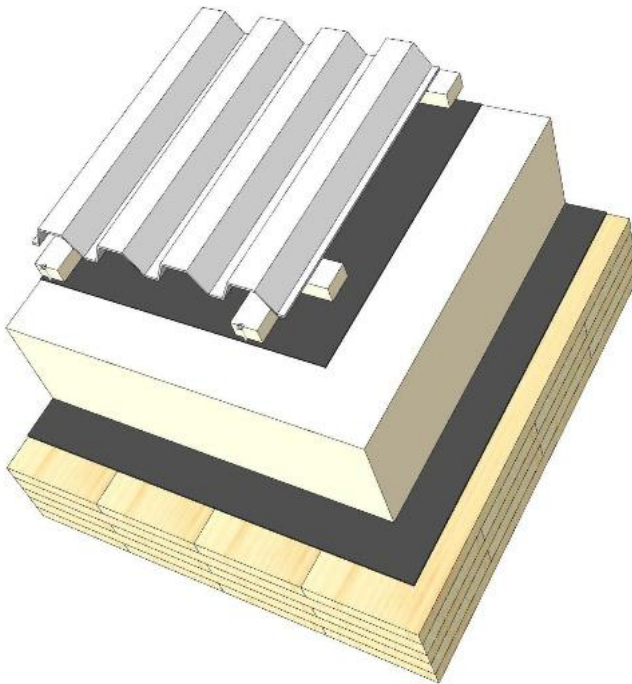
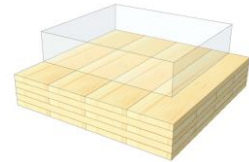


# DA 02

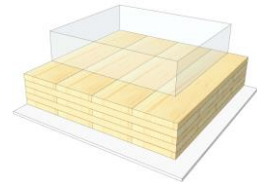
## Steep roof / metal sheet



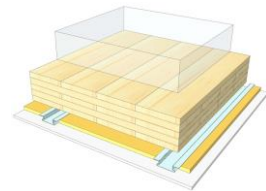
KLH® Visible



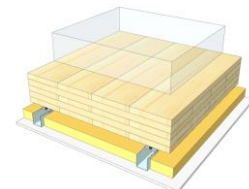
+ G



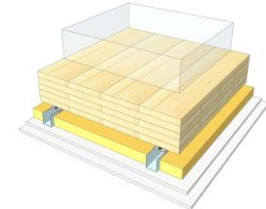
+ RP



+ SC



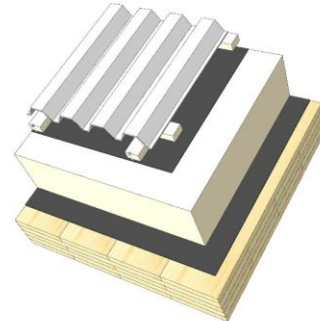
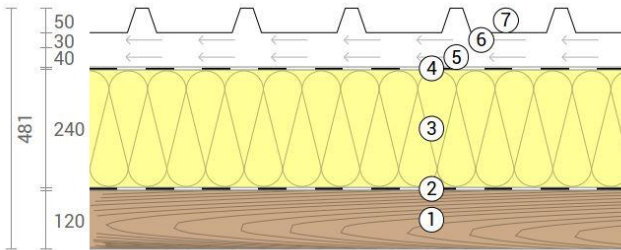
+ SC / 2\*G



	KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G
<b>Airborne</b> Rw [dB]	50	51	52	55	59
<b>Impact</b> Ln,w [dB]					
<b>Thermal</b> U [W/m²K]	0,10	0,10	0,10	0,09	0,09
<b>Fire</b> R*EI [min]	60	60	60	60	90
<b>Thickness</b> [mm]	481	494	521	554	566
<b>Ecology</b> [kg CO2 eq./m²]	-42	-39	-36	-34	-31

# DA 02 V

## Pitched roof / sheet metal roofing



No	mm	Material
1	120	KLH® - CLT
2	0,5	Vapour barrier
3	240	Polyurethane insulation
4	0,5	Underroof sheet, breather membrane $sd \leq 1$ m
5	40	Battens, vertical
6	30	Battens, horizontal
7	50	Sheet metal roofing

R*EI (fire attack from below)	<b>60</b> minutes
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U-Value	<b>0,1</b> W/(m²K)
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Rw	<b>50</b> (-3;-8) dB
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Thickness	<b>481</b> mm
Mass per squaremeter	<b>69</b> kg/m²

Global warming potential	<b>-42</b> kg CO <sub>2</sub> eq./m²
Primary energy (n. renewable)	<b>256</b> kWh/m²

Link Ubakus  
[DA 02 V Ubakus](#)

Link pre-dimensioning fire  
[KLH REI 60](#)

Fire resistance  
R\*EI  
**60**

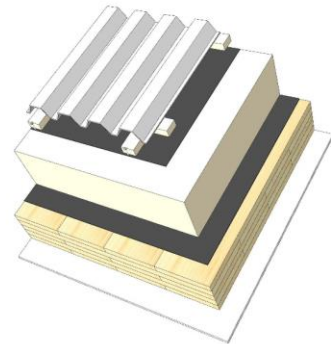
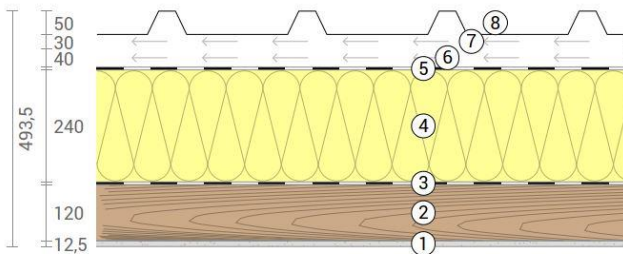
Thermal protection  
W/(m²K)  
**0,1**

Sound insulation  
dB  
**50**

Ecology  
kg CO<sub>2</sub>eq./m²  
**-42**

# DA 02 G

Pitched roof / sheet metal roofing  
Cladded



No	mm	Material
1	12,5	Gt-F board
2	120	KLH® - CLT
3	0,5	Vapour barrier
4	240	Polyurethane insulation
5	0,5	Underroof sheet, breather membrane $s_d \leq 1$ m
6	40	Battens, vertical
7	30	Battens, horizontal
8	50	Sheet metal roofing

R*EI (fire attack from below)	<b>60</b> minutes
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U-Value	<b>0,1</b> W/(m²K)
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Rw	<b>51</b> (-3;-8) dB
----	----------------------

Thickness	<b>494</b> mm
Mass per squaremeter	<b>79</b> kg/m²

Global warming potential	<b>-39</b> kg CO <sub>2</sub> eq./m²
Primary energy (n. renewable)	<b>266</b> kWh/m²

Link Ubakus  
[DA 02 G Ubakus](#)

Link pre-dimensioning fire  
[KLH REI 60](#)

Fire resistance  
R\*EI  
**60**

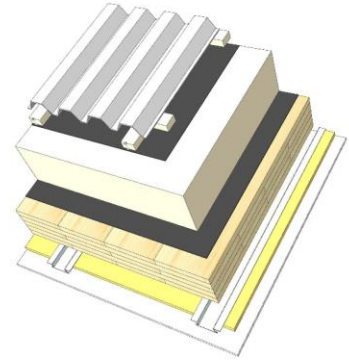
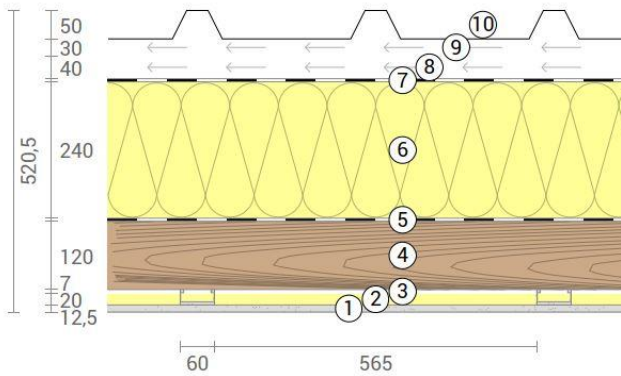
Thermal protection  
W/(m²K)  
**0,1**

Sound insulation  
dB  
**51**

Ecology  
kg CO<sub>2</sub>eq./m²  
**-39**

# DA 02 RP

Pitched roof / sheet metal roofing  
SC on resilient profiles



No	mm	Material
1	12,5	Gt-F board
2	20	Mineral wool
3	27	Resilient profile
4	120	KLH® - CLT
5	0,5	Vapour barrier
6	240	Polyurethane insulation
7	0,5	Underroof sheet, breather membrane $sd \leq 1$ m
8	40	Battens, vertical
9	30	Battens, horizontal
10	50	Sheet metal roofing

R*EI (fire attack from below)
<b>60</b> minutes

U-Value
<b>0,1</b> W/(m <sup>2</sup> K)

Rw
<b>52</b> (0;6) dB

Thickness
<b>521</b> mm
Mass per squaremeter
<b>80</b> kg/m <sup>2</sup>

Global warming potential
<b>-36</b> kg CO <sub>2</sub> eq./m <sup>2</sup>
Primary energy (n. renewable)
<b>278</b> kWh/m <sup>2</sup>

Link Ubakus  
[DA 02 RP Ubakus](#)

Link pre-dimensioning fire  
[KLH REI 60](#)

Fire resistance  
R\*EI  
**60**

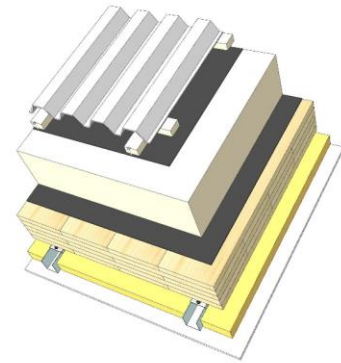
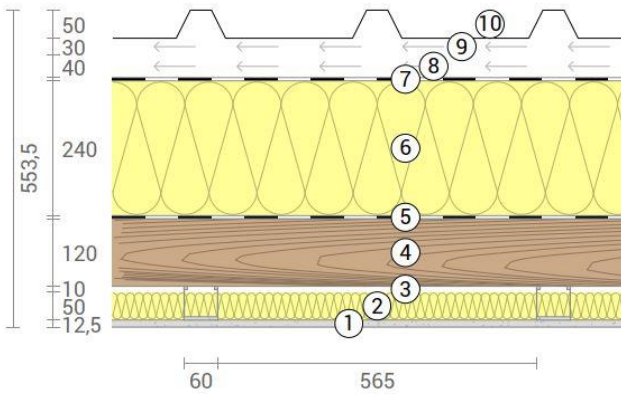
Thermal protection  
W/(m<sup>2</sup>K)  
**0,1**

Sound insulation  
dB  
**52**

Ecology  
kg CO<sub>2</sub>eq./m<sup>2</sup>  
**-36**

# DA 02 SC

Pitched roof / sheet metal roofing  
SC on CD-profiles



No	mm	Material
1	12,5	Gt-F board
2	50	Rock wool
3	60	CD-profiles
4	120	KLH® - CLT
5	0,5	Vapour barrier
6	240	Polyurethane insulation
7	0,5	Underroof sheet, breather membrane $sd \leq 1$ m
8	40	Battens, vertical
9	30	Battens, horizontal
10	50	Sheet metal roofing

R\*EI (fire attack from below)  
**60** minutes

U-Value  
**0,09** W/(m<sup>2</sup>K)

Rw  
**55** (0;-4) dB

Thickness

**554** mm

Mass per squaremeter

**82** kg/m<sup>2</sup>

Global warming potential

**-34** kg CO<sub>2</sub> eq./m<sup>2</sup>

Primary energy (n. renewable)

**286** kWh/m<sup>2</sup>

Link Ubakus

[DA 02 SC Ubakus](#)

Link pre-dimensioning fire

[KLH REI 60](#)

Fire resistance

R\*EI

**60**

Thermal protection

W/(m<sup>2</sup>K)

**0,09**

Sound insulation

dB

**55**

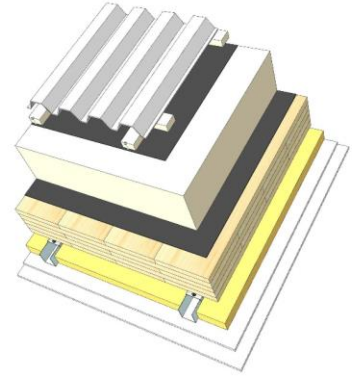
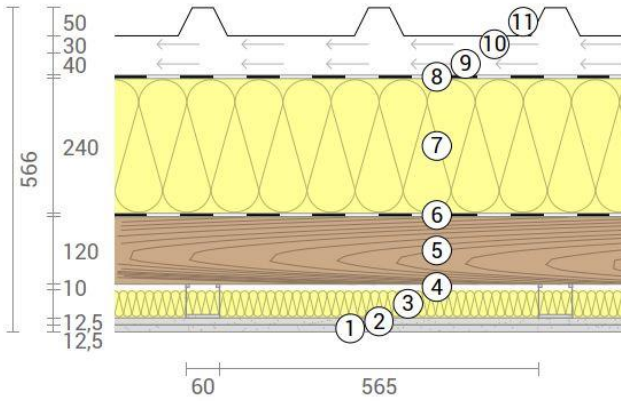
Ecology

kg CO<sub>2</sub>eq./m<sup>2</sup>

**-34**

# DA 02 SC2

Pitched roof / sheet metal roofing  
 SC on CD-profiles, resilient clips



No	mm	Material
1	12,5	Gt-F board
2	12,5	Gt-F board
3	50	Rock wool
4	60	CD-profiles on resilient clips
5	120	KLH® - CLT
6	0,5	Vapour barrier
7	240	Polyurethane insulation
8	0,5	Underroof sheet, breather membrane $sd \leq 1$ m
9	40	Battens, vertical
10	30	Battens, horizontal
11	50	Sheet metal roofing

R*EI (fire attack from below)	<b>90</b> minutes
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U-Value	<b>0,09</b> W/(m²K)
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Rw	<b>59</b> (0;-4) dB
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Thickness	<b>566</b> mm
Mass per squaremeter	<b>92</b> kg/m²

Global warming potential	<b>-31</b> kg CO <sub>2</sub> eq./m²
Primary energy (n. renewable)	<b>296</b> kWh/m²

Link Ubakus  
[DA 02 SC2 Ubakus](#)

Link pre-dimensioning fire  
[KLH REI 90](#)

Fire resistance  
 R\*EI  
**90**

Thermal protection  
 W/(m²K)  
**0,09**

Sound insulation  
 dB  
**59**

Ecology  
 kg CO<sub>2</sub>eq./m²  
**-31**