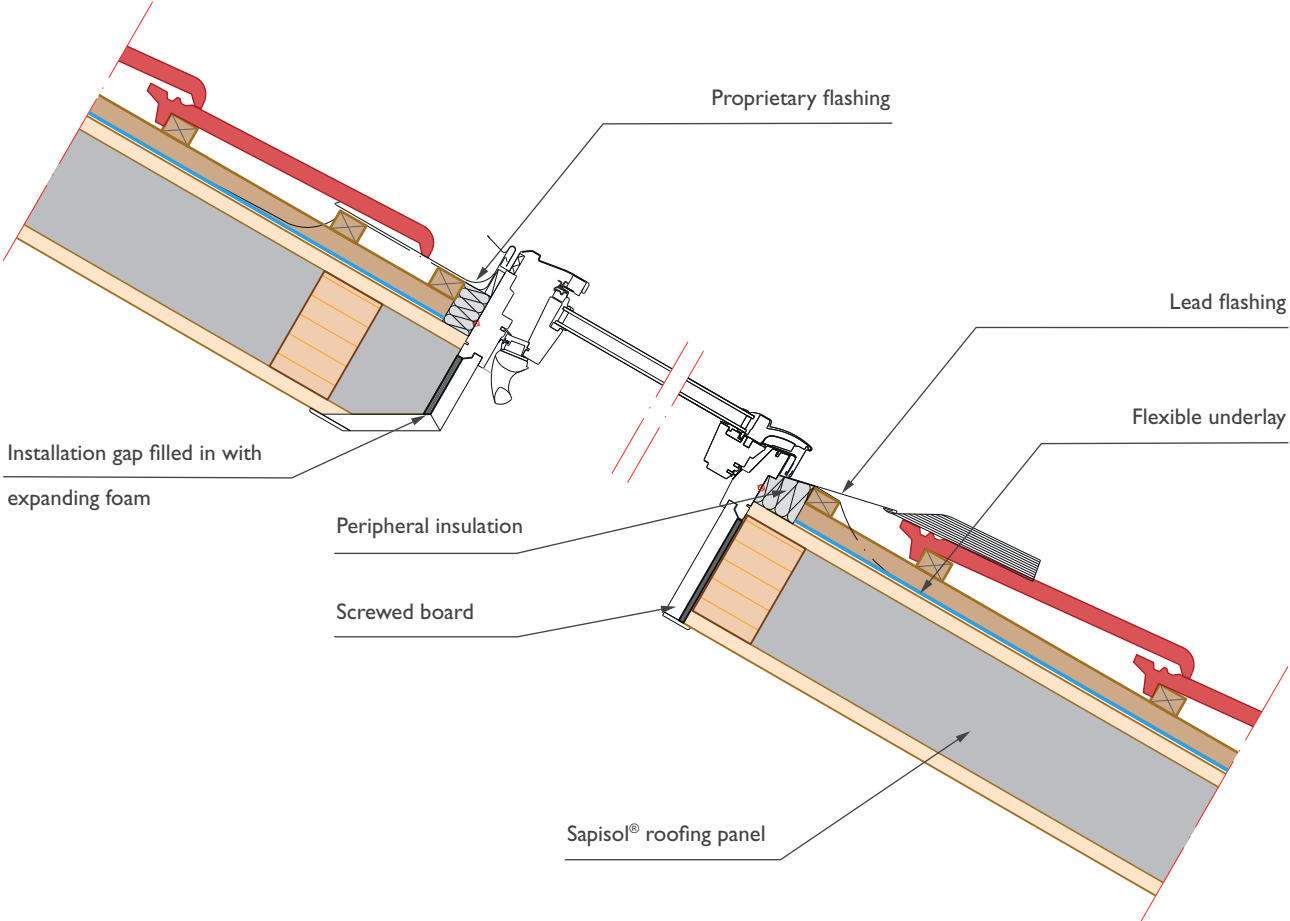


- Installed crosswise to the crosswall



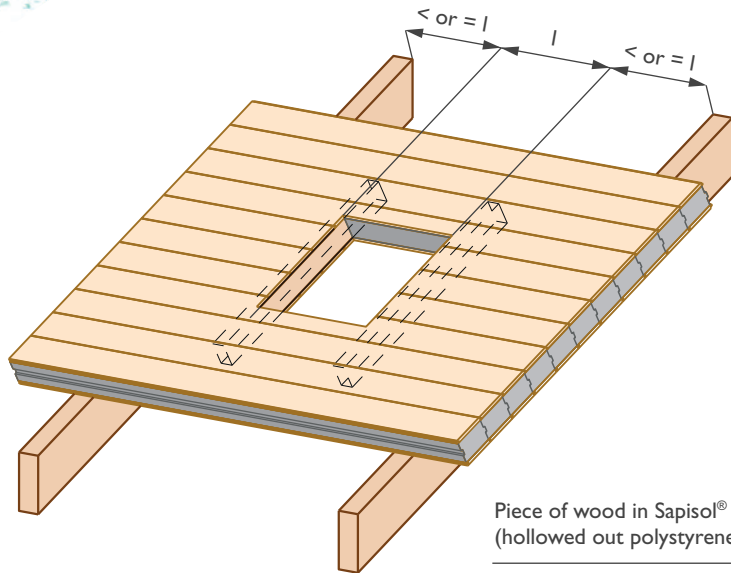


# Roof windows (example)



# Opening reinforcement

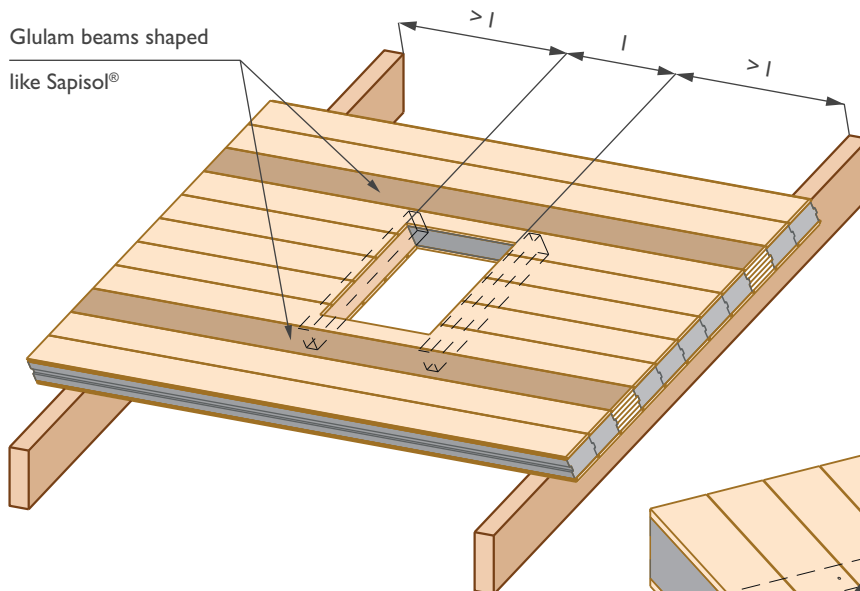
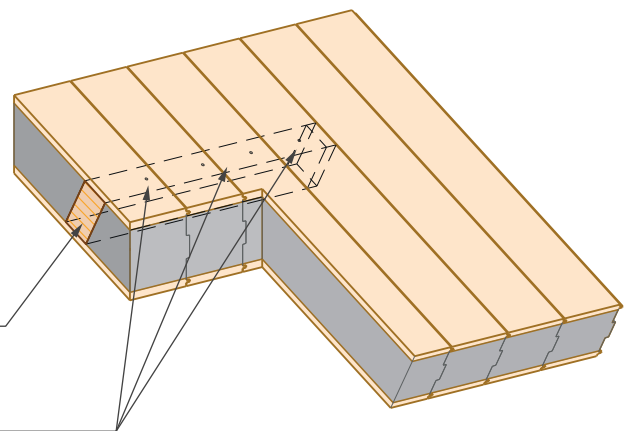
Principle to be defined according to the dimensions of the openings, the span of Sapolis® and the loads involved. **Contact us to adapt the reinforcements.**



**Case 1**

Piece of wood in Sapolis®  
(hollowed out polystyrene)

Screws  $\varnothing 5 \times 70$  mm



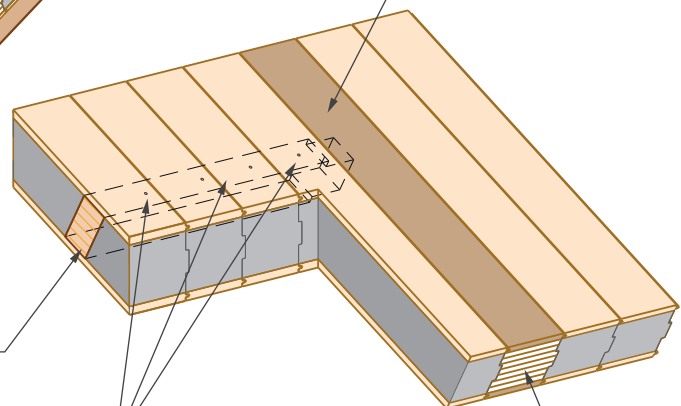
Glulam beams shaped  
like Sapolis®

**Case 2**

Assembly type mortise and tenon

Piece of wood in Sapolis®  
(hollowed out polystyrene)

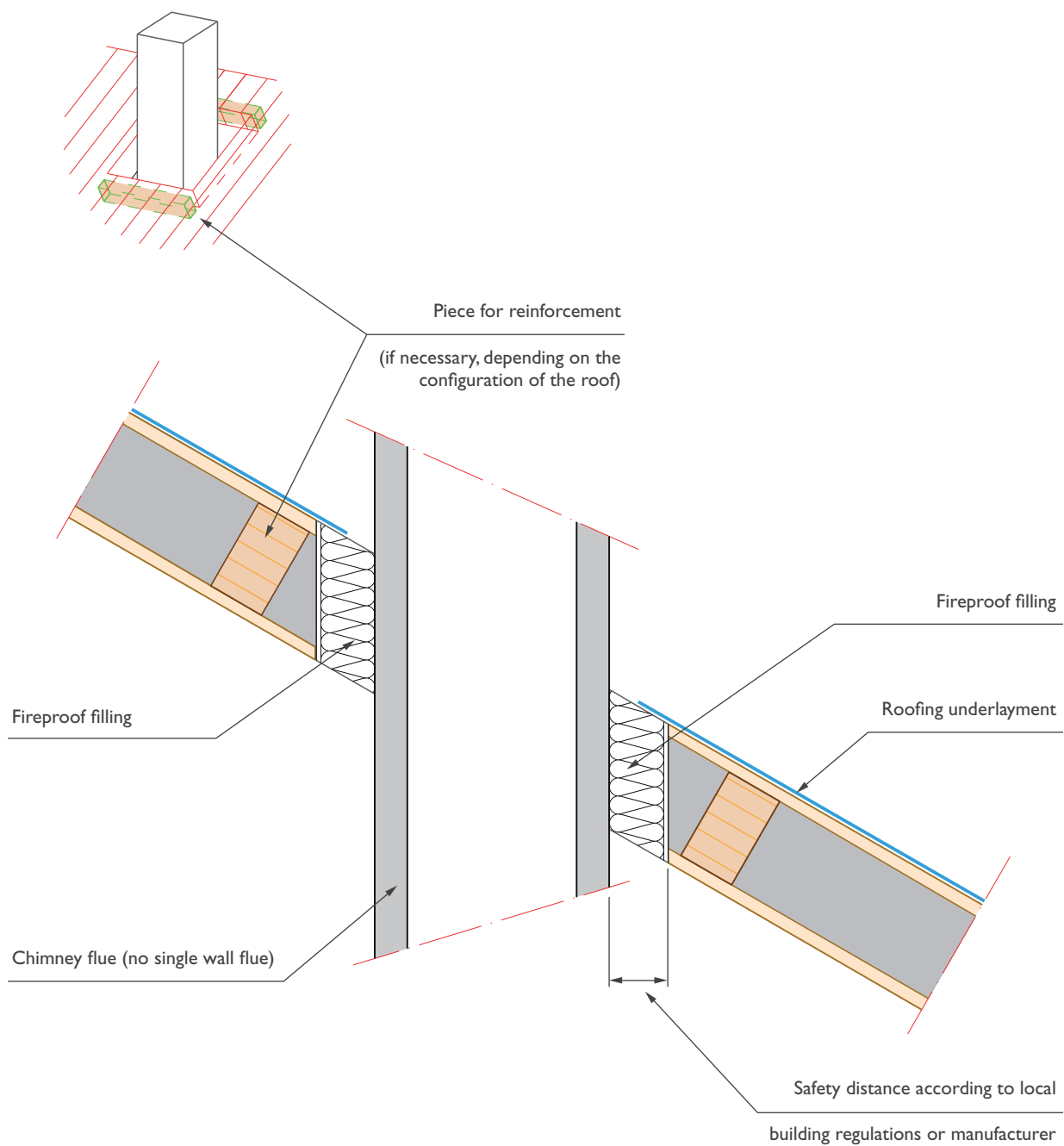
Screws  $\varnothing 5 \times 70$  mm



Glulam beam shaped  
like Sapolis®



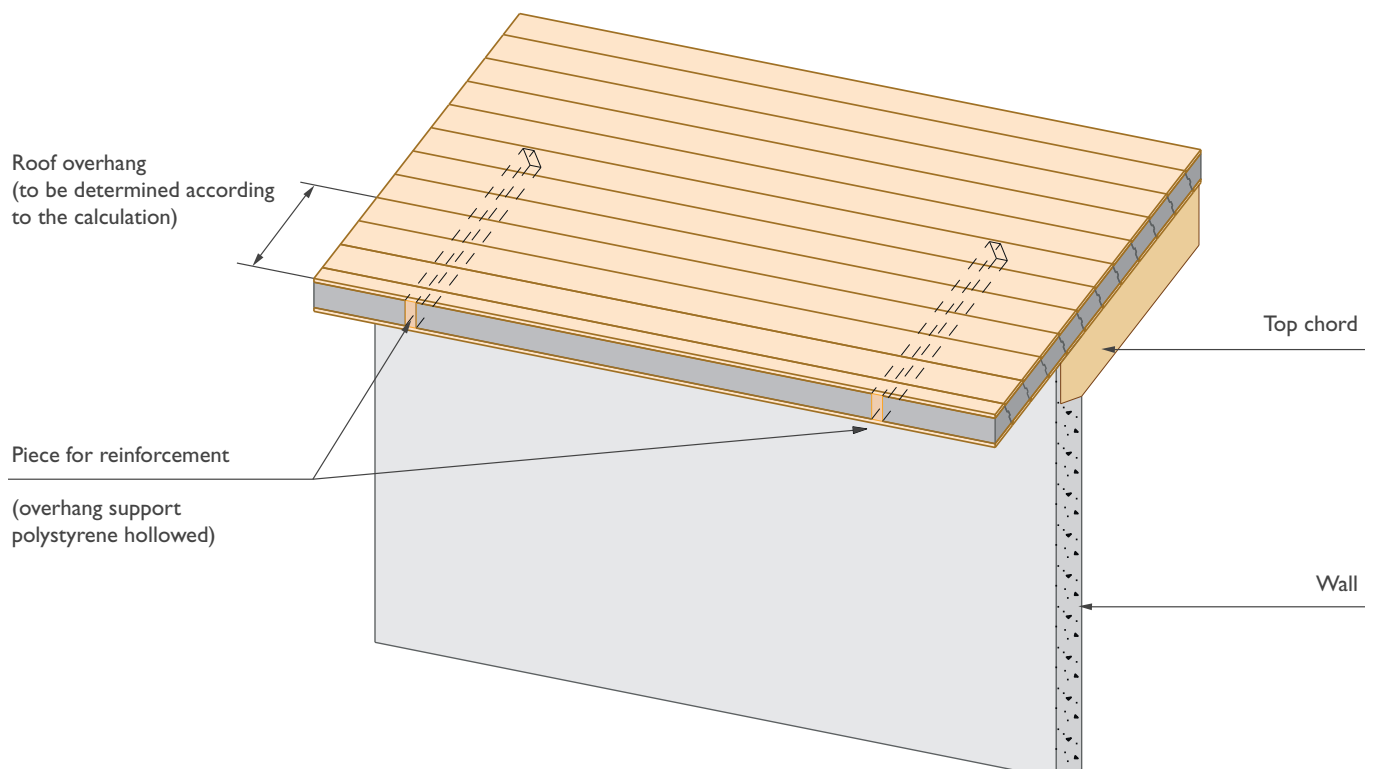
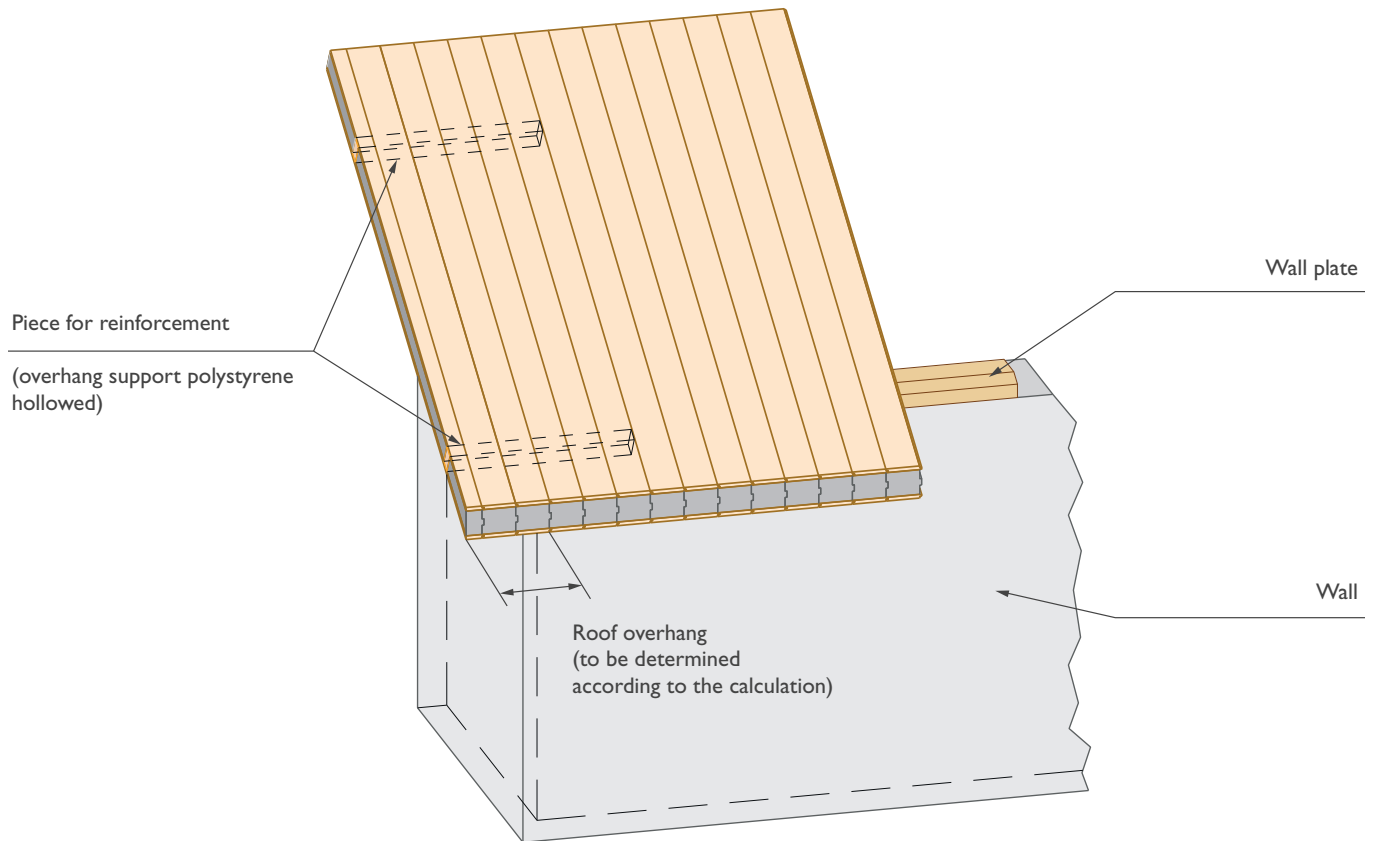
# Smoke pipes



# Overhang reinforcement

Principle to be defined according to the dimensions of the project span of Sapolis® and loading.

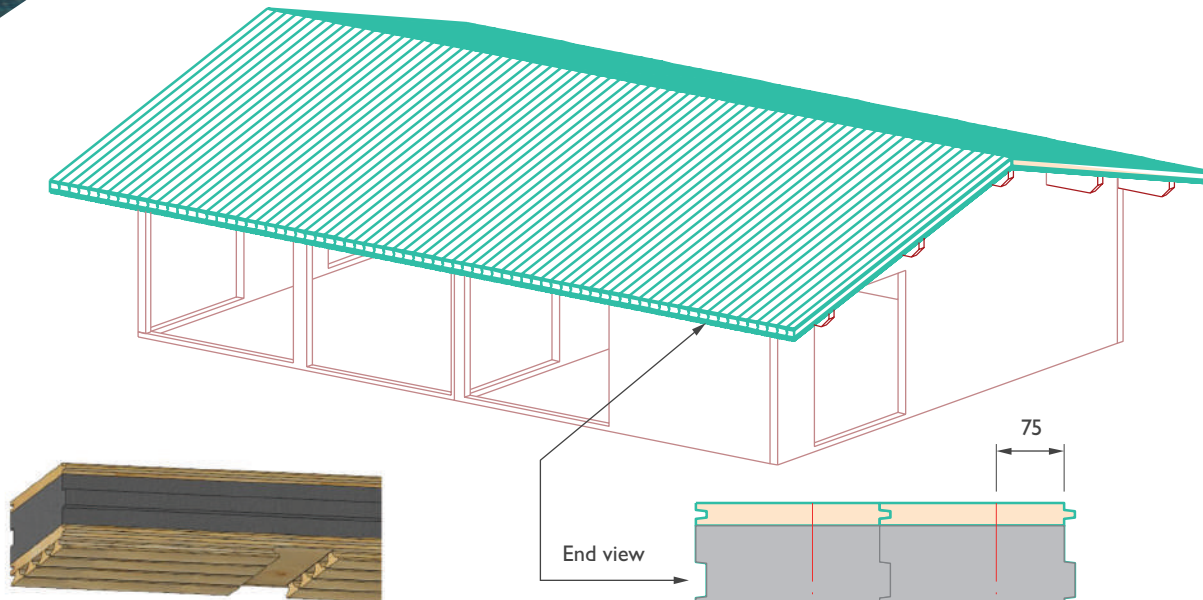
**Contact us to adapt the reinforcements.**



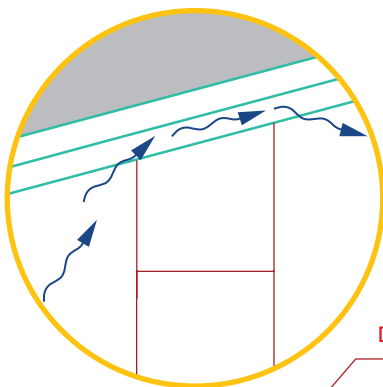


# Sapisol® acoustic facing called "Sapiphone"

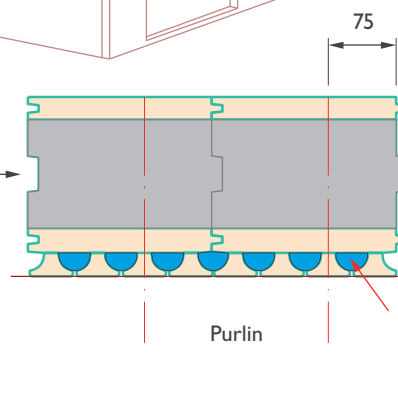
- Installed parallel to the gable



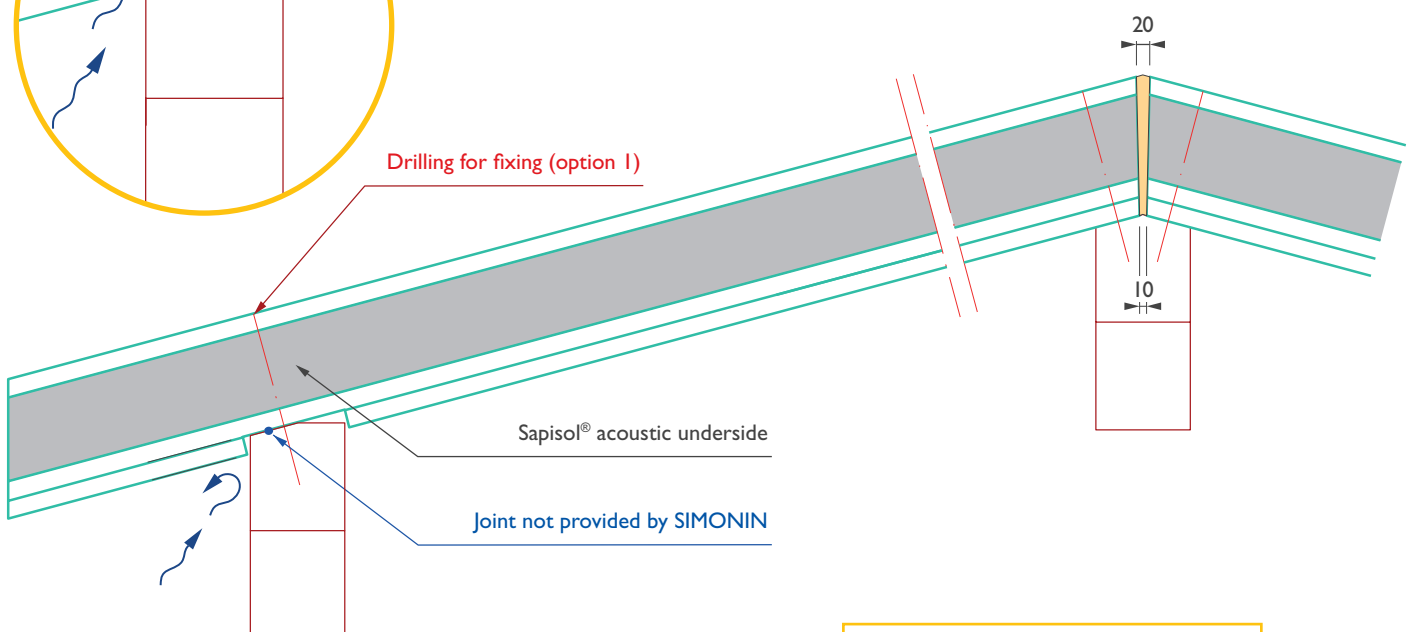
without notch :



End view



Without machining of the underside there is an air passage between the interior and exterior of the building which creates acoustic and thermal issues

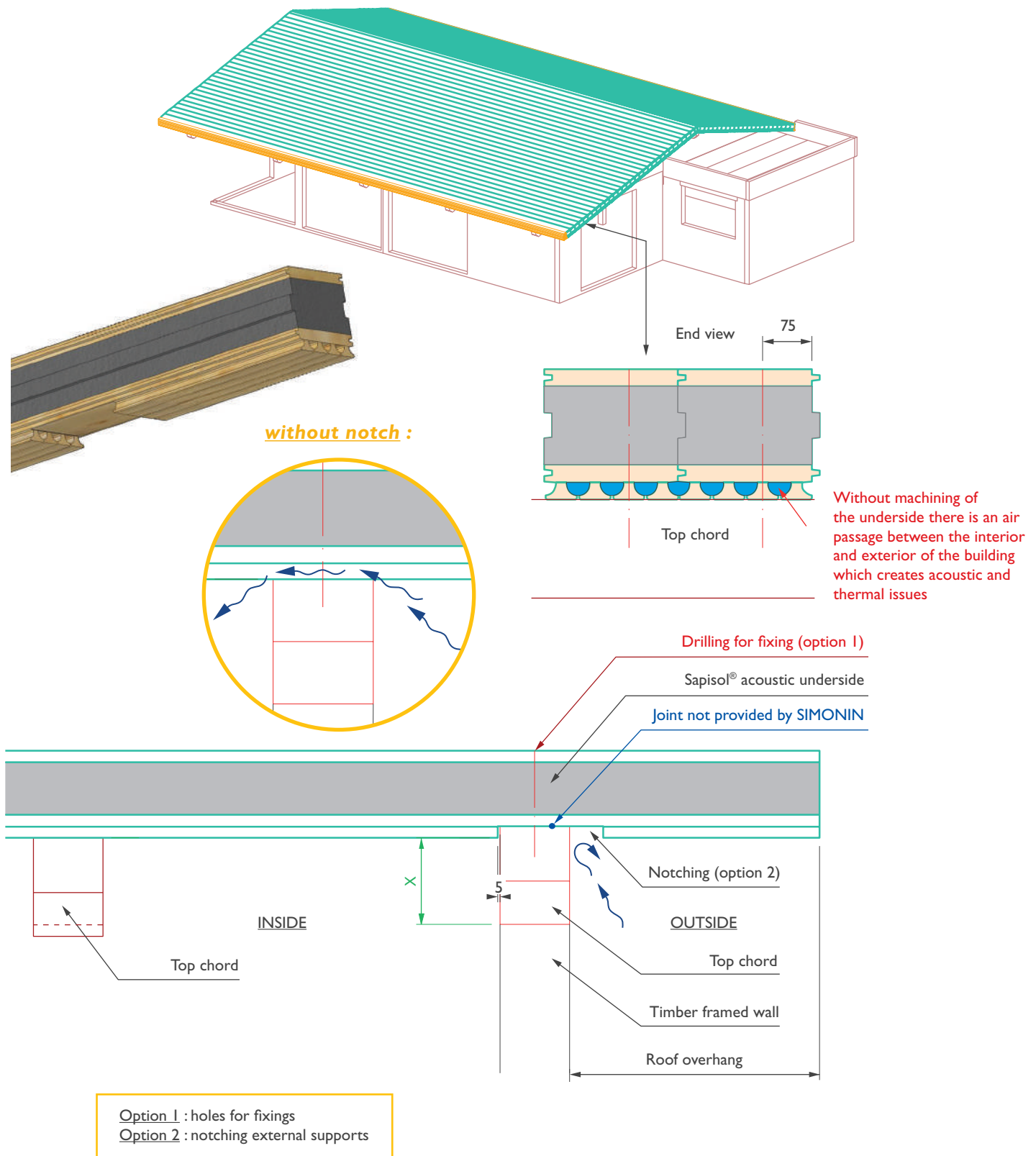


Option 1 : holes for fixings  
Option 2 : notching external supports



# Sapolis® acoustic facing called "Sapiphone"

- Installed parallel to the ridge



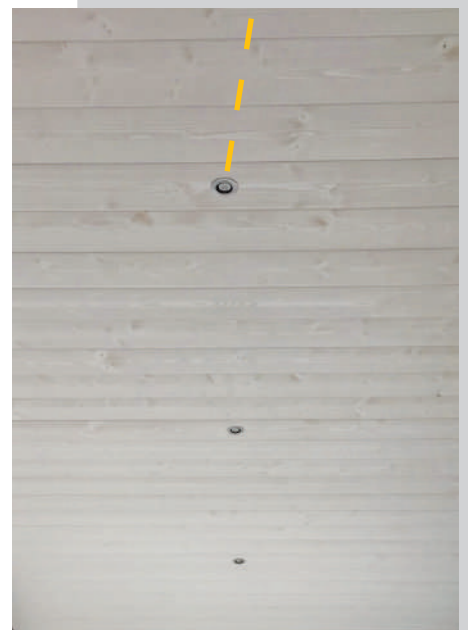
# Electric wires installation inside Sapisol®



Integration of LED spots  
only low voltage



Location plan needed at order.



Spruce - Profile n°2 - Sanded - White stain

# Sapolis<sup>®</sup>, a product that respects the environment

- **EPS** (p40-41)
- **Our quality certificates** (p42)



# EPS

## • Our choice

Simonin roofing components, made of wood and EPS, have a positive environmental impact over their entire life cycle.

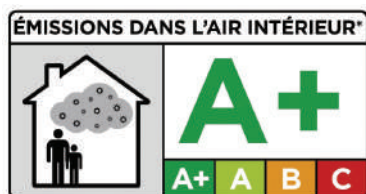
- Preserves environmental resources
- Reduces energy consumption, insulation without thermal bridge
- Saves structural wood and therefore natural resources

SIMONIN wood components have been used since more than 35 years. Two types of EPS are used to manufacture Sapisol® : expanded and graphite, guaranteeing energy efficiency and reliability over time.

In a world where sustainable development is an important factor, EPS naturally finds its place as a building material for the future in energy efficient homes, both by its own qualities and by the low energy and carbon necessary for its production and recycling.

## • Healthy and eco-friendly

Economic and hydrophobic material EPS :



- releases very little Volatile Organic Compound
- emits no fibers (*completely neutral saw dust*).
- doesn't promote the development of bacteria
- hypoallergenic
- contains no gases harmful to the environment
- is totally and easily recyclable

Polystyrene doesn't contain boron as in some so-called "natural" insulation such as cellulose wadding.

A few generations later ...



The wood is crushed and transformed into fuel for heating.  
The EPS is sent to one of the 17 sorting centers in France to be reused.

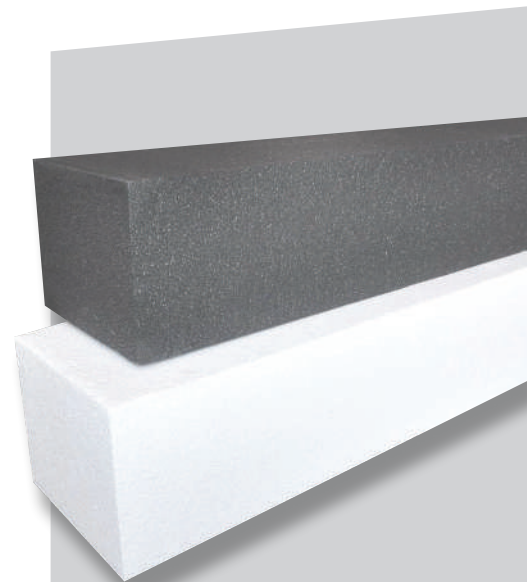


Photo credit : IPEV / Claire LE CALVEZ

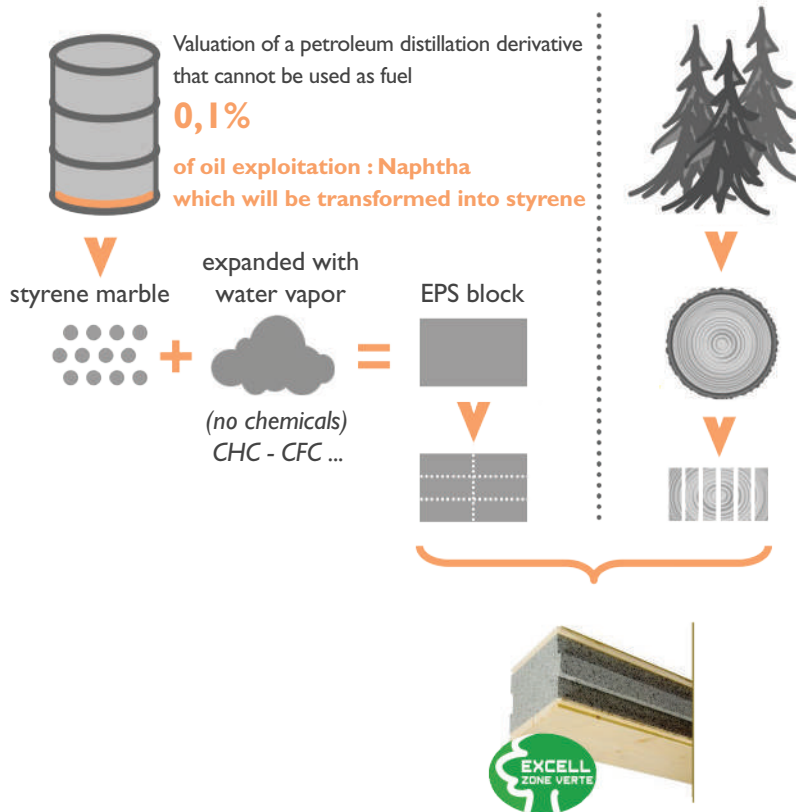


Concordia station in Antarticque



Illa Moutain hut in Andorra

## • The sector



Illla Mountain hut in Andorra



## • Many uses

Easy to use, EPS is omnipresent in :

- building insulation
- food packaging products
- mobile phones, computers, motorcycle helmets...

## • Durable and easy to install

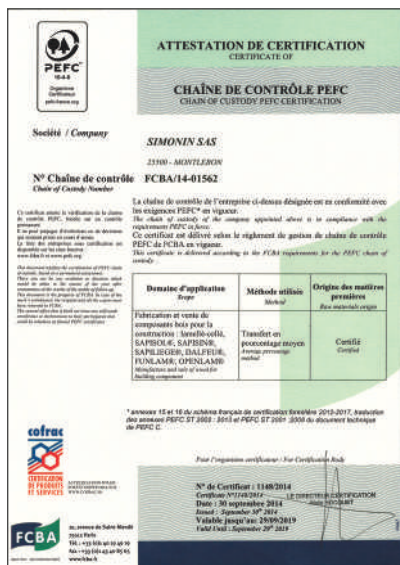
Unlike cellulose fibre, EPS :

- doesn't release any irritating particles during installation
- doesn't settle over time
- doesn't require any special protection during installation and / or removal





# Our quality certificates



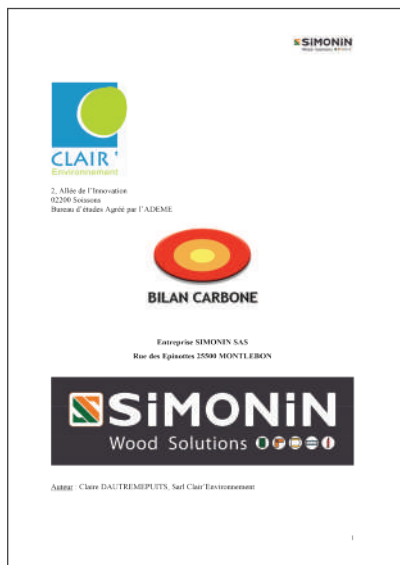
PEFC certificate



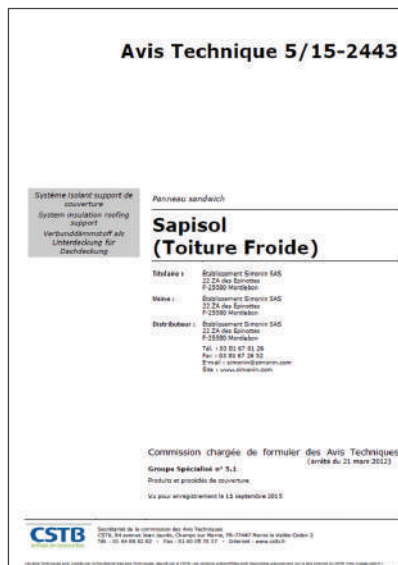
FSC certificate



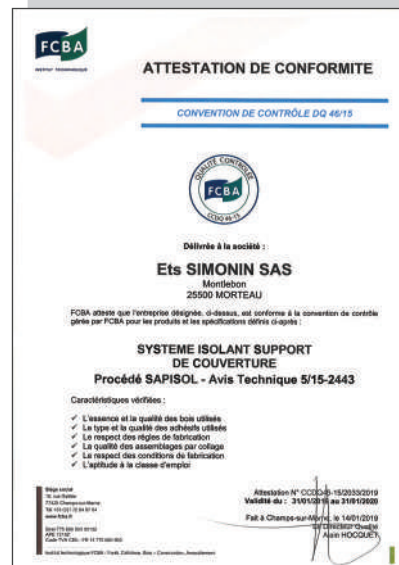
Label Vert certificate



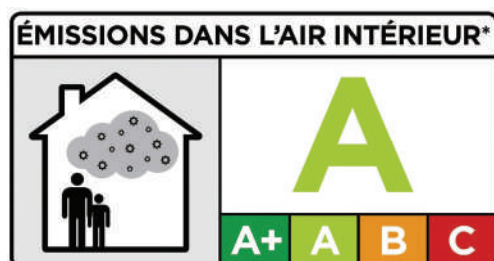
Carbon results



Technical Assessment



Attestation of Conformity Sapisol®





# Sapolis® , a product with recognized efficiency

- **Air tightness** (p44)
- **Extreme situation : Feedback** (p45)
- **Robustness** (p46 - 47)



# Air tightness

As a reminder, the french 2012 thermal regulations don't require any minimum thermal resistance value per wall. However, an overall thermal calculation is required.

Only a competent energy consultant office informed about SIMONIN products will guarantee you a realistic thermal design source of savings. *Don't hesitate to consult us.*



## • Thermal data (according to thermal consultant)

	House A	House B	House C
Altitude (m)	900	1100	820
Roof build up	Sapolis S186 + wood fibre 35 mm	Sapolis S220f + wood fibre 22 mm	Sapolis S220f + wood fibre 60 mm
Thermal resistance (m².K/W)	$R_{\text{Roof}} = 5,77$	$R_{\text{Roof}} = 6,57$	$R_{\text{Roof}} = 7,46$

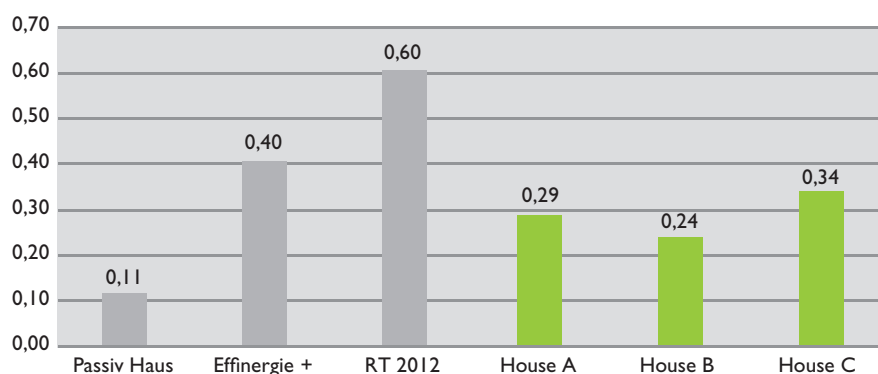
Our realizations below are located in Doubs (25) : one of the coldest regions of France.

## • Final infiltrometry test results (based on air permeability test reports)

	House A	House B	House C
$Q_4$ (m³/h/m²)	0,29	0,24	0,34
$n_{50}$ (vol/h)	1,66	1,22	1,67
$A_L$ (cm²)	52,9	142,0	214,9
n	0,80	0,79	0,76



Private house A



Private house B

## • Conclusion

During the final airtightness test, the results easily meet the requirements of the private home, with  $Q_{\text{measured}} < Q_4$  (0,4m³/h.m²).

During a test carried out during the construction site, the technician underlined in his report : " Sapolis® treats perfectly and completely the air tightness of the roof ".

Proof of the perfect adequacy of Sapolis® to the requirements of RT 2012, this result cannot be obtained without careful implementation of Sapolis® and in accordance with our technical prescriptions.

*See installation details on page 24*



Private house C

# Extreme situation : Feedback

## • Sapolis® in Antarctica !

Sapolis® insulation panel adapts to all environments.  
The proof with the use of the panel in Antarctica, for  
Concordia station, **3000 m above sea level**.

The floor, the facades and the roof are made of Sapolis®, providing  
insulation and comfort for the inhabitants.

- Type of base roof covering : **wood panel**
- Maximum outdoor temperature : **-25°C**
- Minimum outdoor temperature : **-80°C**
- Average year-round temperature : **-55°C**
- Interior atmosphere of the base, temperature : **18° to 20°C**
- Behavior of Sapolis® :

During construction and before the building was used (for 2 years), the  
wood was subjected to the climatic and humidity conditions of the site.

→ **no anomalies**

The building was heated during the winter period for the first time in 2013.  
Since then, Simonin has delivered several other buildings, demonstrating  
that Sapolis® provides full satisfaction.

→ **no anomalies noted**

- Remarks and comments

**Interview with Claire LE CALVEZ - Polar Logistics Department  
French Polar Institute Paul Émile Victor (IPEV)**

*« Remarkable in terms of comfort and well-being compared to the  
other constructions on the site. All users greatly appreciate it (and the  
installation team as well !) ».*



Photos IPEV, Simonin



# Robustness

## • Follow-up after 10 years

Sapisol® used on the inspected buildings, is at least 10 years old this attests of its good behavior, related to its field of use, in particular situations :

- all roofs made at altitudes higher than 900 m are simply ventilated with a traditional flexible underlayer (non-welded ones) or a rigid wood fiber underlayer.
- in swimming pools whose humidity is regulated to enter the conditions of rooms with medium humidity.
- in rooms with high humidity where the temperature is constantly below 12° C.

The hygrothermal behavior of Sapisol® makes it possible to avoid condensation phenomena by using the sorption / desorption capacities of the wood.

Site visits were carried out jointly with the FCBA and the CSTB in August 2013. The aim was to diagnose and validate the performance and behavior of the Sapisol® panel at **altitude** and **in humid environment**.

### Restaurant - 2600 m above sea level (Les deux Alpes - Isère) - 1987

Interior atmosphere : classic

Roofing complex : **S150 (27)** + underlayer + counter battens + battens + steel sheet

Roof side : no trace of humidity, no fungal attack

**H wood : 6 to 7%**

Interior side : no trace of humidity, no fungal attack, no deformation

**H bois : 11 to 13%**



### Maturing cellars in Comté - 830 m 1<sup>st</sup> building (Granges Narboz) - 1996 - 2002

Indoor environment : temperature 8 to 12.5° C - air humidity 95 to 99%

Roofing complex : **S200 (27)** lost roof space + insulated steel sheets

Attic floor side : no trace of condensation **H wood : 12 to 14,5%**

Cellars interior ceiling : some mold on the surface on scots pine

but none on the spruce **H wood : 24 to 28%**

### Maturing cellars in Comté - 1100m 2<sup>nd</sup> building (Saint-Antoine - Doubs) - 1994

Indoor environment: temperature 7.5 to 8.5° C - air humidity 95 to 99%

Roofing complex **S150 (27)** + bituminous membrane + counter battens + battens + fiber cement

Roof side : no trace of humidity, no fungal attack

**H wood : 9 to 10%**

Interior side : no fungal attack **H wood : 26 to 28%**





# Robustness

## Simonin workshop - 800 m (Montlebon - Doubs) - 1990

Indoor atmosphere : temperature 17 to 23° C - air humidity 45 to 95%

Roofing complex : **S120 (27)** + bituminous membrane + counter battens + battens + steel sheets

Roof side : no trace of humidity, no fungal attack

**H wood : 9 to 10,5%**

Interior side : no fungal attack, no deformation



## Charron Restaurant - 1150 m (Montlebon - Doubs) - 1983

Interior atmosphere : classic

Roofing complex : **S100 (27)** + bituminous membrane + counter battens + battens + clay tiles

Roof side : no trace of humidity, no fungal attack

**H wood : 9,5 to 11%**

Interior side : no trace of humidity, no fungal attack, no deformation

**H wood: 10 to 11,5%**

## Charron Museum - 1150 m (Montlebon - Doubs) - 2003

Interior atmosphere : classic

Roofing complex : **S160 (20)** + wood fiber + counter battens + battens + clay tiles

Roof side : no trace of humidity, no fungal attack

**H wood : 7,5 to 8,5%**

Interior side : no trace of humidity, no fungal attack, no deformation

**H wood: 10 to 11,5%**



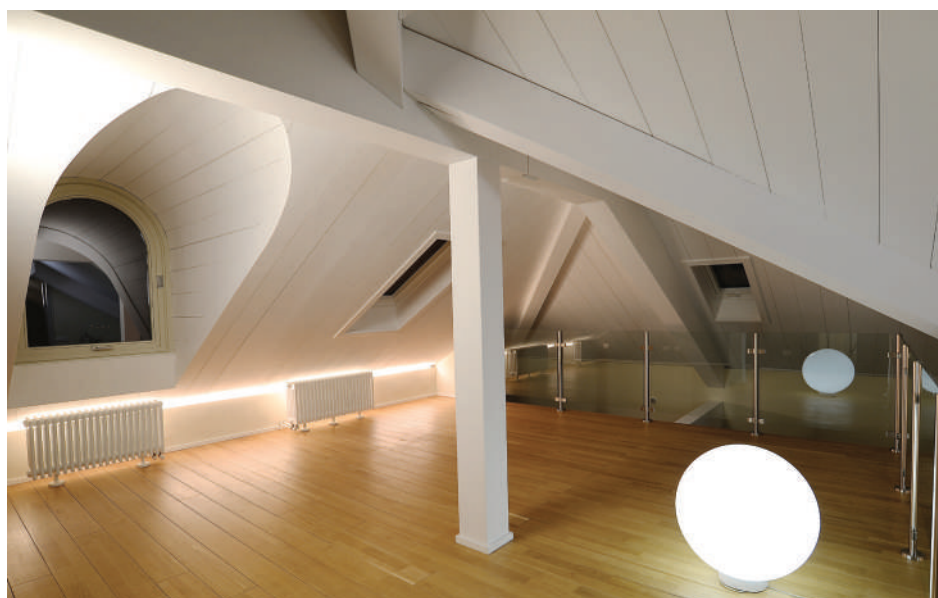
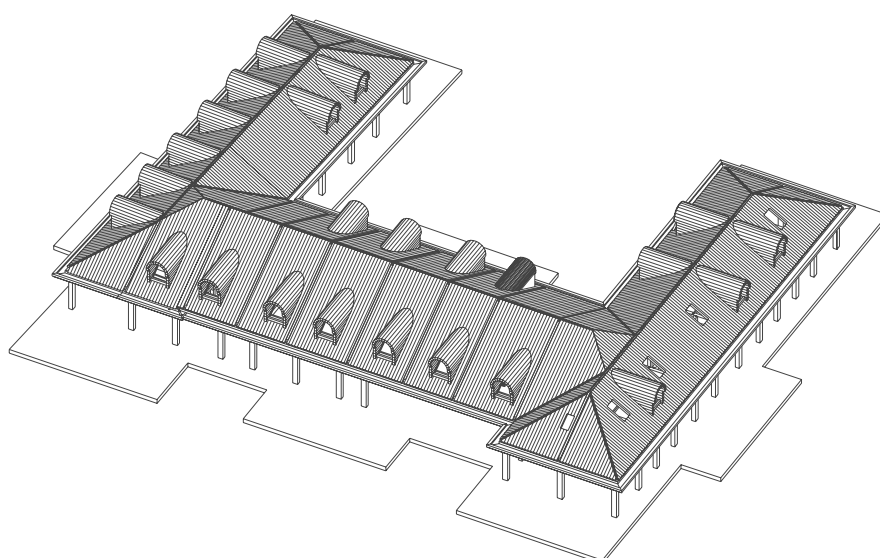
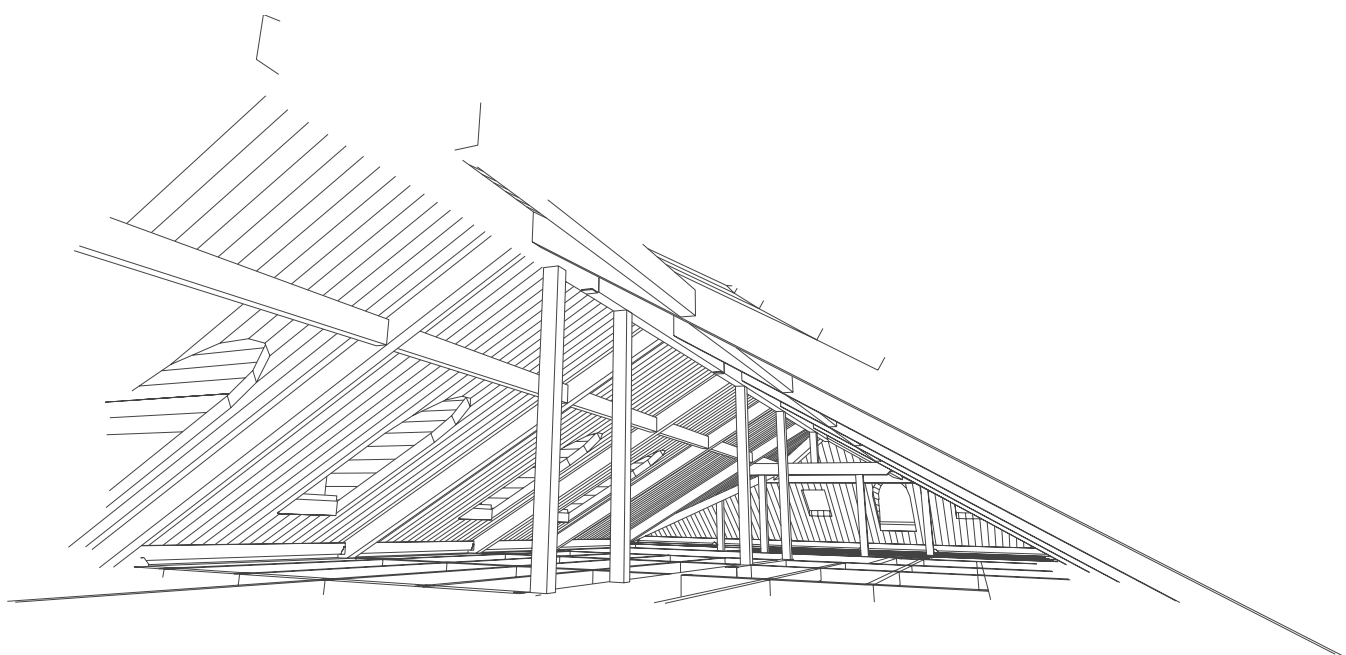
## Private swimming pool - 230 m (Mont-Sous-Vaudrey - Jura) - 2003

Indoor environment : temperature 22 to 30° C - air humidity 55 to 65%

Roofing complex : **S160 (20)** + under flexible underlayer + counter battens + battens + clay tiles

Interior side : no trace of humidity, no fungal attack, no deformation

**H wood : 10,5 to 12,5%**



Spruce - Profile n°2 - Brushed - White paint

# Sapolis® order details

- **Type / Species / Quality / Thickness / Profile** (p50)
- **Laying direction** (p51)
- **Type of cuts supplied** (p52-53)
- **Installation on curved support** (p54)
- **Fasteners / boards of banks and bottom of slope**  
**Sapolis® profile boards / Acoustic underside profile board** (p55)

# Order details Sapolis®

Company : ..... Date : .....

Site reference : .....

## Type of Sapolis®

- Roof Sapolis® ☐
- Floor Sapolis® ☐
- Facade Sapolis® ☐
- Sapolis® standard ☐
- (5,5 ml useful tongue and groove at the ends)
- [Sapolis® with white polystyrene for winery](#) ☐

## Species of Sapolis®

- Visible side spruce ☐
- Visible side spruce "Old wood" ☐
- Visible side oak paneled ☐
- Visible side larch ☐

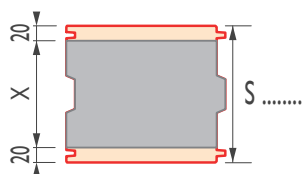
## Quality of Sapolis®

- 1 visible side ☐ industrial grade ☐
- 2 visible sides ☐ Non visible grade ☐

## Thickness of Sapolis®

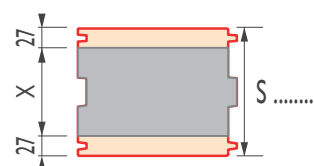
### SAPISOL® with 20 mm boards

- Sapolis® S86 ☐
- Glulam beam S86** ☐
- Sapolis® S106 ☐
- Glulam beam S106** ☐
- Sapolis® S136 ☐
- Glulam beam S136** ☐
- Sapolis® S160 ☐
- Glulam beam S160** ☐
- Sapolis® S186 ☐
- Glulam beam S186** ☐
- Sapolis® S220f ☐
- Glulam beam S220f** ☐



### SAPISOL® with 27 mm boards

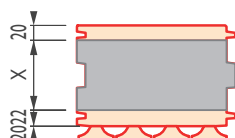
- Sapolis® S100 ☐
- Glulam beam S100** ☐
- Sapolis® S120 ☐
- Glulam beam S120** ☐
- Sapolis® S150 ☐
- Glulam beam S150** ☐
- Sapolis® S174 ☐
- Glulam beam S174** ☐
- Sapolis® S200 ☐
- Glulam beam S200** ☐
- Sapolis® S220e ☐
- Glulam beam S220e** ☐



[Sapolis® in 27 mm boards with fire resistance, profile n° 2 \(chamfer\) compulsory](#)

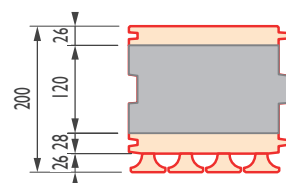
### SAPISOL® ACOUSTIC facing with 20 mm boards

- SAPIPHONE SP 108 ☐
- Glulam beam SP 108** ☐
- SAPIPHONE SP 158 ☐
- Glulam beam SP 158** ☐



### SAPISOL® ACOUSTIC facing with 27 mm boards

- SAPIPHONE SP 200 ☐
- Glulam beam SP 200** ☐



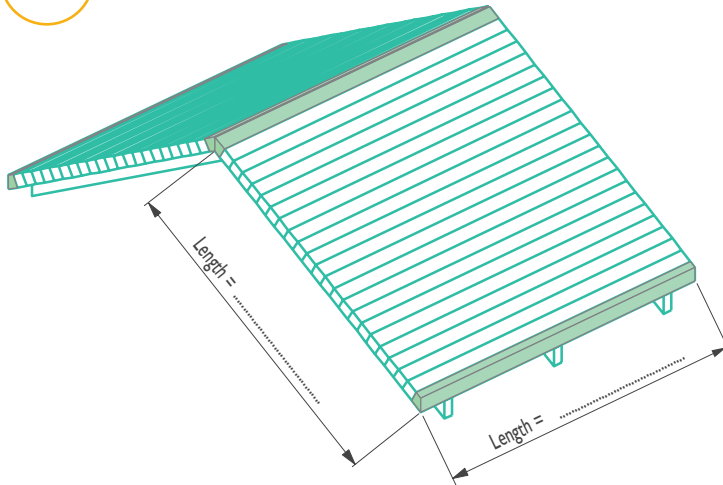


# Order details Sapolis®

Company : ..... Date : .....  
 Site reference : .....

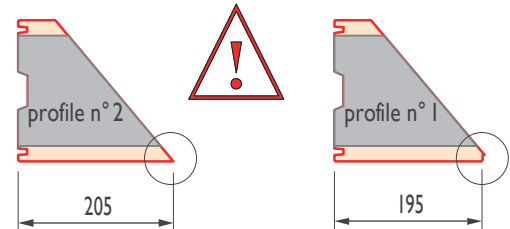
**A**

## Parallel to the ridge



Installed parallel to the ridge

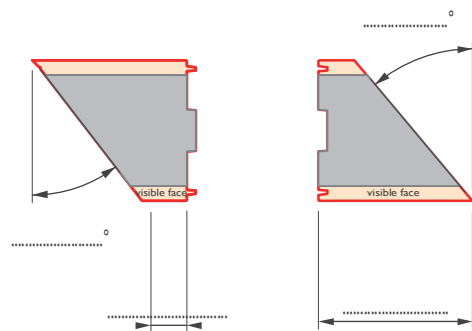
- Number of supports (for calculation of number of fixings)
- Bevel cut made on site
- Bevel cut made on eave
- Bevel cut made on ridge

☐  
☐  
☐  
☐  
☐


for cut, with profile n° 1 there remains a visible rebate, so take a dimension of 195 mm

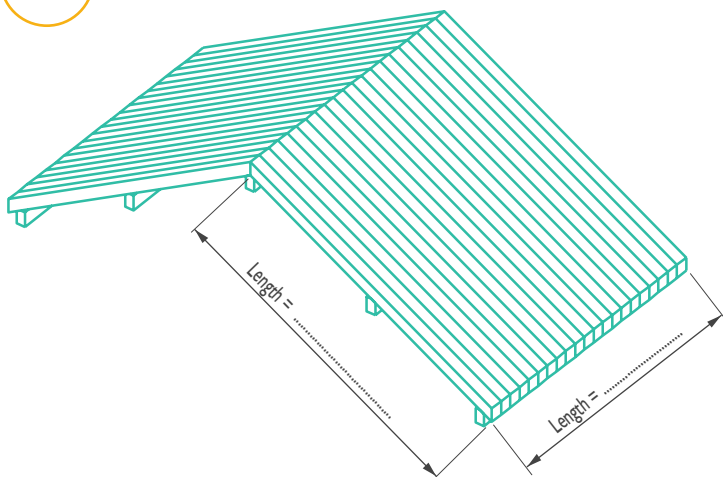
Ridge

Eave



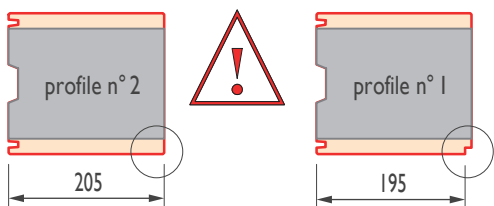
**B**

## Parallel to the gable



Parallel to the gable

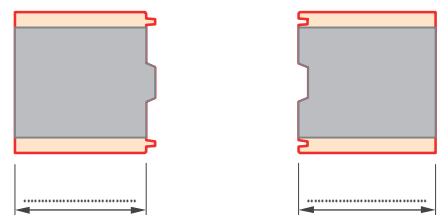
- Number of supports (for calculation of number of fixings)
- Bevel cut made on site
- Bevel cut made on eave
- Bevel cut made on ridge  
(provide start and finish dimensions)

☐  
☐  
☐  
☐  
☐


for cut, with profile n° 1 there remains a visible rebate, so take a dimension of 195 mm

Arrival

Departure

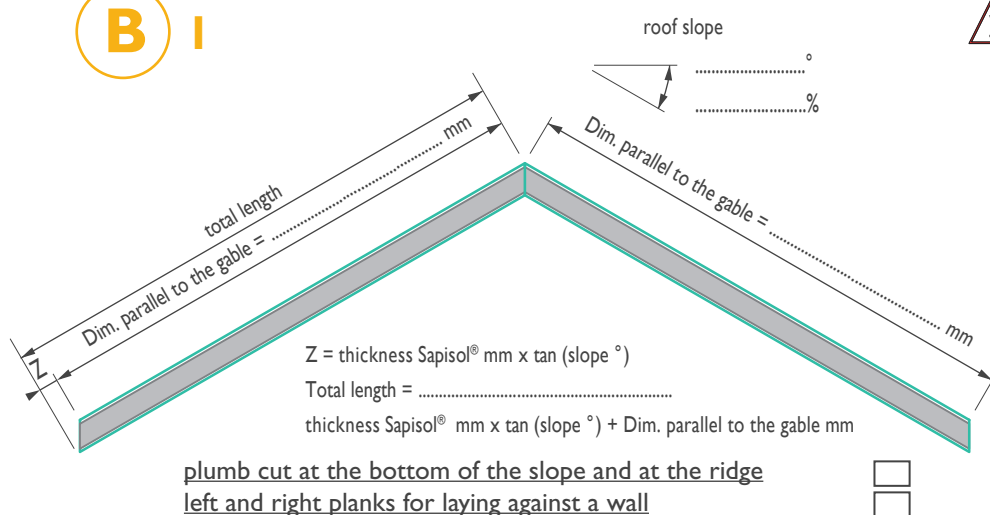


# Order details Sapisol®

Company : ..... Date : .....  
Site reference : .....

## Type of cuts supplied

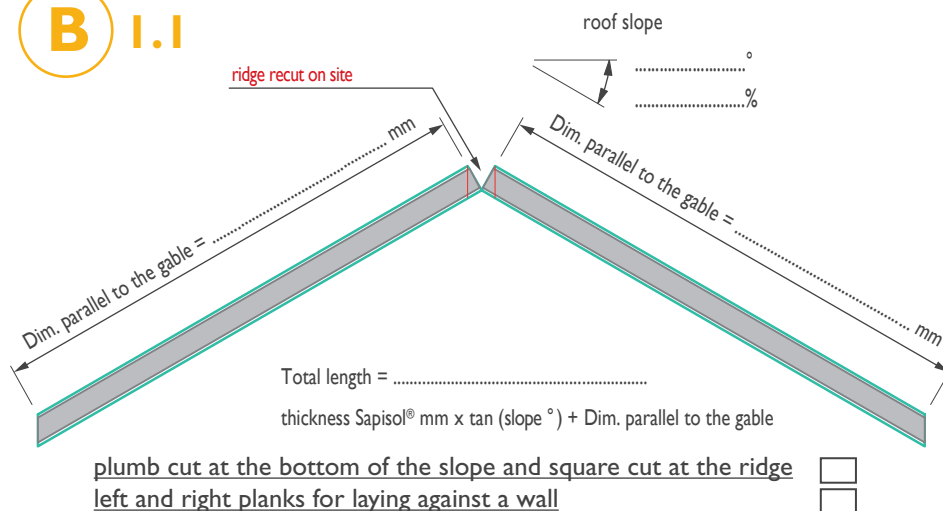
**B** I



**Total length = Billing length**

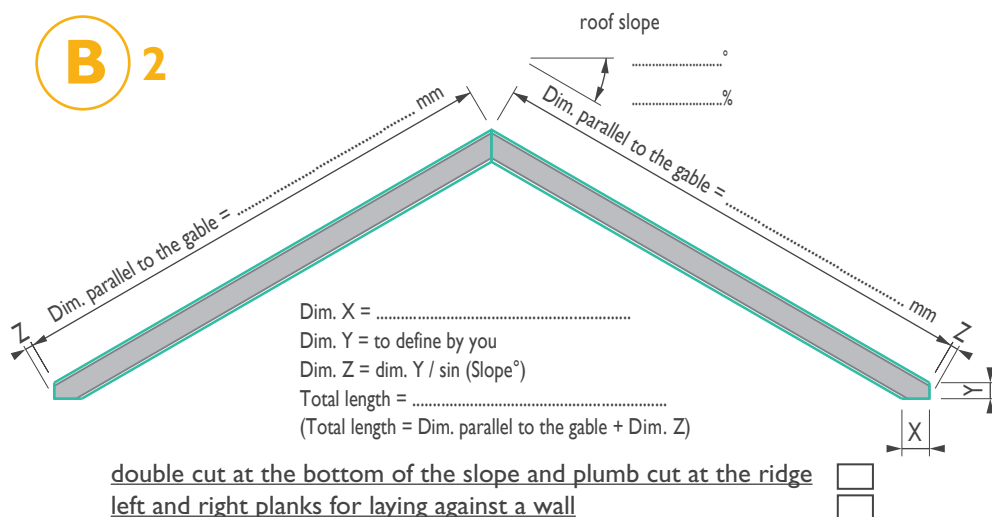
Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

**B** I.1



Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

**B** 2



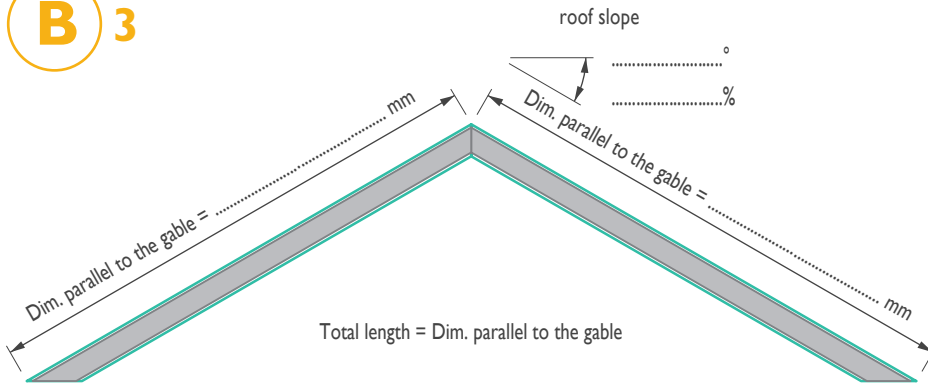
Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

# Order details Sapolis®

Company : ..... Date : .....  
 Site reference : .....

## Type of cuts supplied

**B 3**



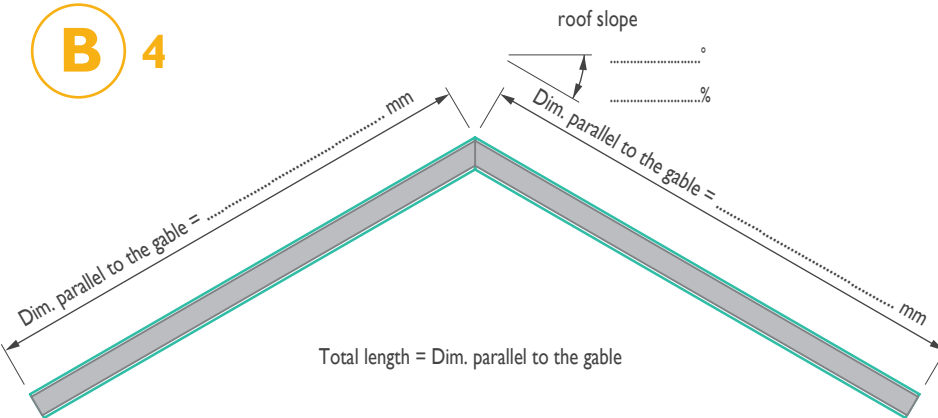
level cut at the bottom of the slope and plumb cut at the ridge  
 left and right planks for laying against a wall

☐  
☐


**Total long = Billing length**

Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

**B 4**



square cut at the bottom of the slope and plumb cut at the ridge  
 left and right planks for laying against a wall

☐  
☐

Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

cut square

☐

Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm

non cut square

☐

Number	Total length
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm
.....	.....mm



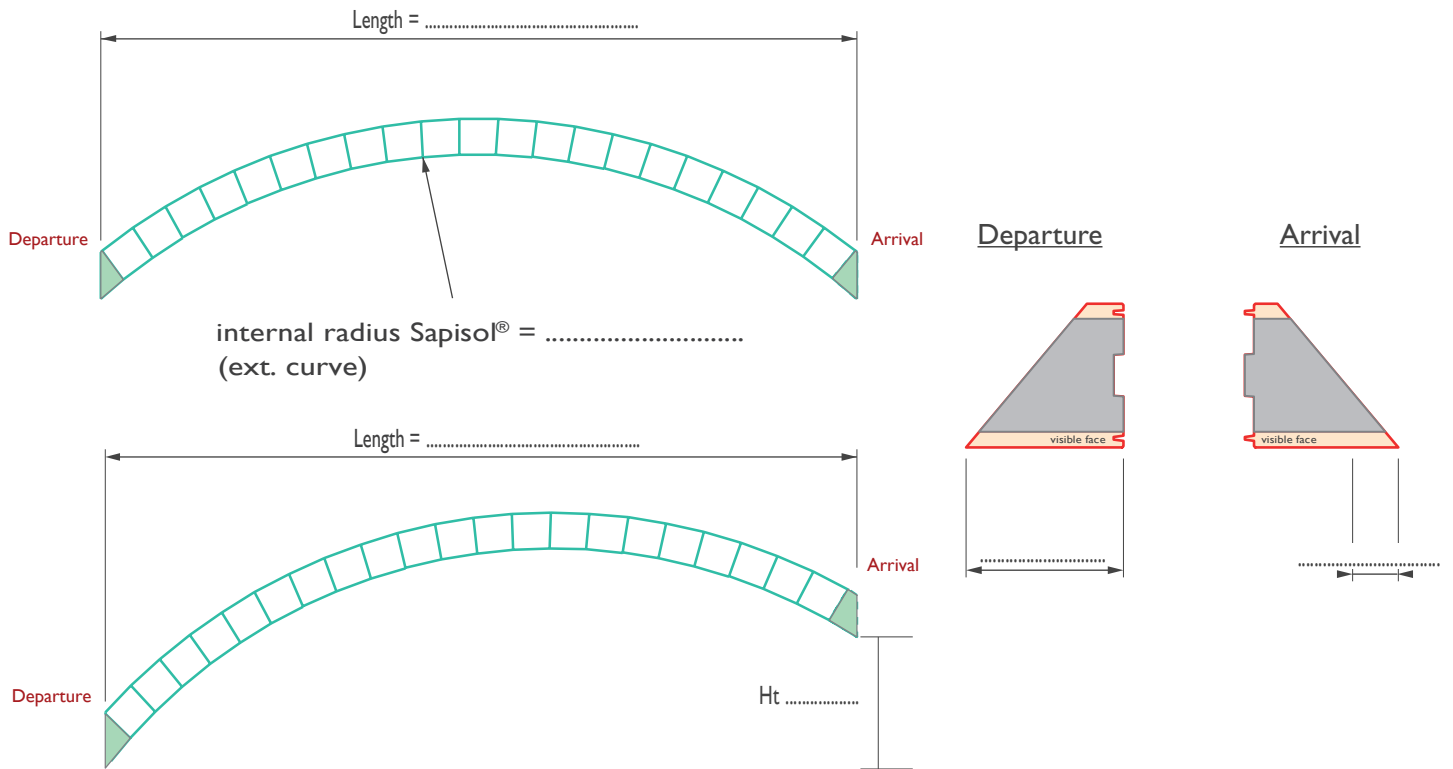
**Beware of Sapolis® not square cut, minimum length of 7m, so plan your optimization**



# Order details Sapisol®

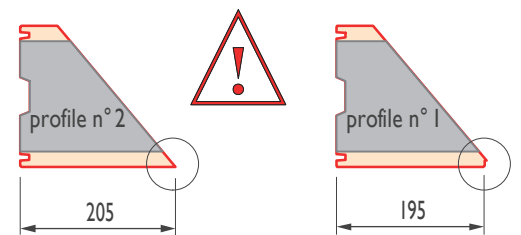
Company : ..... Date : .....  
 Site reference : .....

## Sapisol® for installation on curved support

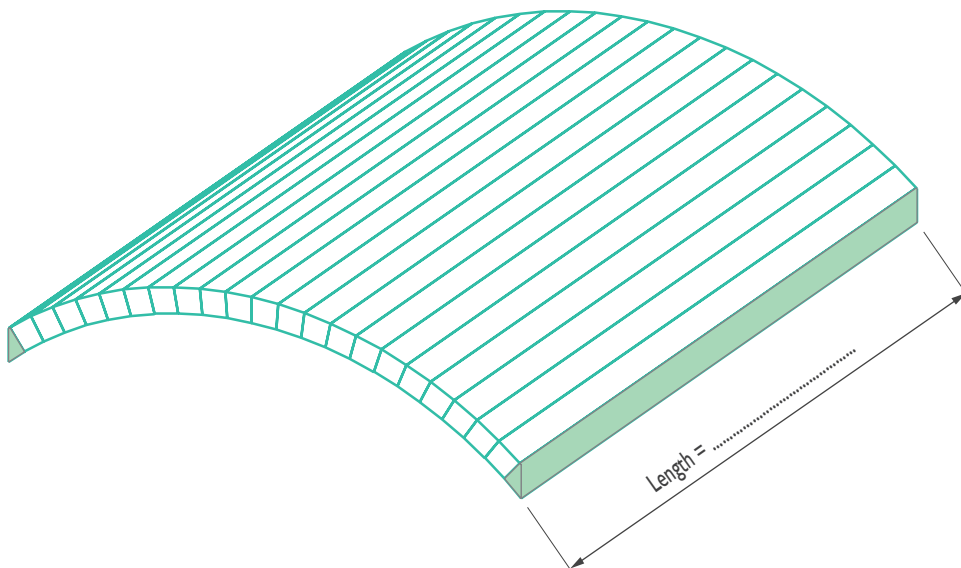


### Sapisol® for installation on curved support

- Number of supports (for calculation of number of fixings)
- Cut carried out on site
- Cut of the starting beam
- Cut of the arrival beam  
(provide start and finish dimensions)

☐  
☐  
☐  
☐  
☐


for cut, with profile n° 1, there remains  
 a visible rebate, so start with a dimension of 195 mm







# Order details Sapolis®

Company : ..... Date : .....

Site reference : .....



## Fixings

• Nails <input type="checkbox"/>	S 86 = nails ø 5,1 x 150 mm	<input type="checkbox"/>	• Screws <input type="checkbox"/>	S 86 = screws ø 8 x 160 mm	<input type="checkbox"/>
	S 136 = nails ø 6 x 200 mm	<input type="checkbox"/>		S 136 = screws ø 8 x 220 mm	<input type="checkbox"/>
	S 160 = nails ø 7 x 225 mm	<input type="checkbox"/>		S 160 = screws ø 8 x 240 mm	<input type="checkbox"/>
	S 186 = nails ø 7 x 250 mm	<input type="checkbox"/>		S 186 = screws ø 8 x 260 mm	<input type="checkbox"/>
	S 220f = nails ø 7 x 300 mm	<input type="checkbox"/>		S 220f = screws ø 8 x 300 mm	<input type="checkbox"/>
	S 174 = nails ø 7 x 250 mm	<input type="checkbox"/>		S 174 = screws ø 8 x 260 mm	<input type="checkbox"/>
	S 200 = nails ø 7 x 300 mm	<input type="checkbox"/>		S 200 = screws ø 8 x 280 mm	<input type="checkbox"/>
	S 220e = nails ø 7 x 300 mm	<input type="checkbox"/>		S 220e = screws ø 8 x 300 mm	<input type="checkbox"/>
	SP 158 = nails ø 7 x 225 mm	<input type="checkbox"/>		SP 158 = screws ø 8 x 240 mm	<input type="checkbox"/>
	SP 200 = nails ø 7 x 300 mm	<input type="checkbox"/>		SP 200 = screws ø 8 x 300 mm	<input type="checkbox"/>
or machined underside = nails ø 7 x 250 mm			or machined underside = screws ø 8 x 260		

## Eave and barge boards

• Finger jointed spruce boards <input type="checkbox"/>	Tongue and groove at the ends	Length 4,50 ml	4 boards / pack soit 18,00 ml	25 x 115 mm	<input type="checkbox"/>
	Planed 4 sides, chamfered edges			25 x 140 mm	<input type="checkbox"/>
	Colourless pressure treatment class 3 + anti-termites			25 x 165 mm	<input type="checkbox"/>
	Without finish			25 x 190 mm	<input type="checkbox"/>
				25 x 215 mm	<input type="checkbox"/>
• In 3 ply spruce panels <input type="checkbox"/>	Square cut, sanded, B / C quality	Length 5,00 ml	4 boards / pack soit 20,00 ml	27 x 250 mm	<input type="checkbox"/>
	Sharp edges			27 x 300 mm	<input type="checkbox"/>
	Colourless pressure treatment class 3 + anti-termites				
	Without finish				

## Sapolis® profile boards

Spruce* <input type="checkbox"/>	Profile n°1 or n°2	Length 4,50 ml	4 boards / pack soit 3,690 m <sup>2</sup>	Profile n°1 <input type="checkbox"/>	Profile n°2 <input type="checkbox"/>
	Sanded, tongue and groove at the ends				
	Without treatment, without finishing (see Sapolis® roofing)				
Larch* <input type="checkbox"/>	Profile n°1 or n°2	Length 4,50 ml	4 boards / pack soit 3,690 m <sup>2</sup>	25 x 205 mm	
	Planed, tongue and groove at the ends				
	Without treatment, without finishing (see Sapolis® roofing)				
				Number of packs : .....	

\* Bs-I, d0 : With finishing on request and according to quantity.

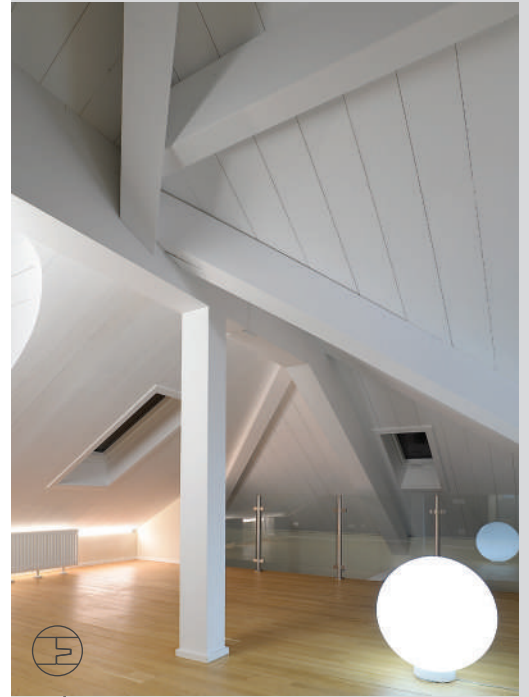
## Acoustic facing profile boards



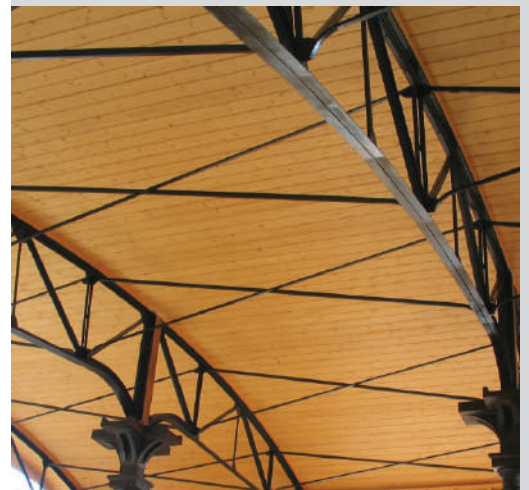
Spruce <input type="checkbox"/>	Sanded, square cut at the ends	Length after cut	Boards / package after cut	52 x 205 mm
	Without treatment, without finishing			Nesting on : .....
	(see Sapolis® roofing)			

• Wood fiber : <input type="checkbox"/>	22 mm	<input type="checkbox"/>	Other-contact us <input type="checkbox"/>
	35 mm	<input type="checkbox"/>	
	60 mm	<input type="checkbox"/>	
		Fixing of wood fiber	<input type="checkbox"/>





Spruce - Profile n°2 - Brushed White paint



Spruce - Acoustic profile



22 ZA des Épinottes • 25500 MONTLEBON • France  
Tel. +33 (0)3 81 67 01 26 • [simonin@simonin.com](mailto:simonin@simonin.com) • [www.simonin.com](http://www.simonin.com)