Normas

RDZ
invisible heating and cooling

UNI EN 1264-4
Criterio de elección de los paneles

Aislamiento en instalaciones por suelo radiante

MANUAL TÉCNICO

INTRODUCCIÓN

Lo descrito a continuación es explícitamente los parámetros reportados de la norma UNE EN 1264-4 la cual sugiere los valores de resitencia térmica mínimas a respetar en función de las condiciones térmicas bajo el ambiente que viene calentado por suelo radiante; se recuerda también que una norma no debe ser confundida con una ley (nacional o local que exista) por lo tanto no existe la obligación de respetarla mientras no venga mencionada en el interior de una misma ley.

CAPAS DE AISLAMIENTO

Tabla 1: Capas de Aislamiento

	Ambiente inferior calefactado	Ambiente inferior no calefactado o calefactado de forma no continuativa o directamente sobre suelo *	Temperatura aire exterior abajo		
			Temperatura exterior de proyecto Td ≥ 0 °C	Temperatura exterior de proyecto 0 > Td ≥ -5°C	Temperatura exterior de proyecto -5°C > Td ≥ -15 °C
Resistencia Térmica $R_{\lambda.ins}$ (m2 K / W)	**0.75**	**1.25**	**1.25**	**1.50**	**2.00**
	"A"	**"B"**		**"C"**	**"D"**

(*) Con un nivel de aguas freáticas ≤ 5m. el valor deberá ser aumentado.

CARACTERÍSTICAS DE LOS PANELES

En la tabla inferior se presentan según la tipología de panel: el espesor nominal del panel (espesor vertical máximo), el espesor equivalente del panel (media geométrica) y finalmente el valor de resistencia térmica del panel según los criterios dictados por la UNE EN 1264-4.
En las páginas siguientes vienen sugeridas las combinaciones de uno o más paneles con el fin de respetar la norma en las diferentes situaciones de utilización.
La norma precisa también que en el caso de más capas de aislamiento estas deben venir desfasados con el fin de evitar la coincidente sobre posición de las juntas de dos capas contiguas.

Tabla 2: Paneles perfilados

Tipo panel	Espesor nominal del panel S [mm]	Espesor equivalente* del panel S_{EQ} [mm]	Resistencia térmica según UNE EN 1264 $R_{\lambda.INS}$ [m2K / W]
ACOUSTIC PLUS 20	48	39,5	0,80
ACOUSTIC PLUS 30	58	40,5	1,05
BASIC 20	48	28	0,75
BASIC 30	58	38	1,05
COVER 20	48	29	0,8
COVER 30	58	39	1,1
COVER 40	68	48,9	1,35
COVER 50	78	58,7	1,65
COVER 60	89,5	70,1	2
COVER HP 20	48	29	0,9
COVER HP 30	58	39	1,25
COVER HP 38	66	46,9	1,5
COVER HP 54	82	62,6	2
NEW PLUS	33	18	0,5
COTA ZERO	28	12,5	0,35

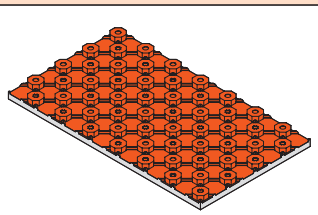
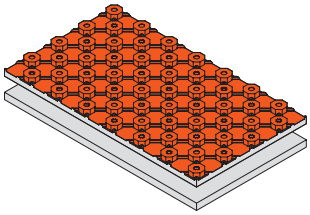
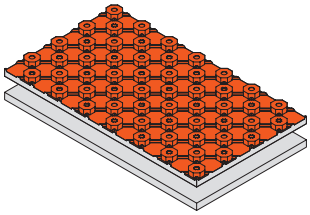
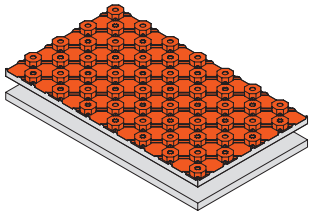
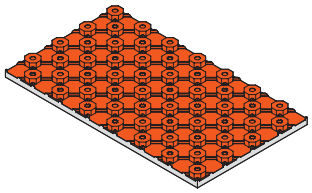
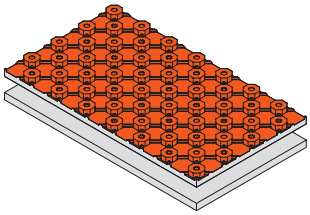
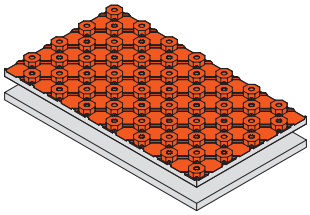
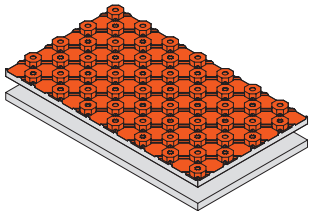
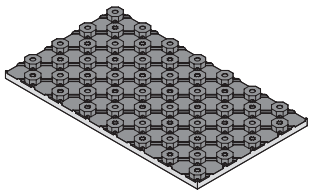
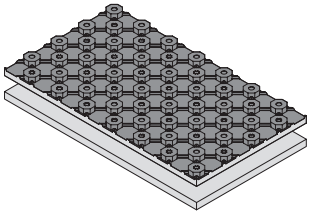
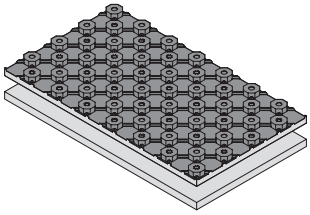
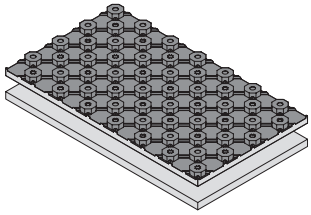
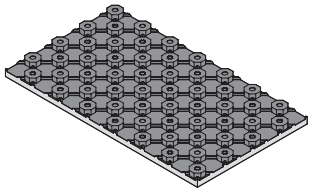
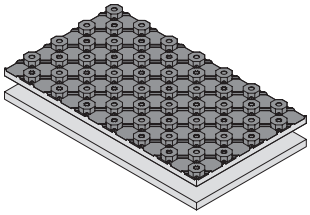
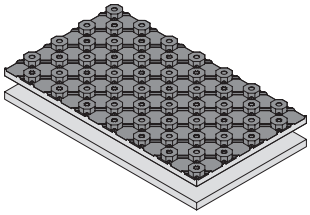
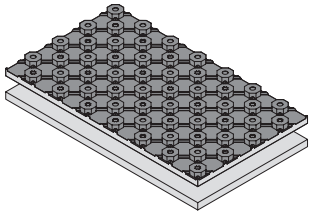
(*) El espesor equivalente del panel (S_{EQ}) viene entendido como espesor medio geométrico

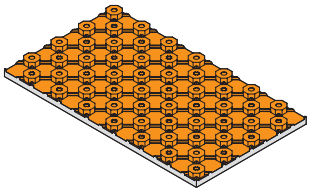
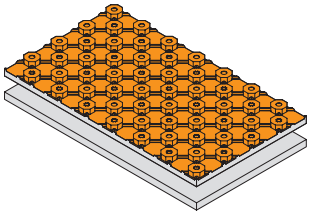
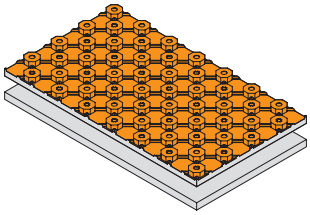
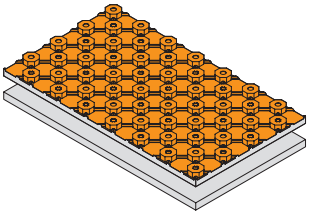
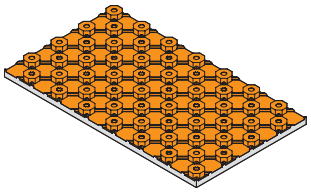
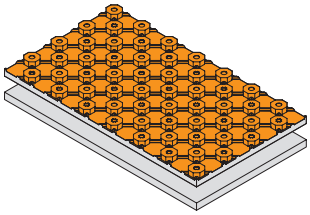
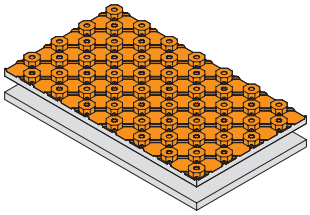
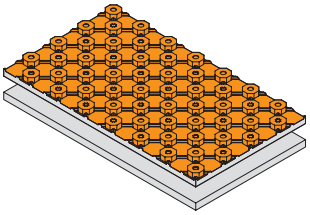
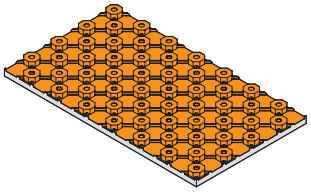
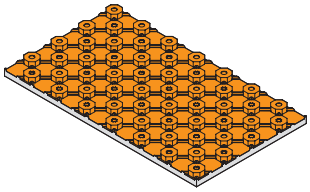
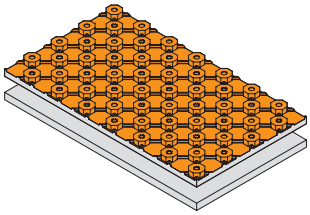
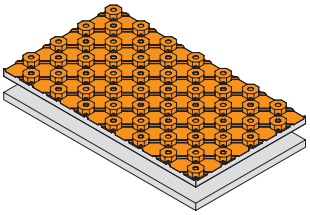
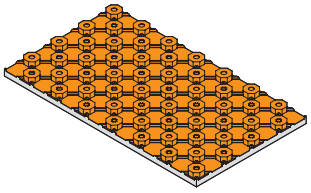
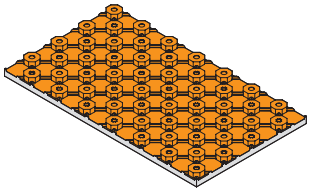
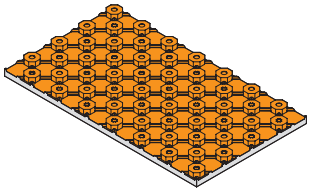
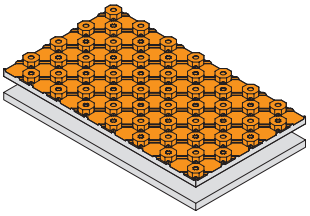
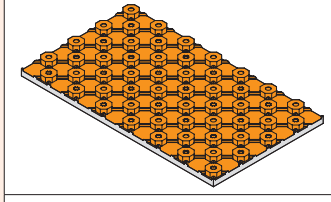
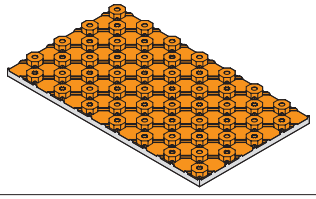
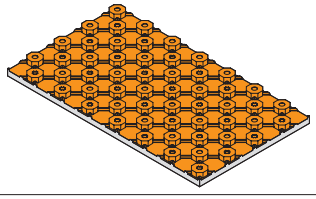
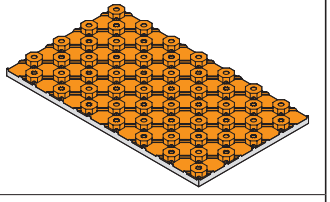
Tabla 3: Paneles Lisos			
Tipo panel	**Espesor nominal del panel S [mm]**	**Espesor equivalente* del panel S_{EQ} [mm]**	**Resistencia térmica según UNE EN 1264 $R_{\lambda,INS}$ [m²K / W]**
COVER HP LISO 20	20	20	0,60
COVER HP LISO 30	30	30	0,95
COVER HP LISO 38	38	38	1,20
COVER HP LISO 54	54	54	1,70
COLCHONETA ACOUSTIC	10	10	0,25
LISO EXTRUIDO 20	20	20	0,6
LISO EXTRUIDO 30	30	30	0,9
LISO EXTRUIDO 40	40	40	1,2
LISO EXTRUIDO 50	50	50	1,45
LISO EXTRUIDO 60	60	60	1,75
PL20	20	20	0,8
PL30	30	30	1,25
PL40	40	40	1,65
PL50	50	50	2,05
PANEL NATURAL	20	20	0,40

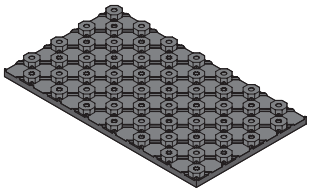
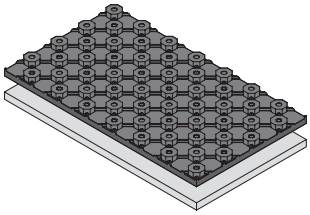
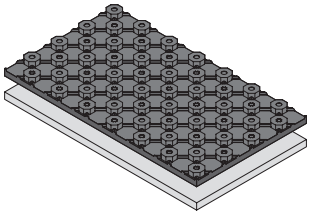
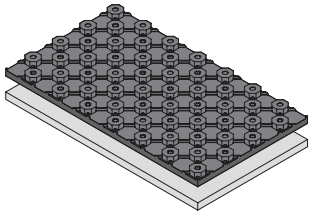
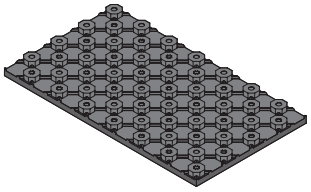
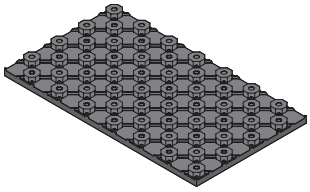
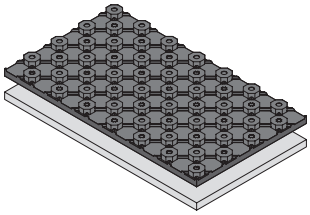
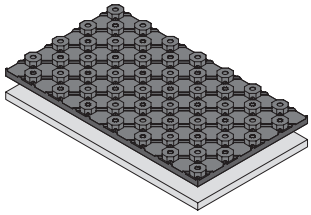
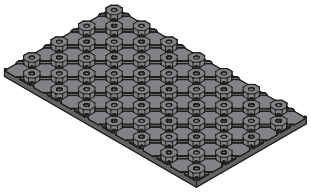
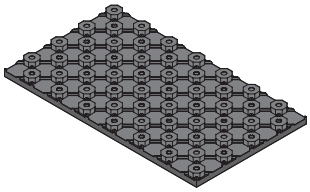
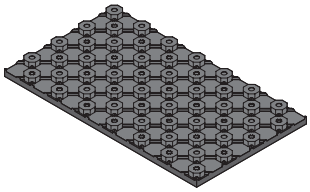
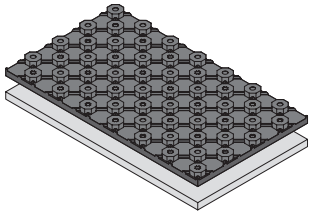
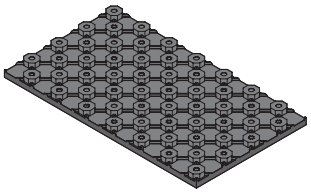
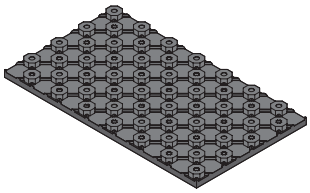
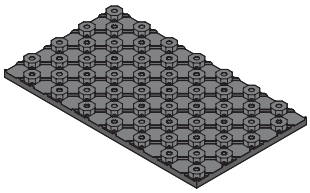
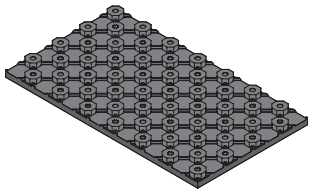
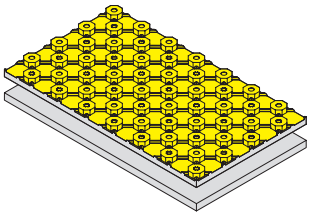
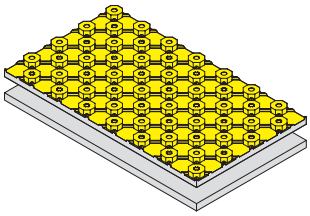
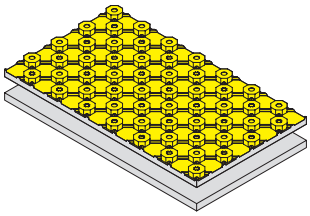
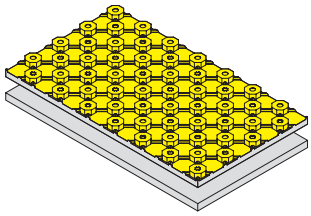
APLICACIÓN PANELES A LAS DISTINTAS CLASES DE LA NORMA

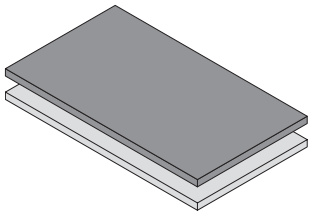
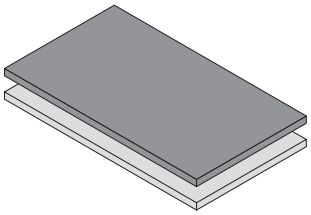
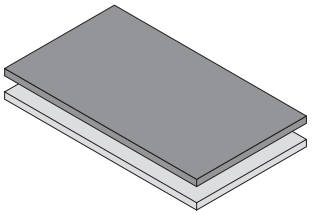
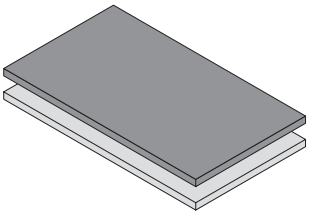
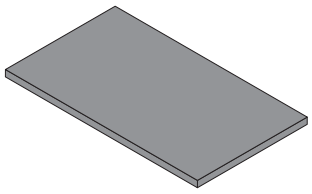
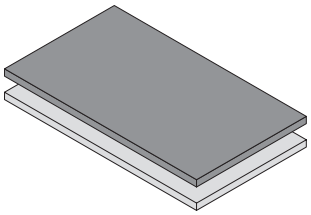
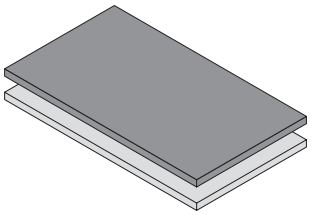
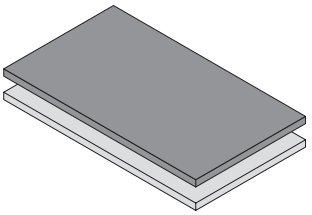
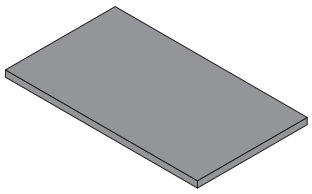
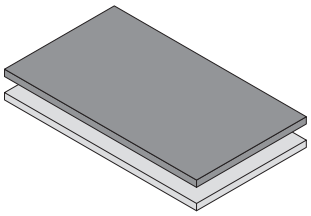
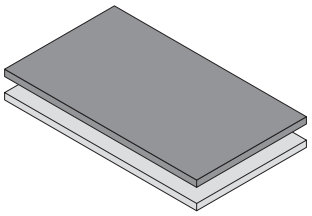
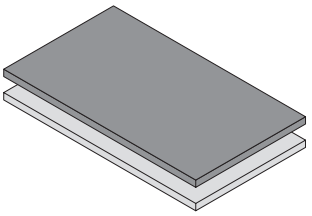
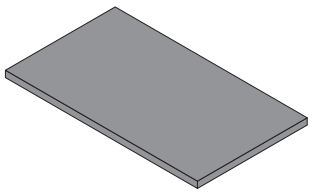
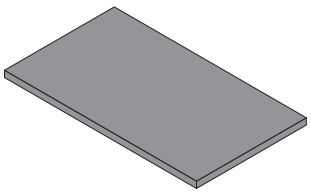
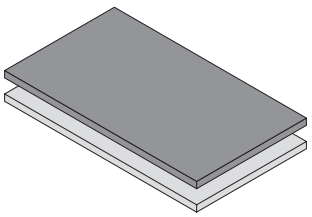
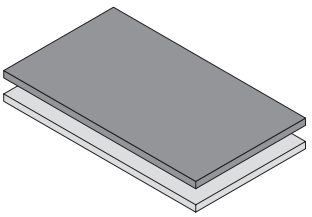
CON PANELES LISOS EXTRUIDOS

Tabla 4: Combinaciones de sistemas con panel liso extruido

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
ACOUSTIC PLUS 20				
	Acoustic Plus 20	**Acoustic Plus 20 + Liso Extruido 20**	**Acoustic Plus 20 + Liso Extruido 30**	**Acoustic Plus 20 + Liso Extruido 40**
	S/Sb = 48/20 [mm] Seq = 30.5 [mm] Rλ.ins = 0.80 [m² K / W]	S/Sb = 68/40 [mm] Seq = 50.5 [mm] Rλ.ins = 1.40 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 88/60 [mm] Seq = 70.5 [mm] Rλ.ins = 2.00 [m² K / W]
ACOUSTIC PLUS 30				
	Acoustic Plus 30	**Acoustic Plus 30 + Liso Extruido 20**	**Acoustic Plus 30 + Liso Extruido 20**	**Acoustic Plus 30 + Liso Extruido 30**
	S/Sb = 58/30 [mm] Seq = 40.5 [mm] Rλ.ins = 1.05 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 88/60 [mm] Seq = 70.5 [mm] Rλ.ins = 2.00 [m² K / W]
BASIC 20				
	Basic 20	**Basic 20 + Liso Extruido 20**	**Basic 20 + Liso Extruido 30**	**Basic 20 + Liso Extruido 50**
	S/Sb = 48/20 [mm] Seq = 28 [mm] Rλ.ins = 0.75 [m² K / W]	S/Sb = 68/40 [mm] Seq = 48 [mm] Rλ.ins = 1.40 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 98/70 [mm] Seq = 78 [mm] Rλ.ins = 2.20 [m² K / W]
BASIC 30				
	Basic 30	**Basic 30 + Liso Extruido 20**	**Basic 30 + Liso Extruido 20**	**Basic 30 + Liso Extruido 40**
	S/Sb = 58/30 [mm] Seq = 38 [mm] Rλ.ins = 1.05 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 98/70 [mm] Seq = 78 [mm] Rλ.ins = 2.25 [m² K / W]

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER 20				
	Cover 20	**Cover 20 + Liso extruido 20**	**Cover 20 + Liso extruido 30**	**Cover 20 + Liso extruido 40**
	S/Sb = 48/20 [mm] Seq = 29 [mm] Rλ.ins = 0.80 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.45 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 88/60 [mm] Seq = 69 [mm] Rλ.ins = 2.00 [m² K / W]
COVER 30				
	Cover 30	**Cover 30 + Liso extruido 20**	**Cover 30 + Liso extruido 20**	**Cover 30 + Liso extruido 30**
	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.10 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.70 [m² K / W]	S/Sb = 88/60 [mm] Seq = 69 [mm] Rλ.ins = 2.00 [m² K / W]
COVER 40				
	Cover 40	**Cover 40**	**Cover 40 + Liso extruido 20**	**Cover 40 + Liso extruido 20**
	S/Sb = 68/40 [mm] Seq = 48.9 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 68/40 [mm] Seq = 48.9 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 88/60 [mm] Seq = 68.9 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 88/60 [mm] Seq = 68.9 [mm] Rλ.ins = 2.00 [m² K / W]
COVER 50				
	Cover 50	**Cover 50**	**Cover 50**	**Cover 50 + Liso extruido 20**
	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 98/70 [mm] Seq = 78.7 [mm] Rλ.ins = 2.30 [m² K / W]
COVER 60				
	Cover 60	**Cover 60**	**Cover 60**	**Cover 60**
	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER HP 20				
	Cover HP 20	**Cover HP 20 + Liso extruido 20**	**Cover HP 20 + Liso extruido 20**	**Cover HP 20 + Liso extruido 40**
	S/Sb = 48/20 [mm] Seq = 29 [mm] Rλ.ins = 0.90 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.55 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.55 [m² K / W]	S/Sb = 88/60 [mm] Seq = 69 [mm] Rλ.ins = 2.10 [m² K / W]
COVER HP 30				
	Cover HP 30	**Cover HP 30**	**Cover HP 30 + Liso extruido 20**	**Cover HP 30 + Liso extruido 30**
	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.25 [m² K / W]	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.25 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.85 [m² K / W]	S/Sb = 88/60 [mm] Seq = 69 [mm] Rλ.ins = 2.15 [m² K / W]
COVER HP 38				
	Cover HP 38	**Cover HP 38**	**Cover HP 38**	**Cover HP 38 + Liso extruido 20**
	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 86/58 [mm] Seq = 66.9 [mm] Rλ.ins = 2.10 [m² K / W]
COVER HP 38				
	Cover HP 54	**Cover HP 54**	**Cover HP 54**	**Cover HP 54**
	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]
NEW PLUS				
	New Plus + Liso extruido 20	**New Plus + Liso extruido 30**	**New Plus + Liso extruido 40**	**New Plus + Liso extruido 50**
	S/Sb = 53/32.5 [mm] Seq = 38 [mm] Rλ.ins = 1.15 [m² K / W]	S/Sb = 63/42.5 [mm] Seq = 48 [mm] Rλ.ins = 1.45 [m² K / W]	S/Sb = 73/52.5 [mm] Seq = 58 [mm] Rλ.ins = 1.75 [m² K / W]	S/Sb = 83/62.5 [mm] Seq = 68 [mm] Rλ.ins = 2.00 [m² K / W]

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER HP LISO 20				
	Cover HP liso 20 + Liso extruido 20	**Cover HP liso 20 + Liso extruido 20**	**Cover HP liso 20 + Liso extruido 30**	**Cover HP liso 20 + Liso extruido 50**
	S=Sb = Seq = 40 [mm] Rλ.ins = 1.25 [m² K / W]	S=Sb = Seq = 40 [mm] Rλ.ins = 1.25 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.55 [m² K / W]	S = Sb = Seq = 70 [mm] Rλ.ins = 2.10 [m² K / W]
COVER HP LISO 30				
	Cover HP liso 30	**Cover HP liso 30 + Liso extruido 20**	**Cover HP liso 30 + Liso extruido 20**	**Cover HP liso 30 + Liso extruido 40**
	S=Sb = Seq = 30 [mm] Rλ.ins = 0.95 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.55 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.55 [m² K / W]	S = Sb = Seq = 70 [mm] Rλ.ins = 2.15 [m² K / W]
COVER HP LISO 38				
	Cover HP liso 38	**Cover HP liso 38 + Liso extruido 20**	**Cover HP liso 38 + Liso extruido 20**	**Cover HP liso 38 + Liso extruido 30**
	S=Sb = Seq = 38 [mm] Rλ.ins = 1.28 [m² K / W]	S=Sb = Seq = 58 [mm] Rλ.ins = 1.85 [m² K / W]	S=Sb = Seq = 58 [mm] Rλ.ins = 1.85 [m² K / W]	S = Sb = Seq = 68 [mm] Rλ.ins = 2.10 [m² K / W]
COVER HP LISO 54				
	Cover HP liso 54	**Cover HP liso 54**	**Cover HP liso 54 + Liso extruido 20**	**Cover HP liso 54 + Liso extruido 20**
	S=Sb = Seq = 54 [mm] Rλ.ins = 1.70 [m² K / W]	S=Sb = Seq = 54 [mm] Rλ.ins = 1.70 [m² K / W]	S=Sb = Seq = 74 [mm] Rλ.ins = 2.35 [m² K / W]	S = Sb = Seq = 74 [mm] Rλ.ins = 2.35 [m² K / W]

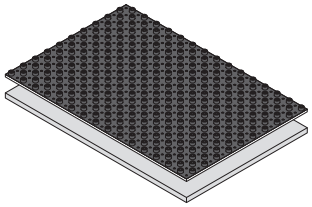
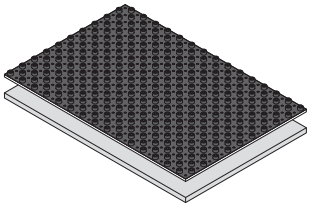
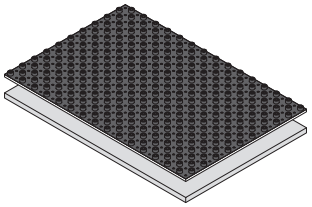
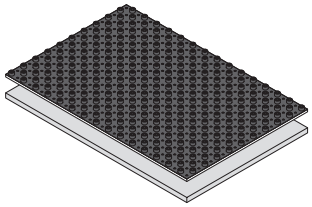
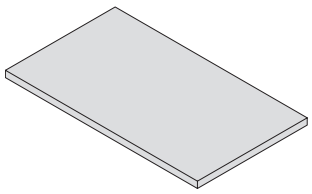
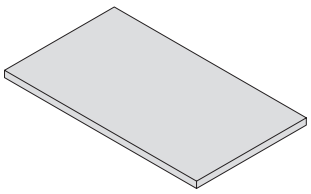
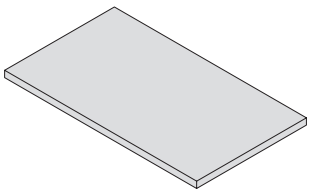
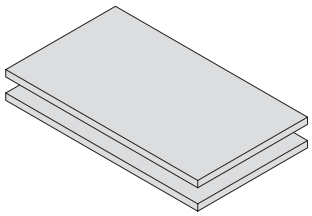
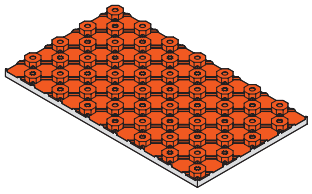
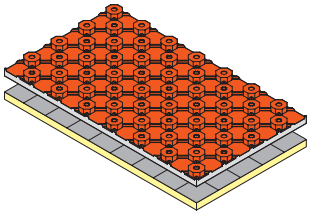
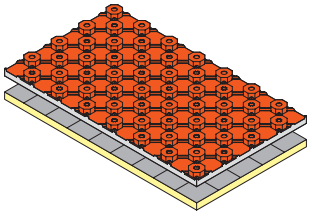
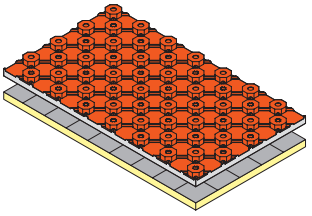
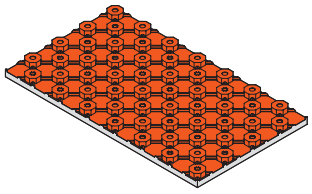
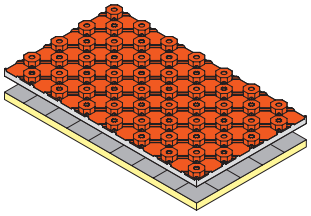
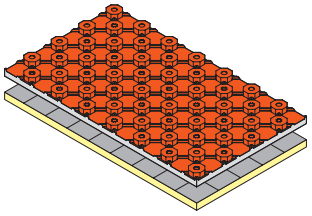
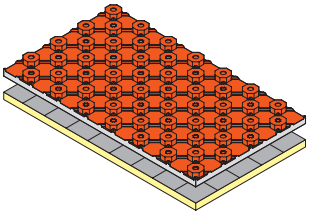
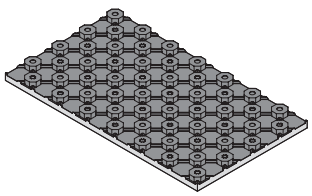
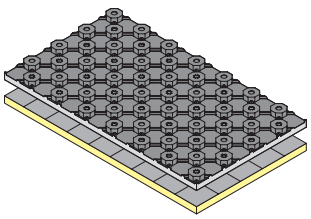
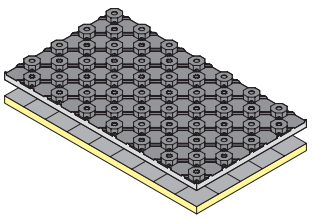
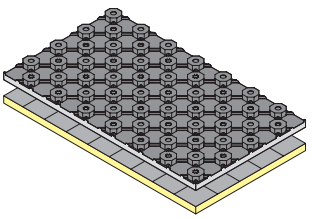
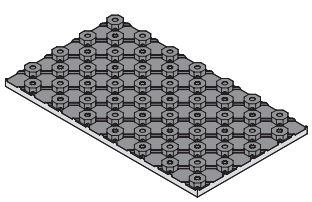
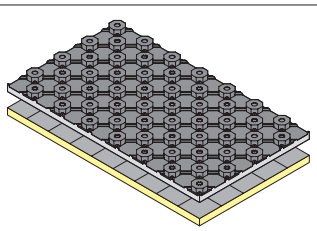
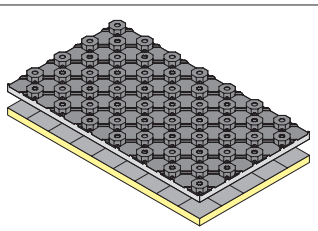
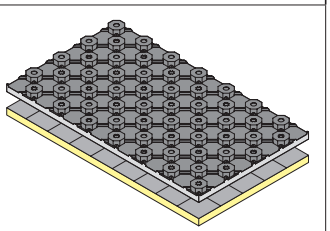
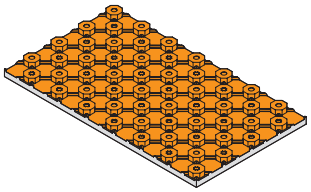
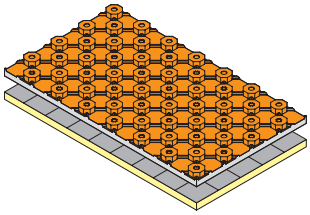
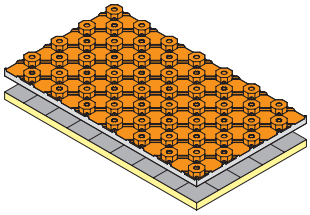
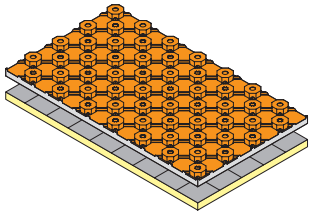
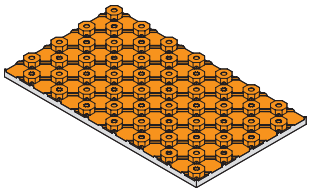
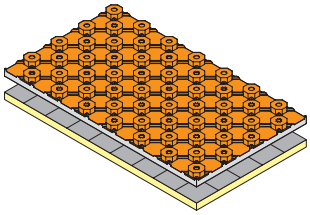
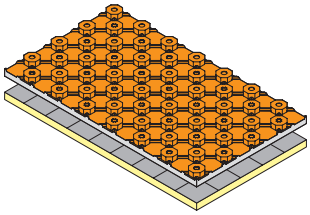
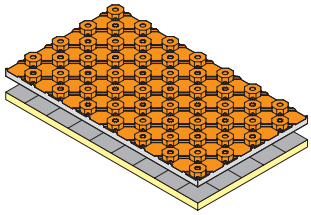
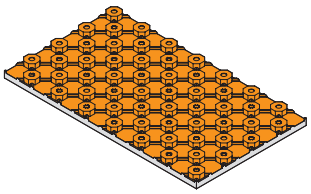
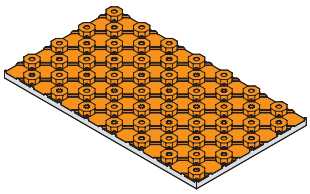
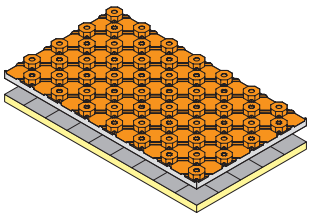
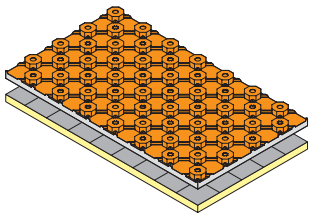
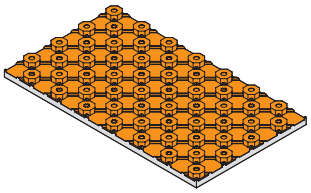
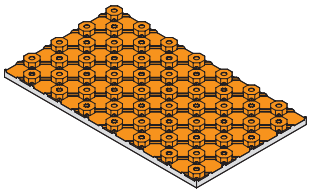
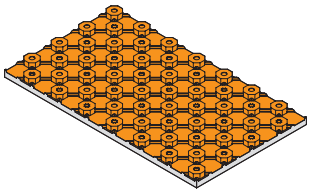
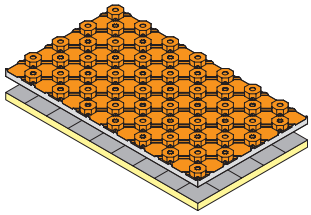
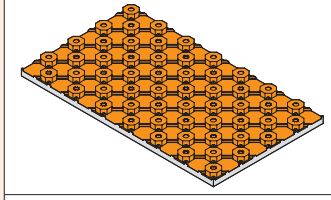
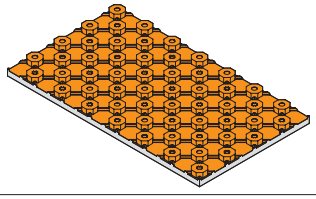
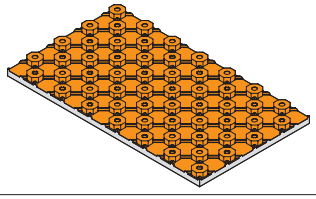
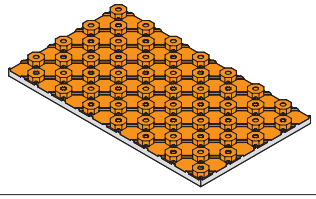
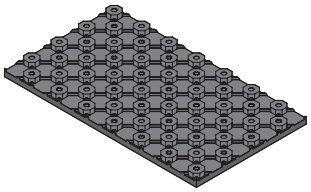
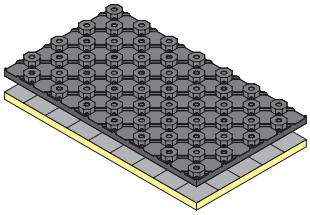
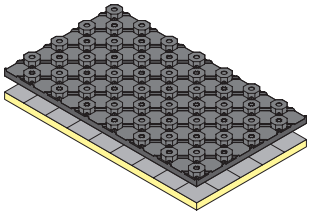
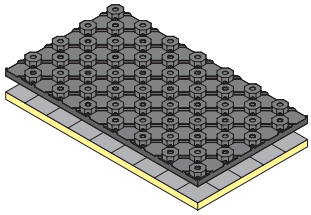
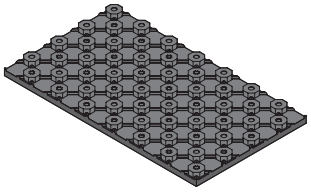
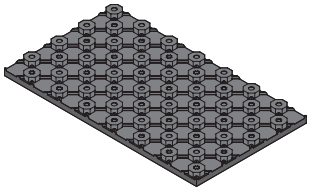
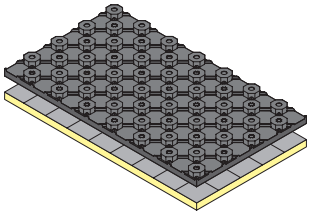
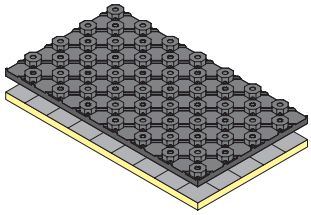
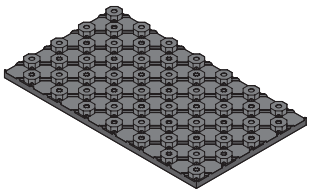
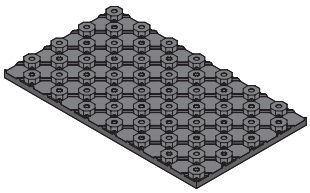
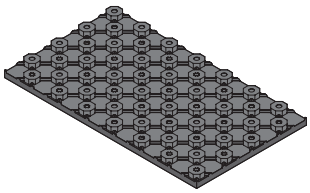
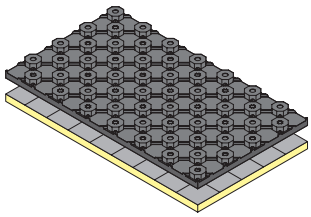
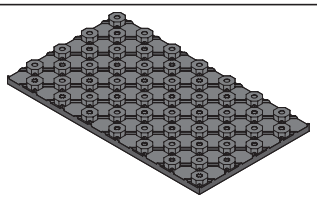
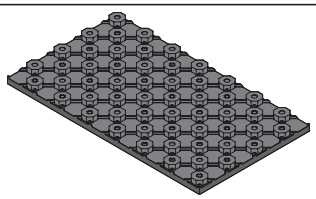
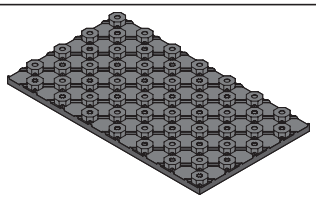
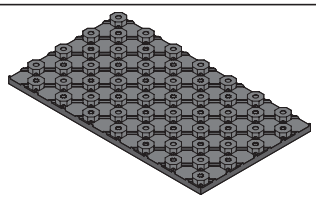
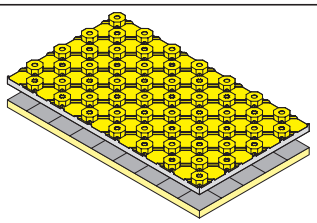
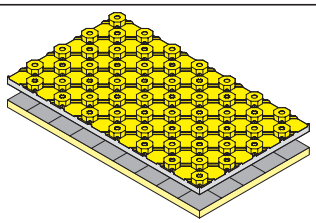
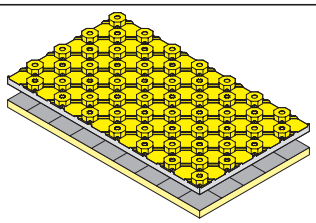
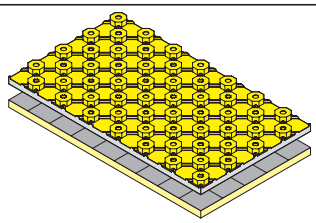
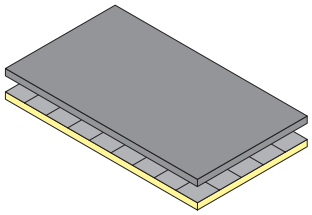
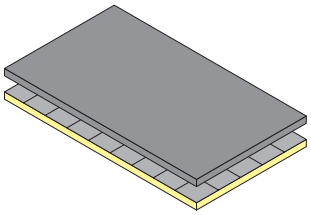
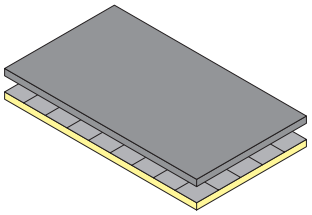
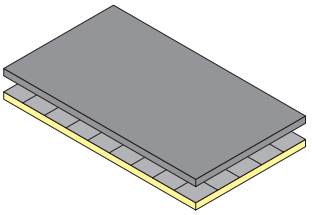
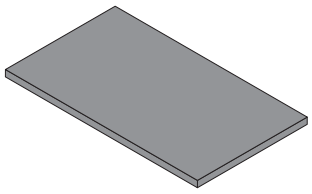
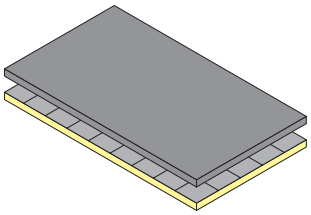
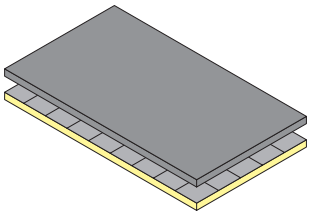
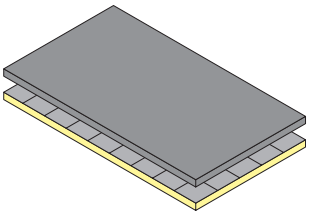
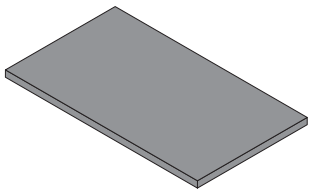
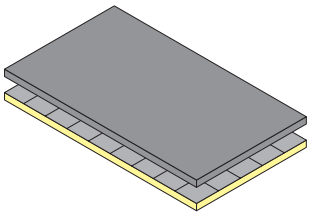
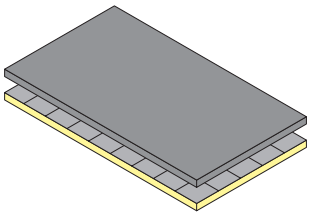
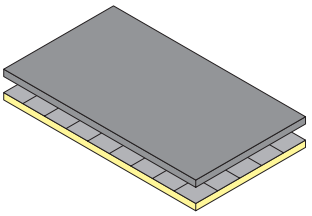
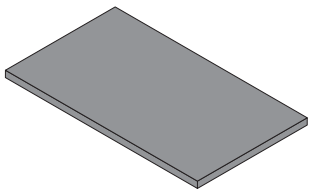
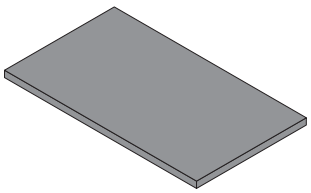
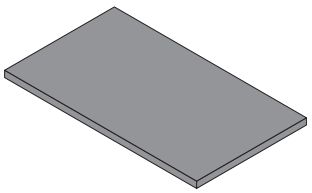
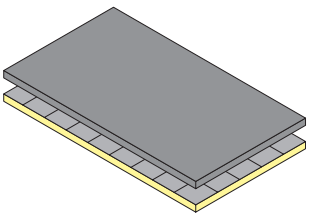
	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COTA ZERO				
	Cota zero + Liso extruido 20	**Cota zero + Liso extruido 30**	**Cota zero + Liso extruido 40**	**Cota zero + Liso extruido 60**
	S/Sb = 48/30 [mm] Seq = 32.5 [mm] $R_{\lambda.ins}$ = 0.95 [m² K / W]	S/Sb = 58/40 [mm] Seq = 42.5 [mm] $R_{\lambda.ins}$ = 1.25 [m² K / W]	S/Sb = 68/50 [mm] Seq = 52.5 [mm] $R_{\lambda.ins}$ = 1.55 [m² K / W]	S/Sb = 88/60 [mm] Seq = 72.5 [mm] $R_{\lambda.ins}$ = 2.10 [m² K / W]
LISO EXTRUIDO				
	Liso extruido 30	**Liso extruido 50**	**Liso extruido 60**	**Liso extruido 50 + Liso extruido 20**
	S=Sb = Seq = 30 [mm] $R_{\lambda.ins}$ = 0.90 [m² K / W]	S = Sb = Seq =50 [mm] $R_{\lambda.ins}$ = 1.45 [m² K / W]	S=Sb = Seq = 60 [mm] $R_{\lambda.ins}$ = 1.75 [m² K / W]	S = Sb = Seq = 70 [mm] $R_{\lambda.ins}$ = 2.05 [m² K / W]

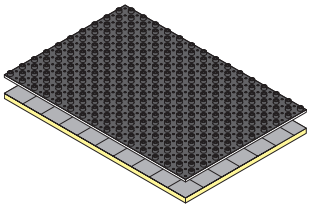
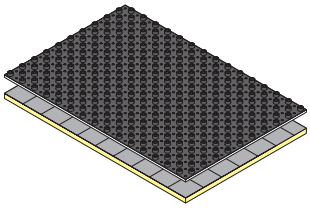
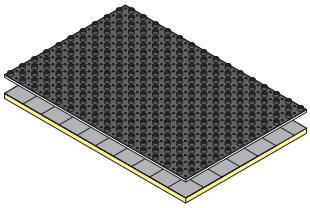
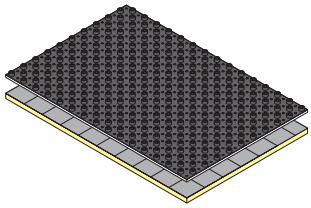
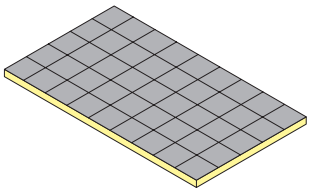
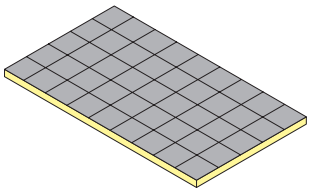
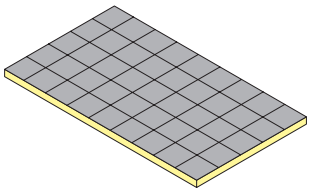
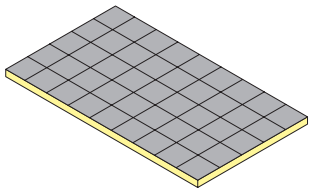
Tabla 5: Combinaciones sistemas con panel PL

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
ACOUSTIC PLUS 20				
	Acoustic Plus 20	**Acoustic Plus 20 + PL 20**	**Acoustic Plus 20 + PL 20**	**Acoustic Plus 20 + PL 30**
	S/Sb = 48/20 [mm] Seq = 30.5 [mm] $R_{\lambda.ins}$ = 0.80 [m² K / W]	S/Sb = 68/40 [mm] Seq = 50.5 [mm] $R_{\lambda.ins}$ = 1.65 [m² K / W]	S/Sb = 68/40 [mm] Seq = 50.5 [mm] $R_{\lambda.ins}$ = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] $R_{\lambda.ins}$ = 2.05 [m² K / W]
ACOUSTIC PLUS 30				
	Acoustic Plus 30	**Acoustic Plus 30 + PL 20**	**Acoustic Plus 30 + PL 20**	**Acoustic Plus 30 + PL 30**
	S/Sb = 58/30 [mm] Seq = 40.5 [mm] $R_{\lambda.ins}$ = 1.05 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] $R_{\lambda.ins}$ = 1.90 [m² K / W]	S/Sb = 78/50 [mm] Seq = 60.5 [mm] $R_{\lambda.ins}$ = 1.90 [m² K / W]	S/Sb = 88/60 [mm] Seq = 70.5 [mm] $R_{\lambda.ins}$ = 2.30 [m² K / W]
BASIC 20				
	Basic 20	**Basic 20 + PL 20**	**Basic 20 + PL 20**	**Basic 20 + PL 30**
	S/Sb = 48/20 [mm] Seq = 28 [mm] $R_{\lambda.ins}$ = 0.75 [m² K / W]	S/Sb = 68/40 [mm] Seq = 48 [mm] $R_{\lambda.ins}$ = 1.60 [m² K / W]	S/Sb = 68/40 [mm] Seq = 48 [mm] $R_{\lambda.ins}$ = 1.60 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58 [mm] $R_{\lambda.ins}$ = 2.00 [m² K / W]
BASIC 30				
	Basic 30	**Basic 30 + PL 20**	**Basic 30 + PL 20**	**Basic 30 + PL 30**
	S/Sb = 58/30 [mm] Seq = 38 [mm] $R_{\lambda.ins}$ = 1.05 [m² K / W]	S/Sb = 78/40 [mm] Seq = 58 [mm] $R_{\lambda.ins}$ = 1.85 [m² K / W]	S/Sb = 78/40 [mm] Seq = 58 [mm] $R_{\lambda.ins}$ = 1.85 [m² K / W]	S/Sb = 88/50 [mm] Seq = 68 [mm] $R_{\lambda.ins}$ = 2.30 [m² K / W]

	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER 20				
	Cover 20	**Cover 20 + PL 20**	**Cover 20 + PL 20**	**Cover 20 + PL 30**
	S/Sb = 48/20 [mm] Seq = 29 [mm] Rλ.ins = 0.80 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 2.05 [m² K / W]
COVER 30				
	Cover 30	**Cover 30 + PL 20**	**Cover 30 + PL 20**	**Cover 30 + PL 30**
	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.10 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.90 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 1.90 [m² K / W]	S/Sb = 88/60 [mm] Seq = 69 [mm] Rλ.ins = 2.35 [m² K / W]
COVER 40				
	Cover 40	**Cover 40**	**Cover 40 + PL 20**	**Cover 40 + PL 20**
	S/Sb = 68/40 [mm] Seq = 48.9 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 68/40 [mm] Seq = 48.9 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 88/60 [mm] Seq = 68.9 [mm] Rλ.ins = 2.20 [m² K / W]	S/Sb = 88/60 [mm] Seq = 68.9 [mm] Rλ.ins = 2.20 [m² K / W]
COVER 50				
	Cover 50	**Cover 50**	**Cover 50**	**Cover 50 + PL 20**
	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 78/50 [mm] Seq = 58.7 [mm] Rλ.ins = 1.65 [m² K / W]	S/Sb = 98/70 [mm] Seq = 78.7 [mm] Rλ.ins = 2.50 [m² K / W]
COVER 60				
	Cover 60	**Cover 60**	**Cover 60**	**Cover 60**
	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 89.5/61.5 [mm] Seq = 70.1 [mm] Rλ.ins = 2.00 [m² K / W]

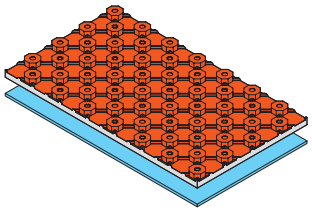
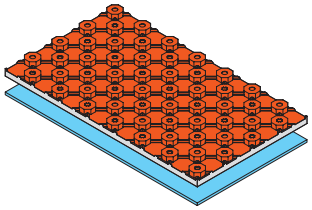
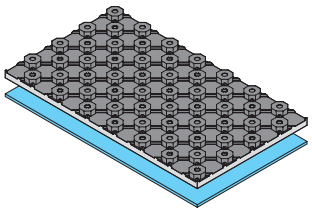
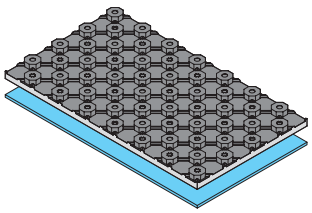
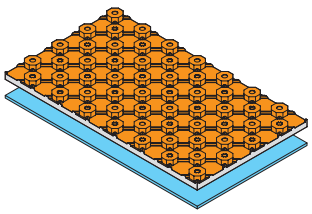
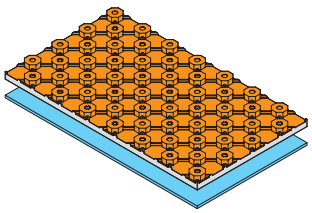
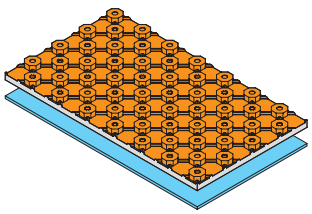
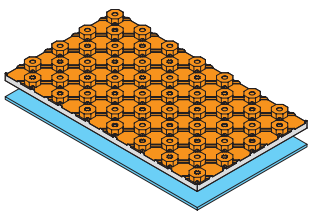
	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER HP 20				
	Cover HP 20	**Cover HP 20 + PL 20**	**Cover HP 20 + PL 20**	**Cover HP 20 + PL 30**
	S/Sb = 48/20 [mm] Seq = 29 [mm] Rλ.ins = 0.90 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.75 [m² K / W]	S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.75 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 2.15 [m² K / W]
COVER HP 30				
	Cover HP 30	**Cover HP 30**	**Cover HP 30 + PL 20**	**Cover HP 30 + PL 20**
	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.25 [m² K / W]	S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.25 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 2.05 [m² K / W]	S/Sb = 78/50 [mm] Seq = 59 [mm] Rλ.ins = 2.05 [m² K / W]
COVER HP 38				
	Cover HP 38	**Cover HP 38**	**Cover HP 38**	**Cover HP 38 + PL 20**
	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 66/38 [mm] Seq = 46.9 [mm] Rλ.ins = 1.50 [m² K / W]	S/Sb = 86/58 [mm] Seq = 66.9 [mm] Rλ.ins = 2.30 [m² K / W]
COVER HP 38				
	Cover HP 54	**Cover HP 54**	**Cover HP 54**	**Cover HP 54**
	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]	S/Sb = 82/54 [mm] Seq = 62.6 [mm] Rλ.ins = 2.00 [m² K / W]
NEW PLUS				
	New Plus + PL 20	**New Plus + PL 20**	**New Plus + PL 30**	**New Plus + PL 40**
	S/Sb = 53/32.5 [mm] Seq = 38 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 53/32.5 [mm] Seq = 38 [mm] Rλ.ins = 1.35 [m² K / W]	S/Sb = 63/42.5 [mm] Seq = 48 [mm] Rλ.ins = 1.75 [m² K / W]	S/Sb = 73/52.5 [mm] Seq = 58 [mm] Rλ.ins = 2.20 [m² K / W]

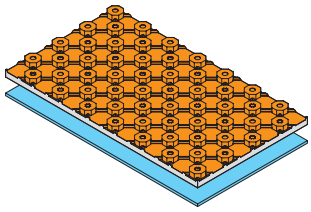
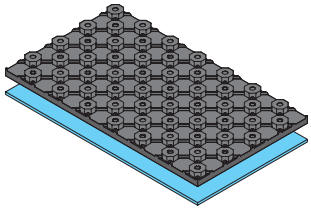
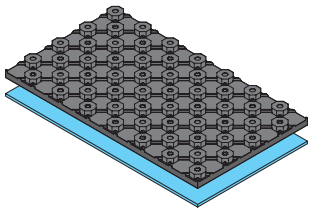
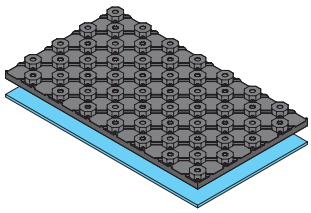
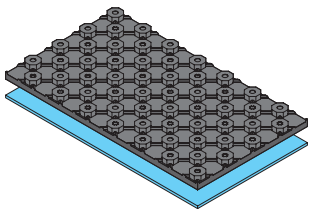
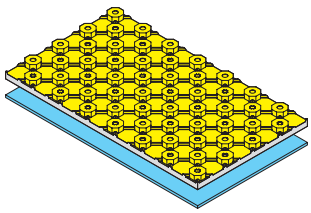
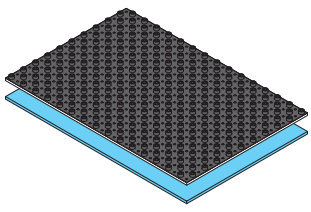
	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COVER HP LISO 20				
	Cover HP liso 20 + PL 20	**Cover HP liso 20 + PL 20**	**Cover HP liso 20 + PL 30**	**Cover HP liso 20 + PL 40**
	S=Sb = Seq = 40 [mm] Rλ.ins = 1.45 [m² K / W]	S=Sb = Seq = 40 [mm] Rλ.ins = 1.45 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.85 [m² K / W]	S = Sb = Seq = 60 [mm] Rλ.ins = 2.30 [m² K / W]
COVER HP LISO 30				
	Cover HP liso 30	**Cover HP liso 30 + PL 20**	**Cover HP liso 30 + PL 20**	**Cover HP liso 30 + PL 30**
	S=Sb = Seq = 30 [mm] Rλ.ins = 0.95 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.80 [m² K / W]	S=Sb = Seq = 50 [mm] Rλ.ins = 1.80 [m² K / W]	S = Sb = Seq = 60 [mm] Rλ.ins = 2.20 [m² K / W]
COVER HP LISO 38				
	Cover HP liso 38	**Cover HP liso 38 + PL 20**	**Cover HP liso 38 + PL 20**	**Cover HP liso 38 + PL 20**
	S=Sb = Seq = 38 [mm] Rλ.ins = 1.20 [m² K / W]	S=Sb = Seq = 58 [mm] Rλ.ins = 2.05 [m² K / W]	S=Sb = Seq = 58 [mm] Rλ.ins = 2.05 [m² K / W]	S = Sb = Seq = 58 [mm] Rλ.ins = 2.05 [m² K / W]
COVER HP LISO 54				
	Cover HP liso 54	**Cover HP liso 54**	**Cover HP liso 54**	**Cover HP liso 54 + PL 20**
	S=Sb = Seq = 54 [mm] Rλ.ins = 1.70 [m² K / W]	S=Sb = Seq = 54 [mm] Rλ.ins = 1.70 [m² K / W]	S=Sb = Seq = 54 [mm] Rλ.ins = 1.70 [m² K / W]	S = Sb = Seq = 74 [mm] Rλ.ins = 2.55 [m² K / W]

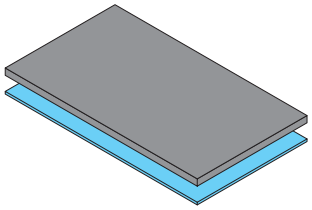
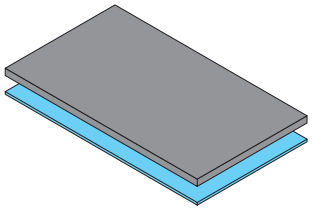
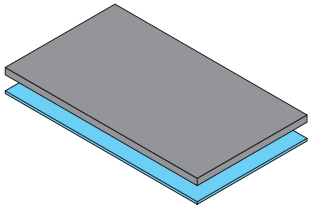
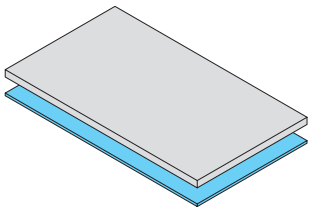
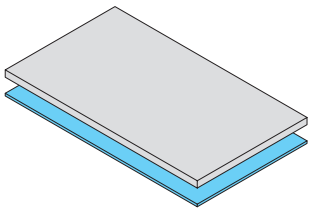
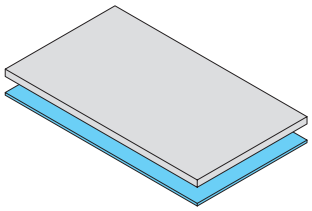
	"A" $R_{\lambda.ins}$ = 0.75 [m² K/W]	"B" $R_{\lambda.ins}$ = 1.25 [m² K/W]	"C" $R_{\lambda.ins}$ = 1.50 [m² K/W]	"D" $R_{\lambda.ins}$ = 2.00 [m² K/W]
COTA ZERO				
	Cota zero + PL 20	**Cota zero + PL 30**	**Cota zero + PL 30**	**Cota zero + PL 40**
	S/Sb = 48/30 [mm] Seq = 32.5 [mm] $R_{\lambda.ins}$ = 1.20 [m² K / W]	S/Sb = 58/40 [mm] Seq = 42.5 [mm] $R_{\lambda.ins}$ = 1.60 [m² K / W]	S/Sb = 58/40 [mm] Seq = 42.5 [mm] $R_{\lambda.ins}$ = 1.60 [m² K / W]	S/Sb = 68/50 [mm] Seq = 52.5 [mm] $R_{\lambda.ins}$ = 2.00 [m² K / W]
PL				
	PL 20	**PL 30**	**PL 40**	**PL 50**
	S=Sb = Seq = 20 [mm] $R_{\lambda.ins}$ = 0.80 [m² K / W]	S = Sb = Seq =30 [mm] $R_{\lambda.ins}$ = 1.25 [m² K / W]	S=Sb = Seq = 40 [mm] $R_{\lambda.ins}$ = 1.65 [m² K / W]	S = Sb = Seq = 50 [mm] $R_{\lambda.ins}$ = 2.05 [m² K / W]

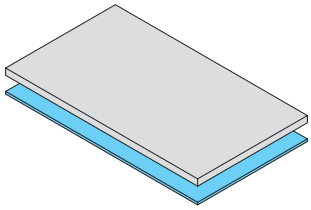
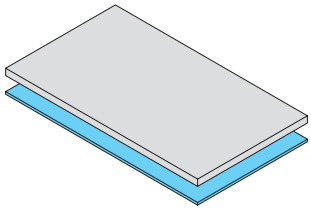
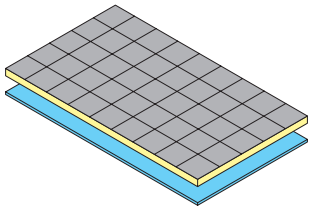
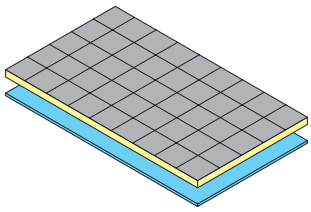
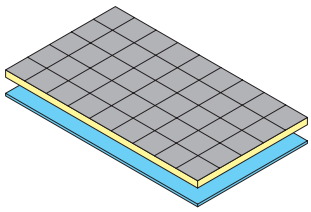
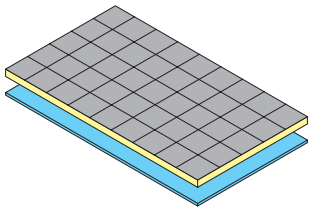
CON COLCHONETA ACÚSTICA

Tabla 6: Combinaciones sistemas con colchoneta acústica

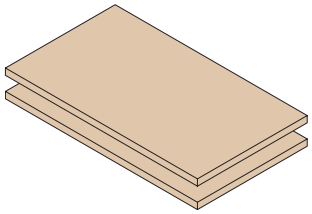
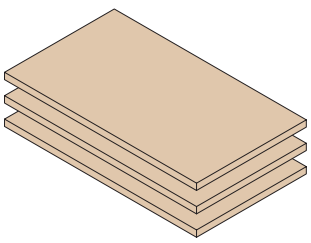
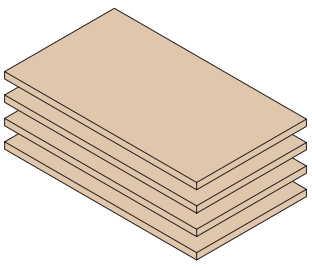
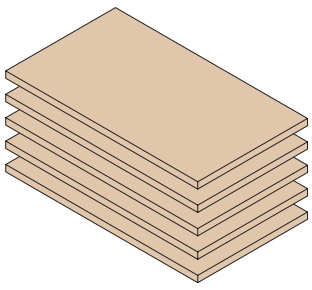
Panel	Datos	Clase
	**ACOUSTIC PLUS 20+ Colchoneta acústica** S/Sb = 58/30 [mm] Seq = 40.5 [mm] Rλ.ins = 1.05 [m^2 K / W]	**"A"**
	**ACOUSTIC PLUS 30+ Colchoneta acústica** S/Sb = 68/40 [mm] Seq = 50.5 [mm] Rλ.ins = 1.35 [m^2 K / W]	**"B"**
	**BASIC 20 + Colchoneta acústica** S/Sb = 58/30 [mm] Seq = 38 [mm] Rλ.ins = 1.00 [m^2 K / W]	**"A"**
	**BASIC 30 + Colchoneta acústica** S/Sb = 68/40 [mm] Seq = 48 [mm] Rλ.ins = 1.30 [m^2 K / W]	**"B"**
	**COVER 20 + Colchoneta acústica** S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.05 [m^2 K / W]	**"A"**
	**COVER 30 + Colchoneta acústica** S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.35 [m^2 K / W]	**"B"**
	**COVER 40 + Colchoneta acústica** S/Sb = 78/50 [mm] Seq = 58.9 [mm] Rλ.ins = 1.65 [m^2 K / W]	**"C"**
	**COVER 50 + Colchoneta acústica** S/Sb = 88/60 [mm] Seq = 68.7 [mm] Rλ.ins = 1.90 [m^2 K / W]	**"C"**

Panel	Datos	Clase
	**COVER 60 + Colchoneta acústica** S/Sb = 99.5/71.5 [mm] Seq = 80.1 [mm] Rλ.ins = 2.25 [m^2 K / W]	**"D"**
	**COVER HP 20 + Colchoneta acústica** S/Sb = 58/30 [mm] Seq = 39 [mm] Rλ.ins = 1.15 [m^2 K / W]	**"A"**
	**COVER HP 30 + Colchoneta acústica** S/Sb = 68/40 [mm] Seq = 49 [mm] Rλ.ins = 1.50 [m^2 K / W]	**"C"**
	**COVER HP 38 + Colchoneta acústica** S/Sb = 76/48 [mm] Seq = 56.9 [mm] Rλ.ins = 1.75 [m^2 K / W]	**"C"**
	**COVER HP 54 + Colchoneta acústica** S/Sb = 92/64 [mm] Seq = 72.6 [mm] Rλ.ins = 2.25 [m^2 K / W]	**"D"**
	**NEW PLUS + Colchoneta acústica** S/Sb = 43/22.5 [mm] Seq = 28 [mm] Rλ.ins = 0.80 [m^2 K / W]	**"A"**
	**COTA ZERO + Colchoneta acústica** S/Sb = 38/20 [mm] Seq = 22.5 [mm] Rλ.ins = 0.60 [m^2 K / W]	**-**

Panel	Datos	Clase
	**COVER HP LISO 20 + Colchoneta acústica** S=Sb = Seq = 30 [mm] Rλ.ins = 0.90 [m^2 K / W]	**"A"**
	**COVER HP LISO 30 + Colchoneta acústica** S=Sb = Seq = 40 [mm] Rλ.ins = 1.20 [m^2 K / W]	**"A"**
	**COVER HP LISO 38 + Colchoneta acústica** S=Sb = Seq = 48 [mm] Rλ.ins = 1.45 [m^2 K / W]	**"B"**
	**LISO ESXTRUIDO 20 + Colchoneta acústica** S=Sb = Seq = 30 [mm] Rλ.ins = 0.85 [m^2 K / W]	**"A"**
	**LISO ESXTRUIDO 30 + Colchoneta acústica** S=Sb = Seq = 40 [mm] Rλ.ins = 1.15 [m^2 K / W]	**"A"**
	**LISO ESXTRUIDO 40 + Colchoneta acústica** S=Sb = Seq = 50 [mm] Rλ.ins = 1.45 [m^2 K / W]	**"B"**

Panel	Datos	Clase
	**LISO ESXTRUIDO 50 + Colchoneta acústica** S=Sb = Seq = 60 [mm] Rλ.ins = 1.70 [m^2 K / W]	**"C"**
	**LISO ESXTRUIDO 60 + Colchoneta acústica** S=Sb = Seq = 70 [mm] Rλ.ins = 2.00 [m^2 K / W]	**"D"**
	**PL 20 + Colchoneta acústica** S=Sb = Seq = 30 [mm] Rλ.ins = 1.05 [m^2 K / W]	**"A"**
	**PL 30 + Colchoneta acústica** S=Sb = Seq = 40 [mm] Rλ.ins = 1.50 [m^2 K / W]	**"C"**
	**PL 40 + Colchoneta acústica** S=Sb = Seq = 50 [mm] Rλ.ins = 1.9 [m^2 K / W]	**"C"**
	**PL 50 + Colchoneta acústica** S=Sb = Seq = 60 [mm] Rλ.ins = 2.30 [m^2 K / W]	**"D"**

PANEL NATURAL

	"A" **$R_{\lambda.ins}$ = 0.75** **[m^2 K/W]**	**"B"** **$R_{\lambda.ins}$ = 1.25** **[m^2 K/W]**	**"C"** **$R_{\lambda.ins}$ = 1.50** **[m^2 K/W]**	**"D"** **$R_{\lambda.ins}$ = 2.00** **[m^2 K/W]**
PANEL NATURAL				
	Panel natural x2	**Panel natural x3**	**Panel natural x4**	**Panel natural x5**
	S=Sb = Seq = 40 [mm] Rλ.ins = 0.85 [m^2 K / W]	S=Sb = Seq = 60 [mm] Rλ.ins = 1.30 [m^2 K / W]	S=Sb = Seq = 80 [mm] Rλ.ins = 1.70 [m^2 K / W]	S=Sb = Seq = 100 [mm] Rλ.ins = 2.15 [m^2 K / W]

ANOTACIONES

ANOTACIONES

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RDZ
invisible heating and cooling

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