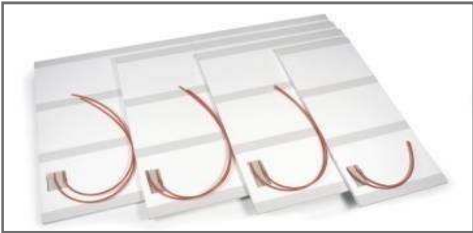

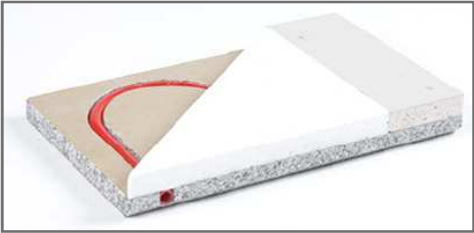





REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING IN DRY CONSTRUCTION

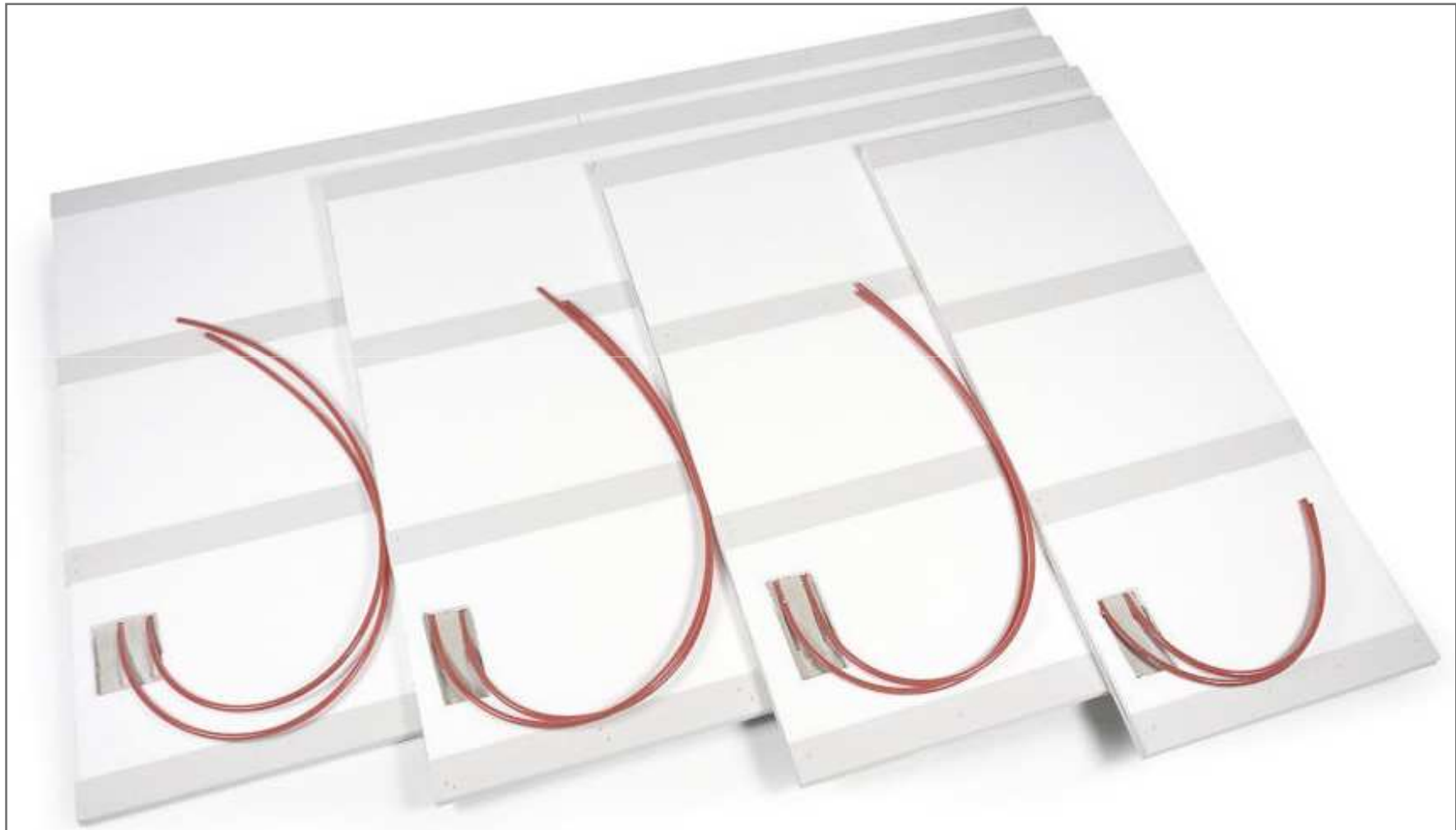
REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

REHAU CHILLED CEILING FAMILY

Cooling cap.	Without acoustic	With acoustic
<p data-bbox="324 654 470 694">60 W/m²</p>	<p data-bbox="728 502 1086 598">REHAU chilled ceiling since 01.01.2007</p> 	<p data-bbox="1377 502 1892 598">REHAU acoustic chilled ceiling since 01.07.2011</p> 
<p data-bbox="302 1061 481 1157">More than 70 W/m²</p>	<p data-bbox="683 941 1131 1093">REHAU high performance chilled ceiling since 01.07.2011</p> 	<p data-bbox="1411 941 1848 1093">REHAU high performance acoustic chilled ceiling since 01.07.2011</p> 

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

REHAU CHILLED CEILING AND REHAU HIGH PERFORMANCE CHILLED CEILING



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: PRODUCT DESCRIPTION

- 1 gypsum board of the brand LaPlura der Fa LaFarge (chilled ceiling)
- Or 1 gypsum board of the brand Rigips Climafit (high performance chilled ceiling)
- Expanded polystyrene (EPS) in stripes bonded on the rear side
- Reinforcement stripes made of gypsum bonded on the rearside
- Pre-drilled fixing grid
- **Edge design:**
 - **Lengthwise:** HRAK or. Vario (halb rund abgeflachte Kante)
 - **Crosswise:** Edgeless
- RAUTHERM S 10.1 x 1.1 mm pipe is integrated into the sandwich construction
- Panel thickness: 30 mm
- 4 element sizes

Element	Length [mm]	Width [mm]	Height [mm]	Area [m ²]	Pipe [m]	Weight [kg]
1	2,000	1,250	30	2.50	48.0	ca. 42.5
2	1,500	1,250	30	1.88	37.0	ca. 32.0
3	1,000	1,250	30	1.25	23.0	ca. 21.0
4	500	1,250	30	0.63	11.0	ca. 10.7



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: HEATING AND COOLING CAPACITY

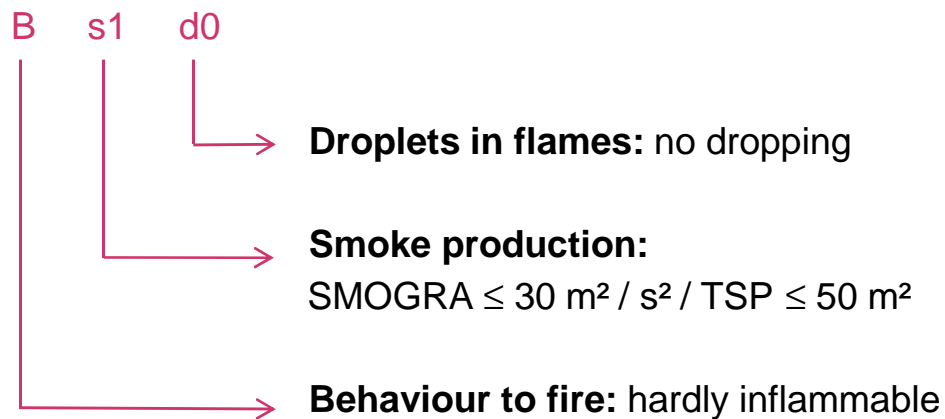
- Measurement of heating and cooling capacity were conducted at an independent institut
- Investigation of cooling capacity pursuant DIN EN 14240 (S/R/RT 17/19/26 °C)
- Investigation of heating capacity according DIN EN 14037 (S/R/RT 31/29/20 °C)
- Pursuant mentioned norms the capacities are calculated to 1 m² activated area

Ceiling type	Chilled ceiling	High performance chilled ceiling
Norm cooling cap. 8 K [W/m ²] (S/R/RT 17/19/26 °C)	51.7	59.9
Norm cooling cap. 10 K [W/m ²] (S/R/RT 15/17/26 °C)	66.0	75.5
Norm heating cap. 10 K [W/m ²] (S/R/RT 31/29/20 °C)	53.5	59.9
Norm heating cap. 15 K [W/m ²] (S/R/RT 36/34/20 °C)	82.6	92.7

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: FIRE REACTION CLASSIFICATION

- Measurement of fire behavior / flammability pursuant to norms
 - DIN EN ISO 11925
 - DIN EN 13823
- Classification pursuant DIN EN 13501
- Fire reaction classification of REHAU acoustic chilled ceiling



Verbale Bewertung	DIN 4102	Europäische Klasse nach DIN EN 13501-1
Nicht brennbar	A1	A1
	A2	A2-s1,d0
Schwer entflammbar	B1	B-s1,d0
		C-s1,d0
		A2-s2,d0
		A2-s3,d0
		B-s2,d0
		B-s3,d0
		C-s2,d0
		C-s3,d0
		A2-s1,d1
		A2-s1,d2
		B-s1,d1
		B-s1,d2
		C-s1,d1
		C-s3,d2
Normal entflammbar	B2	A2-s3,d2
		B-s3,d2
		C-s3,d2
		D-s1,d0
		D-s2,d0
		D-s3,d0
		E
		D-s1,d1
		D-s2,d1
		D-s3,d1
D-s1,d2		
D-s2,d2		
D-s3,d2		
E-d2		
Leicht entflammbar	B3	F

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: SPECIAL PROPERTY OF THE HIGH PERFORMANCE CHILLED CEILING

- Usage of a Rigips Rigiton Climafit plasterboard with integrated graphite particles for increasing thermal conductivity.
- For the installation of the high performance chilled ceiling, Rigips dry wall screws Gold needs to be used. These screws have a so-called RUSPERT coating to avoid corrosion.



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: RANGE OF APPLICATION

- Commercial and residential use for e.g. luxury villa, office and administrative buildings without moisture loads.
- Not suitable for areas with humidity or minimal humidity e.g. residential or commercial wet rooms such as saunas and swimming pools.
- Not suitable for the creation of fire protecting ceilings of Fire-Resistance class F30 to F90 or higher.
- Requirements for structural fire protection and prevention in first escape routes or emergency routes or exits must be considered.



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

CHILLED CEILING: ADVANTAGES

- Suitable for heating and cooling
- High cooling capacity 66 - 76 W/m² (S/R/RT 15/17/26 °C)
(depends on ceiling type)
- High comfort, high convenience
- Optically high class ceiling layout of the surface
- Easy installation caused by a
 - Pre-fabricated ceiling elements
 - High inherent stiffness due gypsum stripes on the rear side
 - Pre-drilled fixing grid
- Flexible ceiling layout opportunities due to 4 different element sizes
- Easy to combine with 15 mm and 30 mm standard gypsum boards
- Good control behaviour due to low inertia
- Short reaction times
- Easy combination with a full or partial air-conditioning system
- All advantages of a radiant heating / cooling system



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

REHAU ACOUSTIC CHILLED CEILING AND REHAU HIGH PERFORMANCE ACOUSTIC CHILLED CEILING
IN DRY CONSTRUCTION



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: PERFORATION



*Perforation 6/18 R
regular round pattern*



*Perforation 8/18 R
regular round pattern*



*Perforation 8/18 Q
regular square pattern*

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: PRODUCT DESCRIPTION

- 2 perforated gypsum plasterboards bounded together (brand: Rigips Rigiton Clima Top)
- Perforation pattern of the 2 plasterboards is arranged exactly above each other
- 3 Perforation patterns:
 - 6/18 R (hole diameter: 6 mm; distance: 18 mm center-center)
 - 8/18 R (hole diameter: 8 mm; distance: 18 mm center-center)
 - 8/18 Q (hole diameter: 8 mm; distance: 18 mm center-center)
- A black acoustic fleece is laminated onto the rear side
- Edge design with sharp edges on all four sides (4 SK)
- Panel thickness: 20 mm
- White RAUTHERM S pipe 10.1 x 1.1 mm is integrated into the sandwich construction
- 3 element sizes

Element	Length [mm]	Width [mm]	Height [mm]	Area [m ²]	Pipe [m]	Weight [kg]
1	1,998	1,188	20	2.37	60	ap. 32.5
2	1,332	1,188	20	1.58	40	ap. 21.0
3	666	1,188	20	0.79	20	ap. 10.5



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: HEATING AND COOLING CAPACITY

- Measurement of heating and cooling capacity were conducted at an independent institut
- Investigation of cooling capacity pursuant DIN EN 14240 (S/R/RT 17/19/26 °C)
- Investigation of heating capacity according DIN EN 14037 (S/R/RT 31/29/20 °C)
- Pursuant mentioned norms the capacities are calculated to 1 m² activated area

Perforation pattern Ceiling type	6/18 R		8/18 R		8/18 Q	
	AKD	H-AKD	AKD	H-AKD	AKD	H-AKD
Norm cooling cap. 8 K [W/m ²] (S/R/RT 17/19/26 °C)	52.6	59.8	51.8	58.6	46.0	52.9
Norm cooling cap. 10 K [W/m ²] (S/R/RT 15/17/26 °C)	66.3	75.5	66.2	74.7	58.0	67.5
Norm heating cap. 10 K [W/m ²] (S/R/RT 31/29/20 °C)	53.3	59.1	53.4	57.4	50.7	54.6
Norm heating cap. 15 K [W/m ²] (S/R/RT 36/34/20 °C)	82.9	91.4	83.4	89.5	78.5	84.3

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: SOUND ABSORPTION VALUES

- Measurement of sound absorption pursuant to ISO 354
- Value of sound absorption α_w -Wert pursuant ISO 11654
- Classification of sound absorption pursuant ISO 11654
- Noise Reductions Coefficient (NRC) pursuant ASTM C423

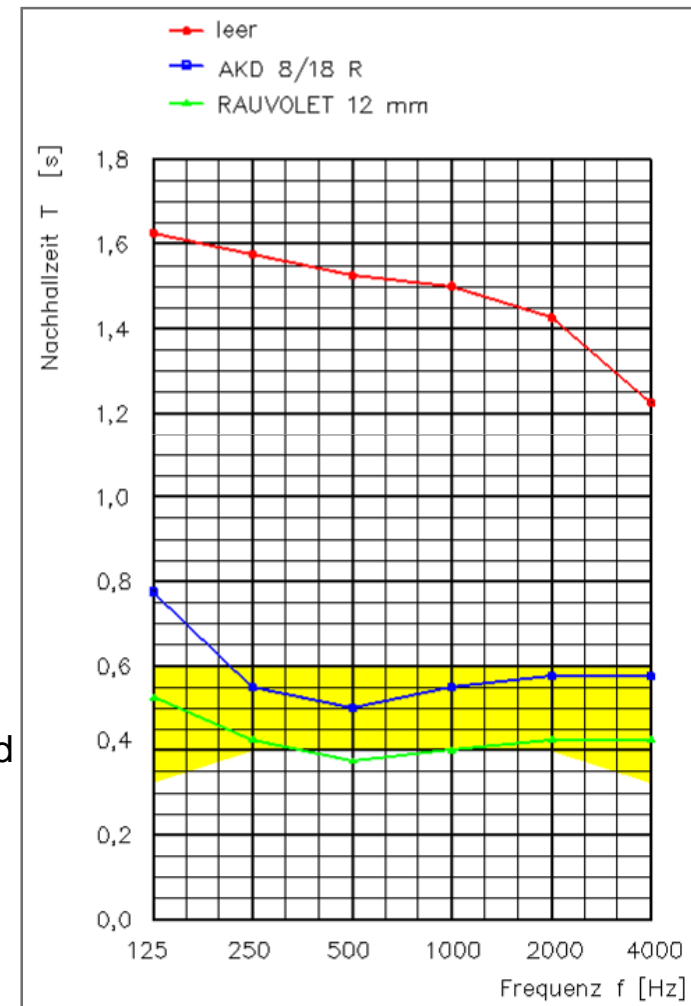
Perforation pattern with / without MiWo ^(*)	6/18 R		8/18 R		8/18 Q	
	without	with	without	with	without	with
α_w -value pursuant ISO 11654	0.45 (LM)	0.50 (L)	0.65 (L)	0.75	0.70	0.80
Classification of sound absorption pursuant ISO 11654	D	D	C	C	C	B
NRC pursuant ASTM C423	0.60	0.60	0.70	0.70	0.70	0.75

(*) MiWo = mineral wool packed in a PE-foil; Thickness: 30 mm

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: DEMAND OF A ROOM (EXAMPLE)

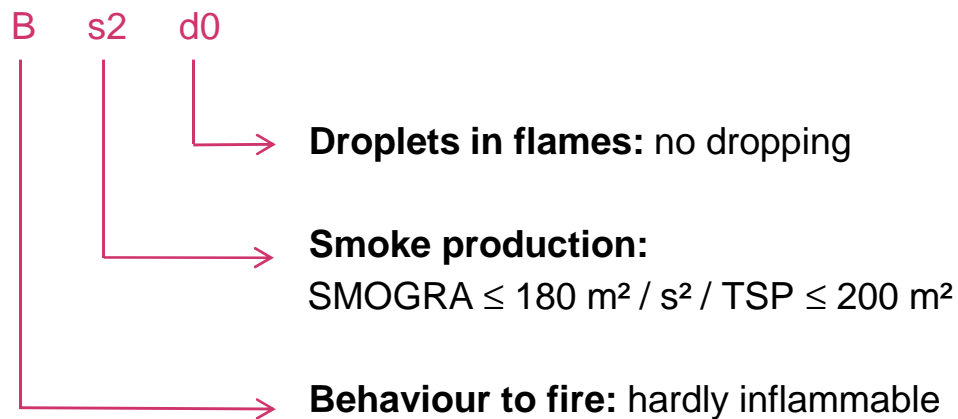
- **Room:** Office for 4 persons
- **Properties of the room:**
 - Length: 5.90 m
 - Width: 5.90 m
 - Height: 2.80 m
 - Area: ca. 34.8 m²
 - Volume: ca. 97.5 m³
 - Surface bottom: 34.8 m² (tile)
 - Surface walls: 56 m² (solid construction)
 - Windows: 10 m²
- **Sound absorber**
 - **Ceiling:** 30 m² REHAU acoustic chilled ceiling 8/18 R (rate approx. 85 %)
 - **Room absorber:** 12 m² RAUVOLET acoustic-line 12 mm
- Recommendation of delay time ("Nachhallzeit") for speech and communication according to the norm DIN 18041 marked by yellow lines



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: FIRE REACTION CLASSIFICATION

- Measurement of fire behavior / flammability pursuant to norms
 - DIN EN ISO 11925
 - DIN EN 13823
- Classification pursuant DIN EN 13501
- Fire reaction classification of REHAU acoustic chilled ceiling



Verbale Bewertung	DIN 4102	Europäische Klasse nach DIN EN 13501-1
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	A2	A2-s1,d0
Schwer entflammbar	B1	B-s1,d0
		C-s1,d0
		A2-s2,d0
		A2-s3,d0
		B-s2,d0
		B-s3,d0
		C-s2,d0
		C-s3,d0
		A2-s1,d1
		A2-s1,d2
		B-s1,d1
		B-s1,d2
		C-s1,d1
		C-s3,d2
A2-s3,d2		
B-s3,d2		
C-s3,d2		
Normal entflammbar	B2	D-s1,d0
		D-s2,d0
		D-s3,d0
		E
		D-s1,d1
		D-s2,d1
		D-s3,d1
		D-s1,d2
		D-s2,d2
		D-s3,d2
E-d2		
Leicht entflammbar	B3	F

REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: SPECIAL PROPERTY OF THE HIGH PERFORMANCE

- Usage of a Rigips Rigiton Climafit plasterboard with integrated graphite particles for increasing thermal conductivity.
- Substitution of the bottom Rigiton Clima Top plasterboard.
- For the installation of the high performance colling ceiling, Rigips dry wall screws Gold needs to be used. These screws have a so-called RUSPERT coating to avoid corrosion.



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: THERMAL INACTIVE ELEMENT / BLIND ELEMENT

- Inactive elements are available in all 3 perforation patterns 6/18 R, 8/18 R, 8/18 Q for the REHAU acoustic chilled ceiling and the REHAU high performance acoustic chilled ceiling
- Different hole colours of AKD and H-AKD (light grey and dark grey)
- Size: 1,998 x 1,188 x 20 mm



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: ADDITIONAL EXTRA INSULATION

- Additional optional extra insulation for an improved sound absorption coefficient
- PE-encapsulated mineral fiber
- Size: 666 x 200 x 30 mm



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: RANGE OF APPLICATION

- Commercial use for e.g. office and administrative buildings without moisture loads.
- Not suitable for areas with humidity or minimal humidity e.g. residential or commercial wet rooms such as saunas and swimming pools.
- Not suitable for the creation of fire protecting ceilings of Fire-Resistance class F30 to F90 or higher.
- Requirements for structural fire protection and prevention in first escape routes or emergency routes or exits must be considered.



REHAU CHILLED CEILING AND REHAU ACOUSTIC CHILLED CEILING

ACOUSTIC CHILLED CEILING: ADVANTAGES

- Suitable for heating and cooling
- High sound absorption coefficient 0.45 – 0.80
(depends on perforation pattern and insulation)
- Sound absorption not influenced by pipe or heat conducting plate
- High cooling capacity 58 - 75 W/m² according to S/R/RT 15/17/26 C
(depends on perforation pattern and ceiling type)
- Optically high class ceiling layout of the surface
- Easy installation caused by a high inherent stiffness and pre-drilled fixing grid
- Flexible ceiling layout opportunities due to 3 different perforation patterns
- Flexible ceiling layout opportunities due to 3 different element sizes
- High comfort, high convenience
- Short reaction times
- Good control behaviour due to low inertia
- Easy combination with a full or partial air-conditioning system
- Easy combination with 10 mm and 20 mm standard gypsum boards
- All advantages of a radiant heating / cooling system

