

INTRODUCTION

- The KLH® standard components provide a quick overview of common component variants in solid wood construction.
- Each wall construction is available in the following variants:
Visible / G (plasterboard) / RP (resilient profile) / FF (facing formwork) / FF free 2*G (facing formwork, self supporting, double planked).
- Each ceiling structure is available in the following variants:
Visible / G (plasterboard) / RP (resilient profile) / SC (suspended ceiling) / SC 2*G (suspended ceiling, double planked).
- Particular attention was paid to comparability and quick customization options.
- All superstructures provide the most important data on the following properties:

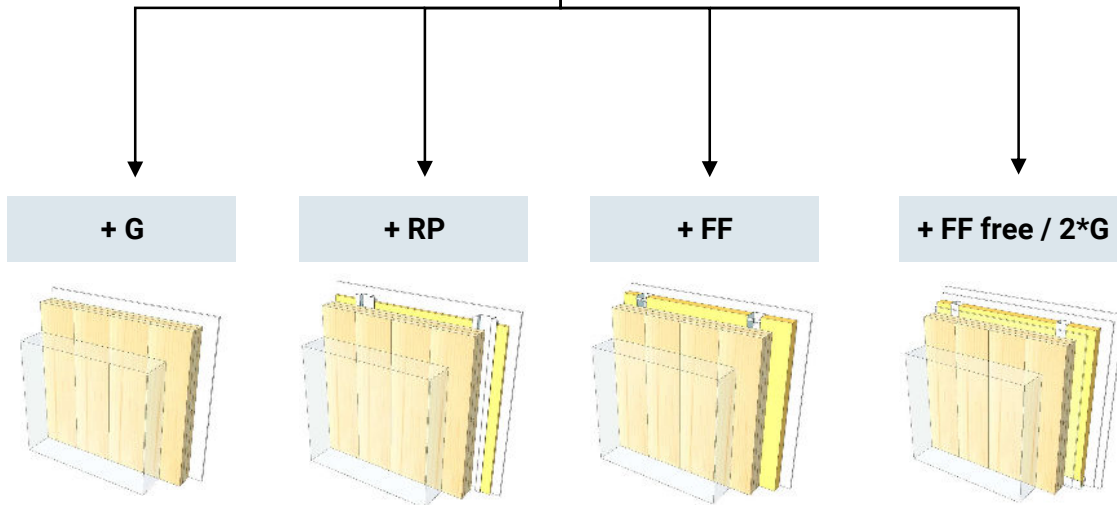
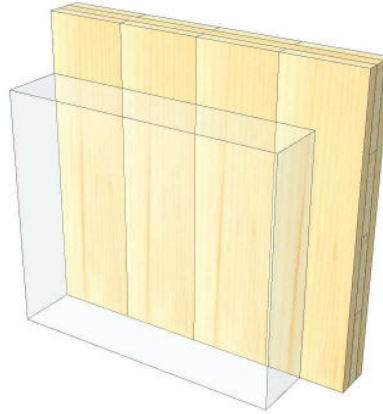
Fire protection	R*EI [min]
<p>The fire protection refers to the base panels and their improvements covered in the KLHdesigner.</p> <p>* The R criterion is to be verified via the residual load-bearing capacity of the remaining cross-section.</p>	
Thermal insulation	U [W/m²K]
<p>The U-value was calculated using the specified material thicknesses and the material parameters provided online.</p> <p>A comprehensive thermal insulation analysis can be accessed via the link provided (Ubakus).</p>	
Sound insulation	Rw / Ln,w [dB]
<p>The sound insulation was calculated on the basis of conducted and comparable tests.</p> <p>The improvements were always added conservatively, depending on the frequency, and adapted on the basis of comparable tests.</p>	
Ecology	[kg CO ₂ eq./m²]
<p>The ecological data refer to the overall structure with the materials stored online. Individual material data can be accessed via the link (Ubakus)</p>	

ENHANCEMENTS

WALL

KLH® Visible

For walls applies the **3s 100 TT (30/40/30)** as the basic panel. The exception are the additionally listed interior wall types.



[mm]
 KLH® - CLT 3s
 12,5 Gt-F board

[mm]
 KLH® - CLT 3s
 30,0 Resilient profile
 20,0 Mineral wool
 12,5 Gt-f board

[mm]
 KLH® - CLT 3s
 60,0 CW - profile,
 elast. clips
 50,0 Mineral wool
 15,0 Gt-F board

[mm]
 KLH® - CLT 3s
 10,0 Air gap
 60,0 CW - profile, self
 supporting
 50,0 Mineral wool
 12,5 Gt-F board
 12,5 Gt-F board

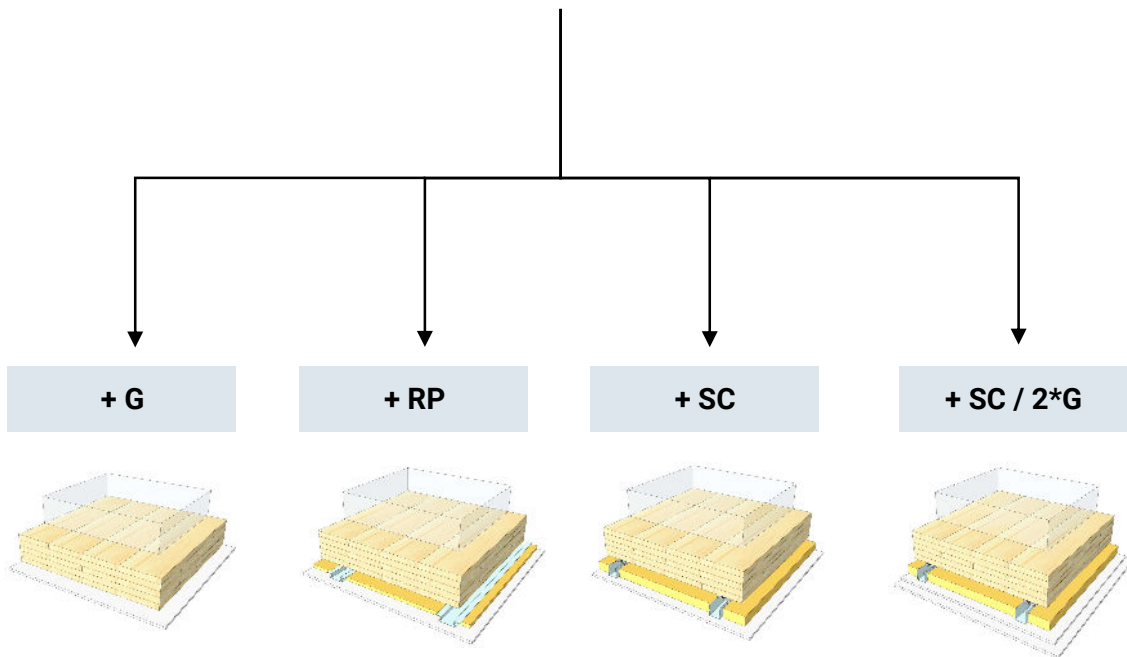
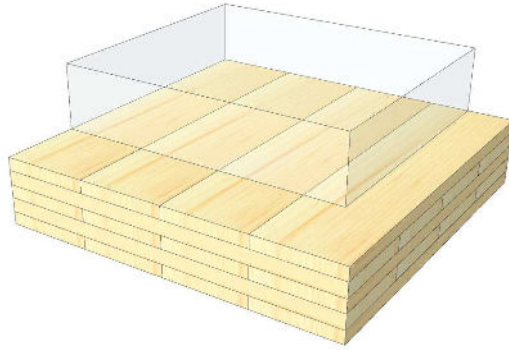
ENHANCEMENTS

FLOOR / ROOF

KLH® Visible

For floors applies the
5s 160 TL
(40/20/40/20/40)
 as the basic panel

For roofs applies the
5s 120 TL
(30/20/20/20/30)
 as the basic panel



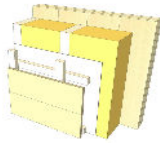
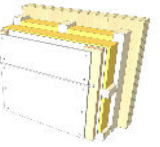
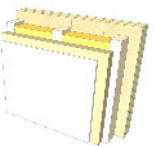
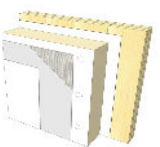
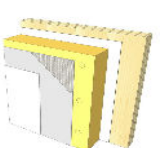
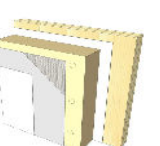
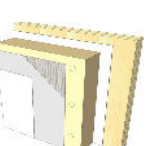
[mm]
 KLH® - CLT 5s
 12,5 Gt-F board

[mm]
 KLH® - CLT 5s
 30,0 Resilient profile
 20,0 Mineral wool
 12,5 Gt-F board




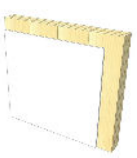
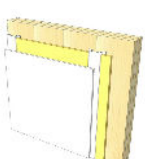
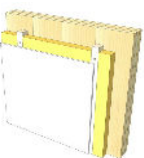
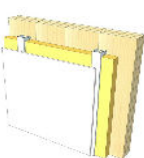
[mm]
 KLH® - CLT 5s
 60,0 CD - profile
 50,0 Mineral wool
 12,5 Gt-F board

[mm]
 KLH® - CLT 5s
 60,0 CD - profile,
 elast. clips
 50,0 Mineral wool
 12,5 Gt-F board
 12,5 Gt-F board

EXTERIOR WALL

		KLH® Visible	+ G	+ RP	+ FF	+ FF free / 2*G	
Ventilated timber facade							
AW 01		Sound R_w [dB]	44	45	52	55	63
		Thermal U [W/m ² K]	0,17	0,17	0,16	0,14	0,14
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	391	403	430	463	476
		Ecology [kg CO ₂ eq./m ²]	-89	-87	-85	-81	-80
Ventilated facade panel							
AW 02		Sound R_w [dB]	53	54	58	60	66
		Thermal U [W/m ² K]	0,17	0,17	0,16	0,14	0,14
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	343	355	382	418	428
		Ecology [kg CO ₂ eq./m ²]	-46	-44	-42	-37	-37
Plaster baseboard							
AW 03		Sound R_w [dB]	48	49	54	55	63
		Thermal U [W/m ² K]	0,19	0,18	0,17	0,15	0,15
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	325	338	365	398	410
		Ecology [kg CO ₂ eq./m ²]	-53	-51	-47	-44	-42
EPS - ETICS							
AW 04		Sound R_w [dB]	36	37	45	47	56
		Thermal U [W/m ² K]	0,15	0,15	0,14	0,13	0,13
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	311	324	351	384	396
		Ecology [kg CO ₂ eq./m ²]	-39	-36	-33	-29	-29
Mineral wool - ETICS							
AW 05		Sound R_w [dB]	41	42	46	48	60
		Thermal U [W/m ² K]	0,15	0,15	0,14	0,13	0,13
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	311	324	351	384	396
		Ecology [kg CO ₂ eq./m ²]	-37	-34	-31	-28	-27
Wood fiber - ETICS							
AW 06		Sound R_w [dB]	39	40	45	48	59
		Thermal U [W/m ² K]	0,17	0,17	0,16	0,14	0,14
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	311	324	351	386	396
		Ecology [kg CO ₂ eq./m ²]	-86	-84	-81	-77	-77
Hemp - ETICS							
AW 07		Sound R_w [dB]	54	55	57	59	67
		Thermal U [W/m ² K]	0,18	0,18	0,16	0,15	0,14
		Fire R^*E_I [min]	30	60	60	90	90
		Thickness [mm]	311	324	351	386	396
		Ecology [kg CO ₂ eq./m ²]	-51	-48	-45	-41	-41

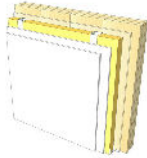
INTERIOR WALL

		KLH® Visible	+ G	+ RP	+ FF	+ FF free / 2*G	
KLH® 3s 60							
IW 01		Sound Rw [dB]	29	30	38	40	49
		Thermal U [W/m²K]	1,32	1,24	0,76	0,53	0,50
		Fire R*EI [min]	0	0	0	0	0
		Thickness [mm]	60	73	100	135	145
		Ecology [kg CO2 eq./m²]	-36	-34	-30	-26	-26
KLH® 3s 100							
IW 02		Sound Rw [dB]	33	34	44	47	59
		Thermal U [W/m²K]	0,91	0,87	0,60	0,45	0,43
		Fire R*EI [min]	30	30	30	30	30
		Thickness [mm]	100	113	140	175	185
		Ecology [kg CO2 eq./m²]	-60	-58	-54	-50	-50
KLH® 5s 160							
IW 03		Sound Rw [dB]	39	40	48	51	61
		Thermal U [W/m²K]	0,63	0,61	0,46	0,36	0,35
		Fire R*EI [min]	30	60	60	90	90
		Thickness [mm]	160	173	200	235	245
		Ecology [kg CO2 eq./m²]	-96	-94	-90	-86	-86
Cladded							
IW 04		Sound Rw [dB]	34	35	45	48	60
		Thermal U [W/m²K]	0,87	0,84	0,59	0,43	0,42
		Fire R*EI [min]	30	60	60	60	60
		Thickness [mm]	113	125	152	188	198
		Ecology [kg CO2 eq./m²]	-58	-55	-52	-48	-48
Resilient profile							
IW 05		Sound Rw [dB]	44	45	48	50	63
		Thermal U [W/m²K]	0,60	0,59	0,45	0,36	0,35
		Fire R*EI [min]	30	60	60	60	60
		Thickness [mm]	140	152	179	215	225
		Ecology [kg CO2 eq./m²]	-54	-52	-49	-44	-44
Facing formwork timber battens							
IW 06		Sound Rw [dB]	41	42	50	51	61
		Thermal U [W/m²K]	0,45	0,44	0,36	0,30	0,29
		Fire R*EI [min]	30	60	60	60	60
		Thickness [mm]	163	175	202	240	250
		Ecology [kg CO2 eq./m²]	-60	-57	-54	-49	-49
Facing formwork CW-profiles							
IW 07		Sound Rw [dB]	47	48	50	52	62
		Thermal U [W/m²K]	0,45	0,44	0,36	0,30	0,29
		Fire R*EI [min]	30	60	60	90	90
		Thickness [mm]	173	185	215	250	260
		Ecology [kg CO2 eq./m²]	-51	-48	-44	-40	-40

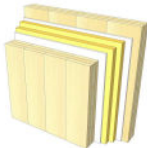
INTERIOR WALL

KLH® Visible	+ G	+ RP	+ FF	+ FF free / 2*G
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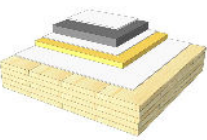
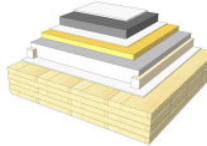
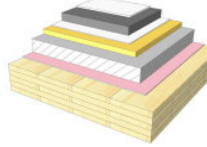
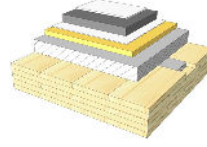
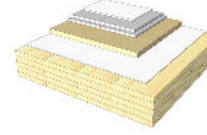
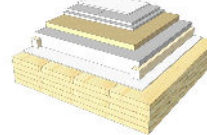
Facing formwork self supporting

IW 08		Sound	Rw [dB]	60	61	63	64	70
		Thermal	U [W/m²K]	0,43	0,42	0,35	0,29	0,28
		Fire	R*EI [min]	30	60	60	90	90
		Thickness	[mm]	185	198	225	260	270
		Ecology	[kg CO2 eq./m²]	-50	-48	-43	-38	-40

Two layer KLH® 3s 100

IW 09		Sound	Rw [dB]	62	64	68	69	73
		Thermal	U [W/m²K]	0,26	0,25	0,22	0,20	0,19
		Fire	R*EI [min]	30	60	60	60	60
		Thickness	[mm]	295	320	347	380	390
		Ecology	[kg CO2 eq./m²]	-112	-107	-104	-100	-99

COMPARTMENT FLOOR

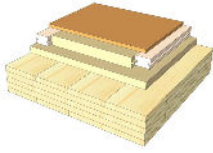
		KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G	
Wet screed / no or light fill							
GD 01		Airborne Rw [dB]	55	56	58	60	72
		Impact Ln,w [dB]	60	60	54	50	45
		Thermal U [W/m²K]	0,41	0,40	0,33	0,29	0,28
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	250	263	290	323	335
		Ecology [kg CO2 eq./m²]	-83	-80	-77	-75	-72
Wet screed / heavy fill (loose or inserts)							
GD 02		Airborne Rw [dB]	61	62	65	68	73
		Impact Ln,w [dB]	44	44	39	37	35
		Thermal U [W/m²K]	0,40	0,39	0,33	0,28	0,28
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	330	343	370	403	415
		Ecology [kg CO2 eq./m²]	-80	-78	-74	-72	-70
Wet screed / bonded heavy fill (elastic or acoustic layer)							
GD 03		Airborne Rw [dB]	59	60	62	68	74
		Impact Ln,w [dB]	46	46	41	39	37
		Thermal U [W/m²K]	0,40	0,39	0,32	0,28	0,28
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	336	349	376	409	421
		Ecology [kg CO2 eq./m²]	-72	-69	-66	-63	-61
Wet screen / TCC / no fill							
GD 04		Airborne Rw [dB]	66	67	69	72	81
		Impact Ln,w [dB]	46	46	40	38	36
		Thermal U [W/m²K]	0,36	0,36	0,30	0,26	0,26
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	330	343	370	403	415
		Ecology [kg CO2 eq./m²]	-65	-63	-59	-57	-55
Dry screed / no or light fill							
GD 05		Airborne Rw [dB]	55	56	58	60	70
		Impact Ln,w [dB]	61	61	56	51	46
		Thermal U [W/m²K]	0,42	0,42	0,35	0,30	0,29
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	215	228	255	288	300
		Ecology [kg CO2 eq./m²]	-93	-91	-88	-85	-83
Dry screed / heavy fill (loose or inserts)							
GD 06		Airborne Rw [dB]	61	62	64	65	72
		Impact Ln,w [dB]	54	54	50	46	43
		Thermal U [W/m²K]	0,42	0,41	0,34	0,29	0,29
		Fire R*EI [min]	90	120	120	120	120
		Thickness [mm]	295	308	335	368	380
		Ecology [kg CO2 eq./m²]	-91	-88	-85	-83	-80

COMPARTMENT FLOOR

KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G
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Wood planks / wood fiber system

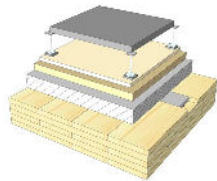
GD 07



Airborne Rw [dB]	53	54	56	58	70
Impact Ln,w [dB]	64	64	60	54	48
Thermal U [W/m²K]	0,25	0,25	0,22	0,20	0,20
Fire R*EI [min]	90	120	120	120	120
Thickness [mm]	280	293	320	353	365
Ecology [kg CO2 eq./m²]	-128	-125	-122	-119	-117

Double floor / TCC

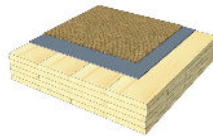
GD 08



Airborne Rw [dB]	61	61	63	64	78
Impact Ln,w [dB]	47	47	42	39	37
Thermal U [W/m²K]	0,32	0,31	0,27	0,24	0,24
Fire R*EI [min]	90	120	120	120	120
Thickness [mm]	468	481	508	541	553
Ecology [kg CO2 eq./m²]	-79	-78	-73	-70	-68

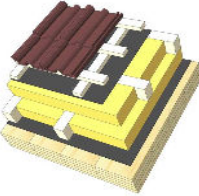
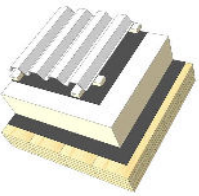
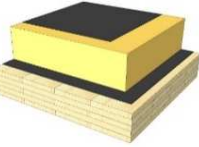

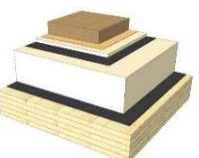
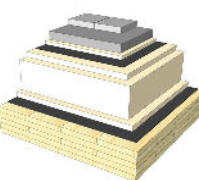
Carpet floor

GD 09



Airborne Rw [dB]	35	36	45	55	57
Impact Ln,w [dB]	62	62	58	53	48
Thermal U [W/m²K]	0,56	0,54	0,43	0,35	0,35
Fire R*EI [min]	90	120	120	120	120
Thickness [mm]	175	188	215	250	260
Ecology [kg CO2 eq./m²]	-96	-94	-90	-87	-86

ROOF

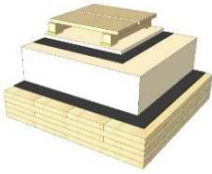
		KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G	
Steep roof / tiles							
DA 01		Airborne Rw [dB]	50	51	52	56	62
		Impact Ln,w [dB]					
		Thermal U [W/m²K]	0,14	0,14	0,13	0,12	0,12
		Fire R*EI [min]	60	60	60	60	90
		Thickness [mm]	504	517	544	577	589
		Ecology [kg CO2 eq./m²]	-91	-89	-85	-83	-80
Steep roof / metal sheet							
DA 02		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]	-33	-31	-27	-25	-22
Flat roof / mineral wool (or wood fiber)							
DA 03		Airborne Rw [dB]	44	45	49	53	57
		Impact Ln,w [dB]					
		Thermal U [W/m²K]	0,16	0,16	0,15	0,14	0,14
		Fire R*EI [min]	60	60	60	60	90
		Thickness [mm]	332	345	372	405	417
		Ecology [kg CO2 eq./m²]	-20	-17	-14	-12	-9,2
Flat roof / EPS							
DA 04		Airborne Rw [dB]	36	37	45	51	56
		Impact Ln,w [dB]					
		Thermal U [W/m²K]	0,14	0,14	0,13	0,13	0,12
		Fire R*EI [min]	60	60	60	60	90
		Thickness [mm]	332	345	372	405	417
		Ecology [kg CO2 eq./m²]	-44	-42	-39	-36	-34
Flat roof / greening							
DA 05		Airborne Rw [dB]	47	48	53	56	62
		Impact Ln,w [dB]					
		Thermal U [W/m²K]	0,14	0,14	0,13	0,12	0,12
		Fire R*EI [min]	60	60	60	60	90
		Thickness [mm]	417	430	457	490	502
		Ecology [kg CO2 eq./m²]	-44	-42	-39	-36	-34
Flat roof / concrete blocks							
DA 06		Airborne Rw [dB]	55	56	58	60	70
		Impact Ln,w [dB]	49	49	45	42	39
		Thermal U [W/m²K]	0,12	0,12	0,11	0,10	0,10
		Fire R*EI [min]	60	60	60	60	90
		Thickness [mm]	487	500	527	560	572
		Ecology [kg CO2 eq./m²]	-40	-38	-34	-32	-30

ROOF

KLH® Visible	+ G	+ RP	+ SC	+ SC / 2*G
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Flat roof / wood terrace

DA 07



Airborne Rw [dB]	38	39	46	51	58
Impact Ln,w [dB]	62	62	57	52	46
Thermal U [W/m²K]	0,14	0,14	0,13	0,12	0,12
Fire R*EI [min]	60	90	90	90	90
Thickness [mm]	427	440	467	500	512
Ecology [kg CO2 eq./m²]	-69	-66	-63	-61	-58