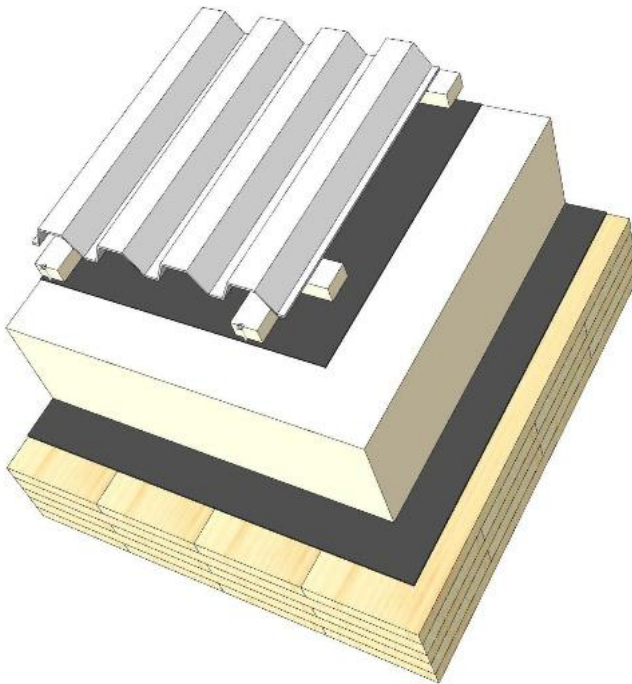
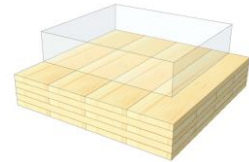


DA 02

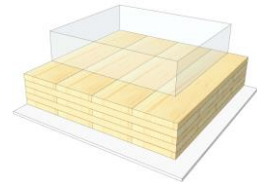
Steep roof / metal sheet



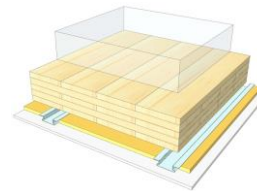
KLH® Visible



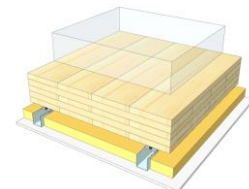
+ G



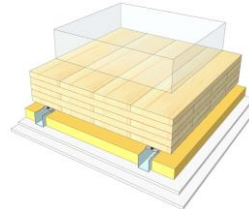
+ RP



+ SC



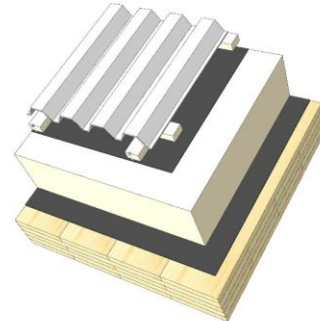
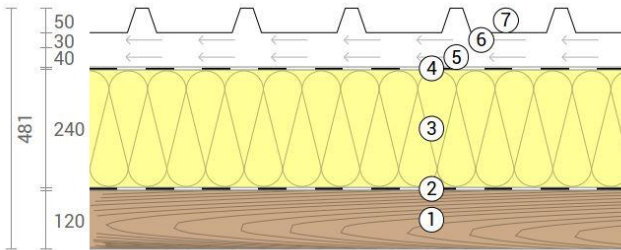
+ SC / 2*G



	KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G
Airborne Rw [dB]	50	51	52	55	59
Impact Ln,w [dB]					
Thermal U [W/m²K]	0,10	0,10	0,10	0,09	0,09
Fire R*EI [min]	60	60	60	60	90
Thickness [mm]	481	494	521	554	566
Ecology [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)	60 minutes
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U-Value	0,1 W/(m²K)
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Rw	50 (-3;-8) dB
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Thickness	481 mm
Mass per squaremeter	69 kg/m²

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

Link Ubakus
[DA 02 V Ubakus](#)

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

Fire resistance
R*EI
60

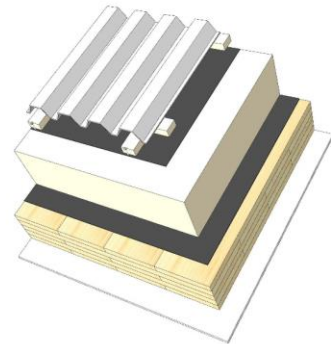
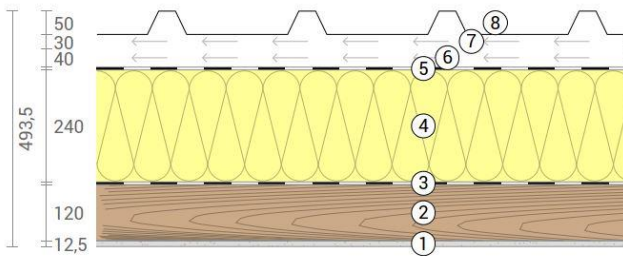
Thermal protection
W/(m²K)
0,1

Sound insulation
dB
50

Ecology
kg CO₂eq./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)	60 minutes
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U-Value	0,1 W/(m²K)
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Rw	51 (-3;-8) dB
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Thickness	494 mm
Mass per squaremeter	79 kg/m²

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

Link Ubakus
[DA 02 G Ubakus](#)

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

Fire resistance
R*EI
60

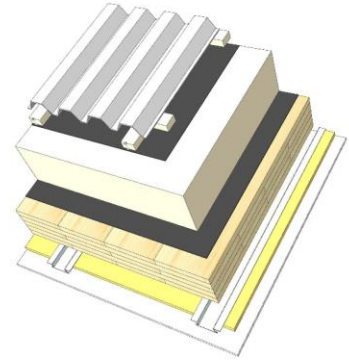
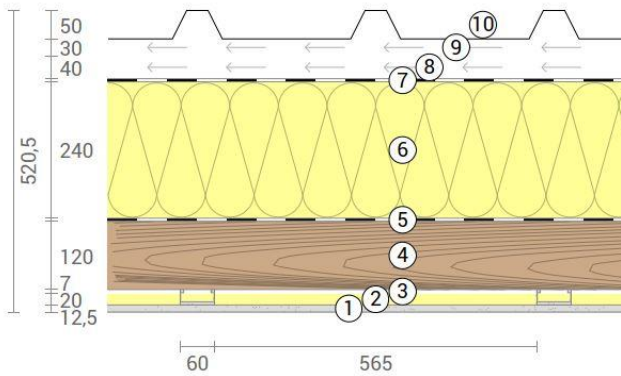
Thermal protection
W/(m²K)
0,1

Sound insulation
dB
51

Ecology
kg CO₂eq./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)
60 minutes

U-Value
0,1 W/(m ² K)

Rw
52 (0;6) dB

Thickness
521 mm
Mass per squaremeter
80 kg/m ²

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

Link Ubakus
[DA 02 RP Ubakus](#)

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

Fire resistance
R*EI
60

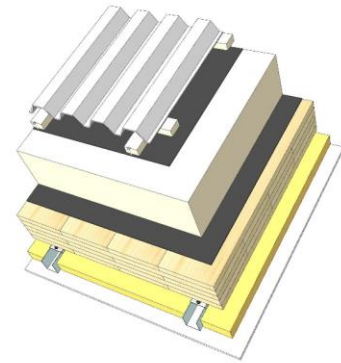
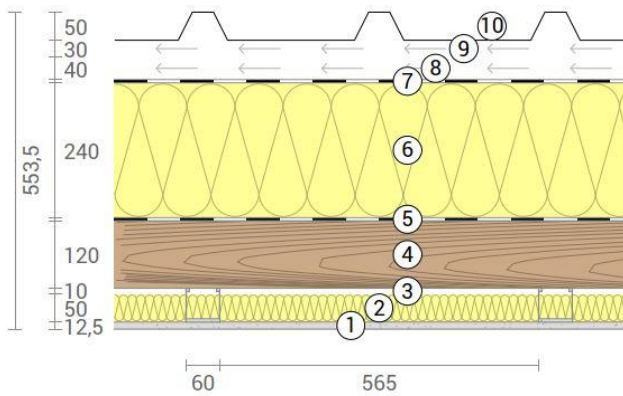
Thermal protection
W/(m²K)
0,1

Sound insulation
dB
52

Ecology
kg CO₂eq./m²
-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/(m²K)

Rw
55 (0;-4) dB

Thickness

554 mm

Mass per squaremeter

82 kg/m²

Global warming potential

-34 kg CO₂ eq./m²

Primary energy (n. renewable)

286 kWh/m²

Link Ubakus

[DA 02 SC Ubakus](#)

Link pre-dimensioning fire

[KLH REI 60](#)

Fire resistance

R*EI

60

Thermal protection

W/(m²K)

0,09

Sound insulation

dB

55

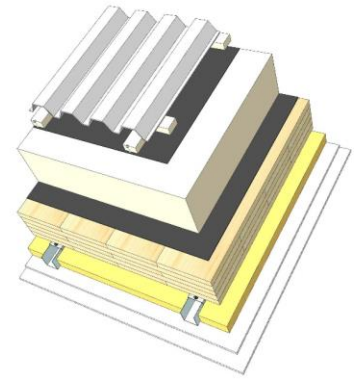
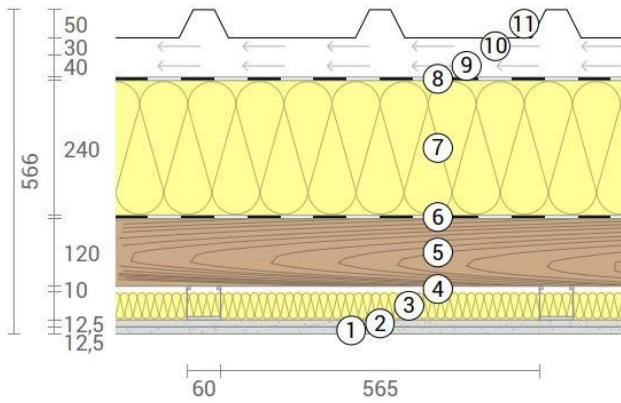
Ecology

kg CO₂eq./m²

-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 $sd \leq 1 \text{ m}$
9	40	Battens, vertical
10	30	Battens, horizontal
11	50	Sheet metal roofing

R*EI (fire attack from below)
90 minutes

U-Value
0,09 W/(m²K)

Rw
59 (0;-4) dB

Thickness

566 mm

Mass per squaremeter

92 kg/m²

Global warming potential

-31 kg CO₂ eq./m²

Primary energy (n. renewable)

296 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 CO₂eq./m²

-31