Sapisol® roofing

Technical Notebook
AT cold roof 5/15-2443
AT warm roof 5.2/19-2649_V1

December 2020
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## Sapisol®, a product that respects the environment
- EPS
- Our quality certificates

## Sapisol®, a product with recognized efficiency
- Air tightness
- Extreme situations : feedback
- Robustness

## Sapisol® order details
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
Applications
New and refurbishment

- Vertical installation
- Horizontal installation
- Curved roof installation
- Flat roof installation

- Spruce - Profile n°2 - Natural
- Spruce - Profile n°1
  2 coats of white stain
- Spruce - Profile n°2
  Colourless stain
- Green roof support and ceiling

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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® S150 (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.
**Dimensions**

2 families

- **20 mm thick boards**
  - All lengths
  - 86 to 220 mm usable

- **27 mm thick boards**
  - All lengths
  - 174 to 220 mm usable

*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

---

<table>
<thead>
<tr>
<th>Profile type</th>
<th>SAPISOL® type</th>
<th>Visible finish side</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Profile with gap" /> N°1</td>
<td>S 86 to S 220 f S 100 to S 220 e</td>
<td>Sanded (standard) or Brushed (on demand)</td>
</tr>
<tr>
<td><img src="image2.png" alt="Profile without gap" /> N°2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corner profiling for installation on curved supports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radius N°1 or N°2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underside machined according to the radius of curvature - Recommended for radius &lt; 1.30 m</td>
<td>S 86 to S 220 f S 100 to S 220 e</td>
<td>PLANED only (The top side can also be machined according to the radius)</td>
</tr>
</tbody>
</table>

**www.simonin.com**
### Characteristics

- **Sapisol® with board thickness 20 mm (Dwelling)**

<table>
<thead>
<tr>
<th>Total thickness type (mm)</th>
<th>S 86</th>
<th>S 106</th>
<th>S 136</th>
<th>S 160</th>
<th>S 186</th>
<th>S 220 f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable width (mm)</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
</tr>
<tr>
<td>Composition (mm)</td>
<td>spruce</td>
<td>graphite-enhanced polystyrene subject to ACERMI - Density : 25 kg/m³ minimum spruce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg/m²)</td>
<td>18.70</td>
<td>19.3</td>
<td>20.20</td>
<td>20.90</td>
<td>21.70</td>
<td>22.70</td>
</tr>
<tr>
<td>Temperature values $U_c$ (W/m² x K)</td>
<td>0.50</td>
<td>0.38</td>
<td>0.28</td>
<td>0.23</td>
<td>0.19</td>
<td>0.16</td>
</tr>
<tr>
<td>Coefficient $U_c$, $R^*$ with acoustic underlay</td>
<td>35 mm</td>
<td>60 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reaction to fire classification</td>
<td>D-s1, d0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot-dip galvanized nails (with or without lifting)</td>
<td>5.5 x 150 mm</td>
<td>5.5 x 180 mm</td>
<td>6 x 200 mm</td>
<td>7 x 225 mm</td>
<td>7 x 250 mm</td>
<td>7 x 300 mm</td>
</tr>
<tr>
<td>Carpentry screws (with lifting or without)</td>
<td>8 x 160 mm</td>
<td>8 x 180 mm</td>
<td>8 x 220 mm</td>
<td>8 x 240 mm</td>
<td>8 x 260 mm</td>
<td>8 x 300 mm</td>
</tr>
</tbody>
</table>

* Doesn’t take account of surface thermal resistances.

- **Sapisol® with board thickness 27 mm (with B-s1, d0)**

<table>
<thead>
<tr>
<th>Total thickness type (mm)</th>
<th>S 100</th>
<th>S 120</th>
<th>S 150</th>
<th>S 174</th>
<th>S 200</th>
<th>S 220 e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable width (mm)</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
<td>205</td>
</tr>
<tr>
<td>Composition (mm)</td>
<td>spruce</td>
<td>graphite-enhanced polystyrene subject to ACERMI - Density : 25 kg/m³ minimum spruce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (kg/m²)</td>
<td>24.60</td>
<td>25.20</td>
<td>26.10</td>
<td>26.80</td>
<td>27.60</td>
<td>28.20</td>
</tr>
<tr>
<td>Temperature values $U_c$ (W/m² x K)</td>
<td>0.48</td>
<td>0.36</td>
<td>0.27</td>
<td>0.22</td>
<td>0.19</td>
<td>0.17</td>
</tr>
<tr>
<td>Coefficient $U_c$, $R^*$ with acoustic underlay</td>
<td>35 mm</td>
<td>60 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reaction to fire classification</td>
<td>D-s1, d0 (B-s1, d0 on demand)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot-dip galvanized nails (with or without lifting)</td>
<td>5.5 x 180 mm</td>
<td>6 x 200 mm</td>
<td>7 x 225 mm</td>
<td>7 x 250 mm</td>
<td>7 x 300 mm</td>
<td>7 x 300 mm</td>
</tr>
<tr>
<td>Carpentry screws (with or without lifting)</td>
<td>8 x 180 mm</td>
<td>8 x 200 mm</td>
<td>8 x 240 mm</td>
<td>8 x 260 mm</td>
<td>8 x 280 mm</td>
<td>8 x 300 mm</td>
</tr>
</tbody>
</table>

* Doesn’t take account of surface thermal resistances.

The thermal resistance measured is significantly higher than the result of the purely theoretical calculation. The Sapisol® process is without thermal bridge and without setting.
### Spans and loads

- **Sapisol® with board thickness 20 mm**

<table>
<thead>
<tr>
<th>3 supports (A)</th>
<th>Distributed downward load (daN/m²)</th>
<th>Placed on 3 supports</th>
<th>Placed on 2 supports</th>
<th>Roof overhangs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>4.00</td>
<td>0.00</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>4.00</td>
<td>0.00</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>3.60</td>
<td>0.00</td>
<td>4.55</td>
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<td>250</td>
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<td>4.05</td>
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<td>300</td>
<td>3.00</td>
<td>0.00</td>
<td>3.70</td>
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<td></td>
<td>350</td>
<td>2.75</td>
<td>0.00</td>
<td>3.40</td>
</tr>
<tr>
<td></td>
<td>400</td>
<td>2.60</td>
<td>0.00</td>
<td>3.20</td>
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<td></td>
<td>500</td>
<td>2.40</td>
<td>0.00</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>2.10</td>
<td>0.00</td>
<td>2.80</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>1.90</td>
<td>0.00</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>1.70</td>
<td>0.00</td>
<td>2.30</td>
</tr>
</tbody>
</table>

### Sapisol® with board thickness 27 mm

<table>
<thead>
<tr>
<th>3 supports (A)</th>
<th>Distributed downward load (daN/m²)</th>
<th>Placed on 3 supports</th>
<th>Placed on 2 supports</th>
<th>Roof overhangs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>5.30</td>
<td>0.00</td>
<td>6.00</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>4.35</td>
<td>0.00</td>
<td>5.35</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>3.75</td>
<td>0.00</td>
<td>4.60</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>3.35</td>
<td>0.00</td>
<td>4.80</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>3.10</td>
<td>0.00</td>
<td>4.40</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>2.85</td>
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<td>4.00</td>
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<tr>
<td></td>
<td>400</td>
<td>2.65</td>
<td>0.00</td>
<td>3.80</td>
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<tr>
<td></td>
<td>500</td>
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<td>0.00</td>
<td>3.60</td>
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<tr>
<td></td>
<td>600</td>
<td>2.25</td>
<td>0.00</td>
<td>3.40</td>
</tr>
<tr>
<td></td>
<td>700</td>
<td>2.10</td>
<td>0.00</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>750</td>
<td>1.90</td>
<td>0.00</td>
<td>3.00</td>
</tr>
</tbody>
</table>

**Maximum admissible span (m) in descending loads (cover + normal snow according to NV 65 modified - February 2009).**
Permanent loads (daN / m²)

- Mechanical tiles : 45 kg/m²
- Battens and counterbattens : 4 kg/m²
- Wood fiber 35 mm : 9 kg/m²
- Various : 5 kg/m²

Total 63 kg/m²

Roof slope 31°

Calculation of the load per m² with slope

Permanent load + (normal snow load Proj. Horiz. x cos slope °)

63 danN/m² + (220 danN/m² x cos 31°)

63 + (220 x 0.857) = 251 daN/m²

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

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/m²
Destination

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

Buildings open to the public
- SAPISOL® with 27 mm boards
- Profile n°2
- With flame retardant stain B-sl, d0 *

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

Industrial building
- SAPISOL® 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-sl, d0 *

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

Winery
- SAPISOL® 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.
Maturing cellar

- SAPISOL® 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

- SAPISOL® 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

- SAPISOL® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- B-sl, 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 - Colourless

Swimming pool

- SAPISOL® 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

- SAPISOL® with 20 mm or 27 mm boards
- Profile n°1 or n°2
- B-sl, 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

December 2020
Sapisol® 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® acoustic facing panel is available in 3 thicknesses

<table>
<thead>
<tr>
<th>Thickness</th>
<th>SP 108 mm</th>
<th>SP 158 mm</th>
<th>SP 200 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

• Characteristics

<table>
<thead>
<tr>
<th>Models</th>
<th>SP 108</th>
<th>SP 158</th>
<th>SP 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood + EPS + Wood (mm)</td>
<td>20+22+46+20</td>
<td>20+22+96+20</td>
<td>26+28+120+26</td>
</tr>
<tr>
<td>Usable width (mm)</td>
<td>205</td>
<td>205</td>
<td>205</td>
</tr>
<tr>
<td>Weight kg/m²</td>
<td>23.97</td>
<td>25.47</td>
<td>33.80</td>
</tr>
<tr>
<td>Theoretical thermal resistance R² (m² K/W)</td>
<td>1.79</td>
<td>3.40</td>
<td>4.29</td>
</tr>
<tr>
<td>Coefficient thermal insulation $U_c$ (W/m² K)</td>
<td>0.50</td>
<td>0.28</td>
<td>0.22</td>
</tr>
<tr>
<td>Coefficient $U_c$ : R² with acoustic underlay 35 mm</td>
<td>0.36</td>
<td>2.59</td>
<td>0.23</td>
</tr>
<tr>
<td>Coefficient $U_c$ : R² with acoustic underlay 60 mm</td>
<td>0.31</td>
<td>3.15</td>
<td>0.20</td>
</tr>
<tr>
<td>Reaction to fire classification</td>
<td>D-sl, d0</td>
<td>D-sl, d0 (B-sl, d0 on demand)</td>
<td></td>
</tr>
</tbody>
</table>

* Doesn’t take into account the surface thermal resistances.

• Load / span table

<table>
<thead>
<tr>
<th>Placed on 3 supports</th>
<th>Placed on 2 supports</th>
<th>Roof overhangs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 supports (A) 2 supports (B) roof overhangs (C)</th>
<th>SP 108</th>
<th>SP 158</th>
<th>SP 200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>100</td>
<td>4.00</td>
<td>3.20</td>
<td>1.00</td>
</tr>
<tr>
<td>150</td>
<td>4.00</td>
<td>3.20</td>
<td>1.00</td>
</tr>
<tr>
<td>200</td>
<td>3.60</td>
<td>2.90</td>
<td>0.90</td>
</tr>
<tr>
<td>250</td>
<td>3.30</td>
<td>2.65</td>
<td>0.85</td>
</tr>
<tr>
<td>300</td>
<td>3.00</td>
<td>2.40</td>
<td>0.80</td>
</tr>
<tr>
<td>400</td>
<td>2.60</td>
<td>2.10</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Distributed downward load (daN/m²)

Permissible spans in meters.
• 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

<table>
<thead>
<tr>
<th>Total thickness type (mm)</th>
<th>SL 136</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood + Cork + Wood</td>
<td>20+96+20</td>
</tr>
<tr>
<td>Usable width (mm)</td>
<td>205</td>
</tr>
<tr>
<td>Length</td>
<td>All lengths</td>
</tr>
<tr>
<td>Weight (kg/m²)</td>
<td>39</td>
</tr>
<tr>
<td>Insulation coefficient $U_c$ (W/m²·K)</td>
<td>0.39</td>
</tr>
<tr>
<td>Insulation coefficient $R^*$ (m²·K/W)</td>
<td>2.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insulation coefficient $U_c$</th>
<th>$R^*$ with 35 mm wood fibre underlay</th>
<th>$R^*$ with 60 mm wood fibre underlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.313</td>
<td>3.19</td>
<td>0.253</td>
</tr>
<tr>
<td>3.76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Doesn’t take into account surface thermal resistances.

• Load / span table

<table>
<thead>
<tr>
<th>Distributed downward load (daN/m²)</th>
<th>Spans A (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placed on 3 supports</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>4.70</td>
</tr>
<tr>
<td>150</td>
<td>3.80</td>
</tr>
<tr>
<td>200</td>
<td>3.20</td>
</tr>
<tr>
<td>250</td>
<td>2.90</td>
</tr>
<tr>
<td>300</td>
<td>2.60</td>
</tr>
<tr>
<td>350</td>
<td>2.30</td>
</tr>
</tbody>
</table>

Maximum permissible spans (m) in descending loads.

* placed on 2 supports = span A/1.25
* roof overhang limited to 30% of the above table

December 2020
Finishes of the undersides

- **Wood species**

  - **Spruce**
  - **Spruce old-wood**
  - **Larch**
  - **Oak**
• 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°1 - Sanded - Natural

Spruce - Profile n°1 - Sanded - Natural
Installation principles

SAPISOL® is installed either:

- **On a cold roof** (ventilated) - AT - 5/15 - 2443
  (SAPISOL® with 20 mm or 27 mm boards)
- **On a warm roof** (non-ventilated roofing support) - AT - 5.2/19 - 2649_V1
  (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**

- Counter batten section: 27 x 40 mm
- Counter batten spacing depending on tile batten section (50 cm max)
- Batten cross section
- Batten spacing
- Height of counter battens

Nota: minimum penetration length:
- 40 mm into the 27 mm boards
- 30 mm into the 20 mm boards

Fixing of the counter battens:
- Screw Ø 5 mm

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

- Counter batten section: 27 x 40 mm minimum
- Counter batten spacing depending on tile batten section (50 cm max)
- Batten cross section
- Batten spacing
- Height of counter battens

Nota: minimum penetration length:
- 40 mm into the 27 mm boards
- 30 mm into the 20 mm boards

Fixing of the counter battens:
- Screw Ø 5 mm

Flexible underlay
Rigid underlay
Wood fiber
Ventilated roofs

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

- **Roofing:**
  - Corrugated steel sheets
  - Corrugated aluminum 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**
- **Height of counter battens**

- **Fixing the counter battens:**
  - Screw ø 6 minimum

  *Nota: minimum penetration length:*
  - 40 mm into the 27 mm boards
  - 30 mm into the 20 mm boards

**Or**

- **Attachment of joists:**
  - ø 6 minimum depending on uplift
  - Quantity depending on uplift
  - Through the counter battens

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

- **Metallic sheet roofing:**
  - Zinc
  - Stainless steel
  - Copper
  - Lead

- **Roof board**
- **Counter batten**

- **Fixing the sleepers:**
  - With nails
  - Screw ø 6 minimum depending on uplift

- **Fixing of the counter battens:**
  - Screws ø 6 minimum

  *Nota: minimum penetration length:*
  - 40 mm into the 27 mm boards
  - 30 mm into the 20 mm boards

*Figure 17 - Couverture plaques nervurées et ondulées sur lambourdes* (Plaques nervurées acier ou aluminium, plaques ondulées fibres-ciment)
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

- Roof board for:
  - Zinc, stainless steel, copper, slate, asphalt shingle
- Additional waterproof membrane
- Counter batten
- Trapezoidal batten
- Sapisol® roofing panels

#### Sleeper for:
- Corrugated steel sheets

#### OR

- Batten for: slate
- Counter batten
- Roof board
- Counter batten
- Sapisol® roofing panels

### Raised

- Roof board for:
  - Zinc, stainless steel, copper, slates, asphalt shingle
- Additional waterproof membrane
- Counter batten
- Sapisol® roofing panels

#### Sleeper for:
- Corrugated steel sheets

#### OR

- Batten for: slate
- Counter batten
- Roof board
- Counter batten
- Sapisol® roofing panels

Additional sealing on trapezoidal edges or under extensions prepared in accordance with the 2011 CSTB Guide to mountain climate cover.
Installation principles
Unventilated roofs without additional insulation

Without additional insulation, only PVC membranes with an Sd ≤ 30 m fixed mechanically or independently are tolerated. Below are some examples of possibilities.

**Direct installation**

**TYPE A**

Waterproof membrane
PVC with Sd < 30 m

**TYPE B**

Waterproof membrane
PVC with Sd < 30 m

**Installation with non-ventilated air space**

**TYPE C.1**

Solid wood or wood panels

**TYPE C.2**

Solid wood or wood panels

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**

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>R ($m^2 \times K/W$)</th>
<th>R total real</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>3.91</td>
<td>10.21</td>
</tr>
<tr>
<td>120</td>
<td>5.65</td>
<td>16.96</td>
</tr>
<tr>
<td>160</td>
<td>6.96</td>
<td>20.35</td>
</tr>
<tr>
<td>200</td>
<td>8.70</td>
<td>26.00</td>
</tr>
<tr>
<td>90</td>
<td>3.91</td>
<td>10.21</td>
</tr>
<tr>
<td>120</td>
<td>5.65</td>
<td>16.96</td>
</tr>
<tr>
<td>160</td>
<td>6.96</td>
<td>20.35</td>
</tr>
<tr>
<td>200</td>
<td>8.70</td>
<td>26.00</td>
</tr>
</tbody>
</table>

**With additional insulation**

- **SAPISOL + VAPOR BARRIER + INSULATION with 1/3 - 2/3 rule**

<table>
<thead>
<tr>
<th>Models</th>
<th>S 86</th>
<th>S 106</th>
<th>S 136</th>
<th>S 160</th>
<th>S 100</th>
<th>S 120</th>
<th>S 150</th>
<th>S 174</th>
</tr>
</thead>
<tbody>
<tr>
<td>R Sapisol alone</td>
<td>1.79</td>
<td>2.44</td>
<td>3.40</td>
<td>4.18</td>
<td>1.90</td>
<td>2.54</td>
<td>3.51</td>
<td>4.29</td>
</tr>
<tr>
<td>R Insulation minimum</td>
<td>3.58</td>
<td>4.87</td>
<td>6.81</td>
<td>8.36</td>
<td>3.80</td>
<td>5.09</td>
<td>7.02</td>
<td>8.57</td>
</tr>
<tr>
<td>R total minimum theoretical</td>
<td>5.37</td>
<td>7.31</td>
<td>10.21</td>
<td>12.54</td>
<td>5.70</td>
<td>7.63</td>
<td>10.54</td>
<td>12.86</td>
</tr>
</tbody>
</table>

With additional insulation:

- **PIR : $\lambda$ 0.023**
  - Thickness (mm) | R ($m^2 \times K/W$) | R total real |
  - 90             | 3.91                   | 10.21        |
  - 120            | 5.65                   | 16.96        |
  - 160            | 6.96                   | 20.35        |
  - 200            | 8.70                   | 26.00        |
  - 90             | 3.91                   | 10.21        |
  - 120            | 5.65                   | 16.96        |
  - 160            | 6.96                   | 20.35        |
  - 200            | 8.70                   | 26.00        |

- **Polystyrene : $\lambda$ 0.030**
  - Thickness (mm) | R ($m^2 \times K/W$) | R total real |
  - 110            | 3.67                   | 10.10        |
  - 150            | 5.67                   | 16.10        |
  - 210            | 7.00                   | 21.85        |
  - 260            | 8.67                   | 28.35        |
  - 120            | 4.00                   | 16.00        |
  - 160            | 5.67                   | 22.00        |
  - 220            | 7.33                   | 28.33        |
  - 260            | 8.67                   | 34.67        |

- **Mineral wool : $\lambda$ 0.040**
  - Thickness (mm) | R ($m^2 \times K/W$) | R total real |
  - 150            | 3.75                   | 10.40        |
  - 200            | 5.75                   | 16.40        |
  - 280            | 7.00                   | 22.80        |
  - 340            | 8.50                   | 29.30        |
  - 160            | 4.00                   | 20.00        |
  - 210            | 5.50                   | 26.50        |
  - 290            | 7.25                   | 33.25        |
  - 350            | 8.75                   | 40.75        |

Sapisol® with 20 mm boards

Sapisol® with 27 mm boards
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

Respect theoretical marking of Sapisol®

Tracing every 205 mm on carrier

Continuous insulation Finished overhang underside

Roof and finished underside in one operation
Installation and fixing of panels

• Standard fixing
• Reinforced fixing (high wind regions)

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

- Beam engagement
- Fixing without tightening
- Tightening of the previous fastening

Sapisol® roofing panel
Timber batten minimum section 100 x 100 mm

Sapisol® fixing
Flexible underlay
Sapisol® roofing panel

December 2020
Installation details

Ridges

In all the figures, for the plain climate, the under-roof screen is "CSTB approved" or "CSTB certified", Sd1.

- Pre assembled Sapisol® beams by gluing in workshop
- Sapisol® roofing panel
- Sealing joint (if needed)

(Facilitates projection adjustment)

- Complementary layer of roofing underlayment
- Gap filled in with expanding foam
- Fixing by nail or screw
- Flexible underlay

- Complementary layer
- Roofing underlayment
- Flexible underlay

- Gap filled in with expanding foam
- Fixing by nail or screw
- Flexible underlay

- Complementary layer of roofing underlayment
- Gap filled in with expanding foam
- Flexible underlay

- Sapisol® roofing panel
- Positioning grooves (if needed)

Facilities projection adjustment

In all the figures, for the plain climate, the under-roof screen is "CSTB approved" or "CSTB certified", Sd1.
Valley / Hip

Valley

Hip

Sapisol® roofing panel

Flexible underlay

Gap filled with expanding foam

Sealing joint (if needed)

Flexible underlay

Gap filled in with expanding foam

Sealing joint (if needed)

Complementary layer of roofing underlayment

10

20

mini 300 mm

min g
Eave: Principle

- Flexible underlay
- Metal drip edge
- Cover recommended
- Fascia board
- Sapisol® roofing panel

Rake banks: Principle

- Steel or fiber cement sheeting
  - Flexible underlay
  - Horizontal battens
  - Sapisol® roofing panel
  - Screwed barge board
  - Cover recommended

- Roof tile
  - Flexible underlay
  - Gable tile
  - Cover recommended
  - Screwed barge board
  - Sapisol® roofing panel
Wall plate

• Installation parallel to the gable

• Installation parallel to the ridge

Wall plate Mediterranean

Flexible underlay
Counter batten

Flexible underlay
Counter batten

Masonry
Wall plate
Sapisol® roofing panel
Sealing joint (if needed)

Flexible underlay
Counter batten

Metal drip edge
Fascia board
Sapisol® roofing panel
Sealing joint (if needed)

Eaves lath (min 3% slope)

Gap filled in with expanding foam

Masonry
Wall plate
Sapisol® roofing panel
Sealing joint (if needed)
Gables

• Parallel to the gable

- Sapisol® roofing panel
- Flexible underlay
- Wall plate with sealing joint (if needed)
- Compriband joint
- Gap filled in with expanding foam (if big gap)
- Purlin
- Wall plate with sealing joint (if needed)
- Set filled with expansive insulating foam (if big gap)
- Insulation
- Additional compressible insulation (not expanding foam)

• Parallel to the ridge

- Sapisol® roofing panel
- Flexible underlay
- Wall plate with sealing joint (if needed)
- Sealing joint (if needed)
- Compriband joint
- Top chord
- Insulation
- Assembly gap
- Insulation
- 25 mm min
- Purlin
- Gables
Crosswall between flats
Phonic bridge break

• Installed parallel to the crosswall

• Installed crosswise to the crosswall
Roof windows (example)

- Installation gap filled in with expanding foam
- Proprietary flashing
- Peripheral insulation
- Screwed board
- Sapisol® roofing panel
- Lead flashing
- Flexible underlay

Insulation

Installation gap filled in with expanding foam

Screwed board

Flexible underlay

www.simonin.com
Opening reinforcement

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

Case 1

Piece of wood in Sapisol®
(hollowed out polystyrene)

Screws ø 5 x 70 mm

Case 2

Glulam beams shaped
like Sapisol®

Assembly type mortise and tenon

Glulam beam shaped
like Sapisol®

Opening reinforcement
Smoke pipes

Piece for reinforcement
(if necessary, depending on the configuration of the roof)

Fireproof filling

Roofing underlayment

Chimney flue (no single wall flue)

Safety distance according to local building regulations or manufacturer

Fireproof filling

www.simonin.com
Overhang reinforcement

Principle to be defined according to the dimensions of the project span of Sapisol® and loading. Contact us to adapt the reinforcements.
Sapisol® acoustic facing called "Sapiphone"

• Installed parallel to the gable

Without notch:

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
Sapisol® acoustic facing called "Sapiphone"

- Installed parallel to the ridge

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

Without machining of the underside there is an air passage between the interior and exterior of the building which creates acoustic and thermal issues.
Electric wires installation inside Sapisol®

Spruce - Profile n°2 - Sanded - White stain

Integration of LED spots
only low voltage

Location plan needed at order.
Sapisol®, a product that respects the environment

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

www.simonin.com
• The sector

Valuation of a petroleum distillation derivative that cannot be used as fuel

0.1%
of oil exploitation: Naphtha
which will be transformed into styrene

Valuation of a petroleum distillation derivative that cannot be used as fuel

0.1%
of oil exploitation: Naphtha
which will be transformed into styrene

Valuation of a petroleum distillation derivative that cannot be used as fuel

0.1%
of oil exploitation: Naphtha
which will be transformed into styrene

• 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®
Sapisol®, 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)*

<table>
<thead>
<tr>
<th></th>
<th>House A</th>
<th>House B</th>
<th>House C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude (m)</td>
<td>900</td>
<td>1100</td>
<td>820</td>
</tr>
<tr>
<td>Roof build up</td>
<td>Sapisol S186 + wood fibre 35 mm</td>
<td>Sapisol S220f + wood fibre 22 mm</td>
<td>Sapisol S220f + wood fibre 60 mm</td>
</tr>
<tr>
<td>Thermal resistance <em>(m².K/W)</em></td>
<td>$R_{\text{roof}} = 5.77$</td>
<td>$R_{\text{roof}} = 6.57$</td>
<td>$R_{\text{roof}} = 7.46$</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>House A</th>
<th>House B</th>
<th>House C</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Q_4$ <em>(m³/h/m²)</em></td>
<td>0.29</td>
<td>0.24</td>
<td>0.34</td>
</tr>
<tr>
<td>$n_{50}$ <em>(vol/h)</em></td>
<td>1.66</td>
<td>1.22</td>
<td>1.67</td>
</tr>
<tr>
<td>$A_1$ <em>(cm²)</em></td>
<td>52.9</td>
<td>142.0</td>
<td>214.9</td>
</tr>
<tr>
<td>$n$</td>
<td>0.80</td>
<td>0.79</td>
<td>0.76</td>
</tr>
</tbody>
</table>

- **Conclusion**

During the final airtightness test, the results easily meet the requirements of the private home, with $Q_{\text{measured}} < Q_4 (0.60 \text{m}^3/\text{h.m}^2)$. During a test carried out during the construction site, the technician underlined in his report: “Sapisol® treats perfectly and completely the airtightness of the roof”.

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

*See installation details on page 24*
Extreme situation : Feedback

• Sapisol® in Antarctica!

Sapisol® 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 Sapisol®, 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 Sapisol®:

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 Sapisol® 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!) ». 
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
1st 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
2nd 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%

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.
**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 + clay tiles
- Roof side: no trace of humidity, no fungal attack
  
  \[ H \text{ wood: 9 to 10,5\%} \]
- 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
  
  \[ H \text{ wood: 9,5 to 11\%} \]
- Interior side: no trace of humidity, no fungal attack, no deformation
  
  \[ H \text{ wood: 10 to 11,5\%} \]

**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
  
  \[ H \text{ wood: 7,5 to 8,5\%} \]
- Interior side: no trace of humidity, no fungal attack, no deformation
  
  \[ H \text{ wood: 10 to 11,5\%} \]

**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
  
  \[ H \text{ wood: 10,5 to 12,5\%} \]
Spruce - Profile n°2 - Brushed - White paint
Sapisol® order details

- Type / Species / Quality / Thickness / Profile (p.50)
- Laying direction (p.51)
- Type of cuts supplied (p.52-53)
- Installation on curved support (p.54)
- Fasteners / boards of banks and bottom of slope
  Sapisol® profile boards / Acoustic underside profile board (p.55)
Order details Sapisol®

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

**Type of Sapisol®**
- Roof Sapisol®
- Floor Sapisol®
- Facade Sapisol®
- Sapisol® standard
  (5.5 ml useful tongue and groove at the ends)
- Sapisol® with white polystyrene for winery

**Species of Sapisol®**
- Visible side spruce
- Visible side spruce “Old wood”
- Visible side oak paneled
- Visible side larch

**Quality of Sapisol®**
- 1 visible side
- 2 visible sides

**Thickness of Sapisol®**

**SAPISOL® with 20 mm boards**
- Sapisol® S86
- Glulam beam S86
- Sapisol® S106
- Glulam beam S106
- Sapisol® S136
- Glulam beam S136
- Sapisol® S160
- Glulam beam S160
- Sapisol® S186
- Glulam beam S186
- Sapisol® S220f
- Glulam beam S220f

**SAPISOL® with 27 mm boards**
- Sapisol® S100
- Glulam beam S100
- Sapisol® S120
- Glulam beam S120
- Sapisol® S150
- Glulam beam S150
- Sapisol® S174
- Glulam beam S174
- Sapisol® S200
- Glulam beam S200
- Sapisol® S220e
- Glulam beam S220e

*Sapisol® 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

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Order details Sapisol®

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

Ridge

Eave

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

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
Order details Sapisol®

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

Type of cuts supplied

**B 1**

```
roof slope

Z = thickness Sapisol® mm x tan (slope °)
Total length = thickness Sapisol® mm x tan (slope °) + Dim. parallel to the gable mm
```

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Total length</th>
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**B 1.1**

```
roof slope

Total length = thickness Sapisol® mm x tan (slope °) + Dim. parallel to the gable mm
```

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Total length</th>
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**B 2**

```
Dim. X = ..........................................................
Dim. Y = to define by you
Dim. Z = dim. Y / sin (Slope°)
Total length = ..........................................................
(Total length = Dim. parallel to the gable + Dim. Z)
```

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

<table>
<thead>
<tr>
<th>Number</th>
<th>Total length</th>
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www.simonin.com
## Order details Sapisol®

### Type of cuts supplied

**B 3**

- **Roof slope**: \( \text{\%} \)
- **Dim. parallel to the gable**: \( \text{\,mm} \)
- **Total length**: Dim. parallel to the gable

**B 4**

- **Roof slope**: \( \text{\%} \)
- **Dim. parallel to the gable**: \( \text{\,mm} \)
- **Total length**: Dim. parallel to the gable

### Total long = Billing length

<table>
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<th>Number</th>
<th>Total length (mm)</th>
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</table>

**Level cut at the bottom of the slope and plumb cut at the ridge**

**Left and right planks for laying against a wall**

**Square cut at the bottom of the slope and plumb cut at the ridge**

**Left and right planks for laying against a wall**

---

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

---

### Non cut square

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<tr>
<th>Number</th>
<th>Total length (mm)</th>
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### Cut square

<table>
<thead>
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<th>Number</th>
<th>Total length (mm)</th>
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</table>
Order details Sapisol®

Company: ____________________________ Date: ____________________________
Site reference: ____________________________

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

www.simonin.com
**Order details Sapisol®**

<table>
<thead>
<tr>
<th>Company:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site reference:</td>
<td></td>
</tr>
</tbody>
</table>

### Fixings

<table>
<thead>
<tr>
<th>• Nails</th>
<th>• Screws</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 86 = nails ø 5.1 x 150 mm</td>
<td>S 86 = screws ø 8 x 160 mm</td>
</tr>
<tr>
<td>S 136 = nails ø 6 x 200 mm</td>
<td>S 136 = screws ø 8 x 220 mm</td>
</tr>
<tr>
<td>S 160 = nails ø 7 x 225 mm</td>
<td>S 160 = screws ø 8 x 240 mm</td>
</tr>
<tr>
<td>S 186 = nails ø 7 x 250 mm</td>
<td>S 186 = screws ø 8 x 260 mm</td>
</tr>
<tr>
<td>S 220f = nails ø 7 x 300 mm</td>
<td>S 220f = screws ø 8 x 300 mm</td>
</tr>
<tr>
<td>S 174 = nails ø 7 x 250 mm</td>
<td>S 174 = screws ø 8 x 260 mm</td>
</tr>
<tr>
<td>S 200 = nails ø 7 x 300 mm</td>
<td>S 200 = screws ø 8 x 280 mm</td>
</tr>
<tr>
<td>S 220e = nails ø 7 x 300 mm</td>
<td>S 220e = screws ø 8 x 300 mm</td>
</tr>
<tr>
<td>SP 158 = nails ø 7 x 225 mm</td>
<td>SP 158 = screws ø 8 x 240 mm</td>
</tr>
<tr>
<td>SP 200 = nails ø 7 x 300 mm</td>
<td>SP 200 = screws ø 8 x 300 mm</td>
</tr>
<tr>
<td>or machined underside = nails ø 7 x 250 mm</td>
<td>or machined underside = screws ø 8 x 260</td>
</tr>
</tbody>
</table>

### Eave and barge boards

<table>
<thead>
<tr>
<th>• Finger jointed spruce boards</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tongue and groove at the ends</td>
<td></td>
</tr>
<tr>
<td>Planed 4 sides, chamfered edges</td>
<td></td>
</tr>
<tr>
<td>Colourless pressure treatment class 3 + anti-termites</td>
<td>Length 4,50 ml 4 boards / pack 25 x 115 mm 4,50 ml 4 boards / pack 25 x 140 mm</td>
</tr>
<tr>
<td>Without finish</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>• In 3 ply spruce panels</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Square cut, sanded, B / C quality</td>
<td></td>
</tr>
<tr>
<td>Sharp edges</td>
<td>Length 5,00 ml 4 boards / pack 27 x 205 mm</td>
</tr>
<tr>
<td>Colourless pressure treatment class 3 + anti-termites</td>
<td></td>
</tr>
<tr>
<td>Without finish</td>
<td></td>
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</tbody>
</table>

### Sapisol® profile boards

<table>
<thead>
<tr>
<th>Spruce *</th>
<th>Larch *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile n°1 or n°2</td>
<td>Profile n°1 or n°2</td>
</tr>
<tr>
<td>Sanded, tongue and groove at the ends</td>
<td>Planed, tongue and groove at the ends</td>
</tr>
<tr>
<td>Without treatment, without finishing (see Sapisol® roofing)</td>
<td>Without treatment, without finishing (see Sapisol® roofing)</td>
</tr>
</tbody>
</table>

| * Bs-1, d0 : With finishing on request and according to quantity. |

### Acoustic facing profile boards

<table>
<thead>
<tr>
<th>Spruce</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Sanded, square cut at the ends</td>
<td></td>
</tr>
<tr>
<td>Without treatment, without finishing (see Sapisol® roofing)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>• Wood fiber:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>22 mm</td>
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<tr>
<td>35 mm</td>
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<tr>
<td>60 mm</td>
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</tbody>
</table>

* Fixing of wood fiber: Other-contact us:  

---

* BS-1, d0: With finishing on request and according to quantity.
Spruce - Profile n°2 - Brushed
White paint