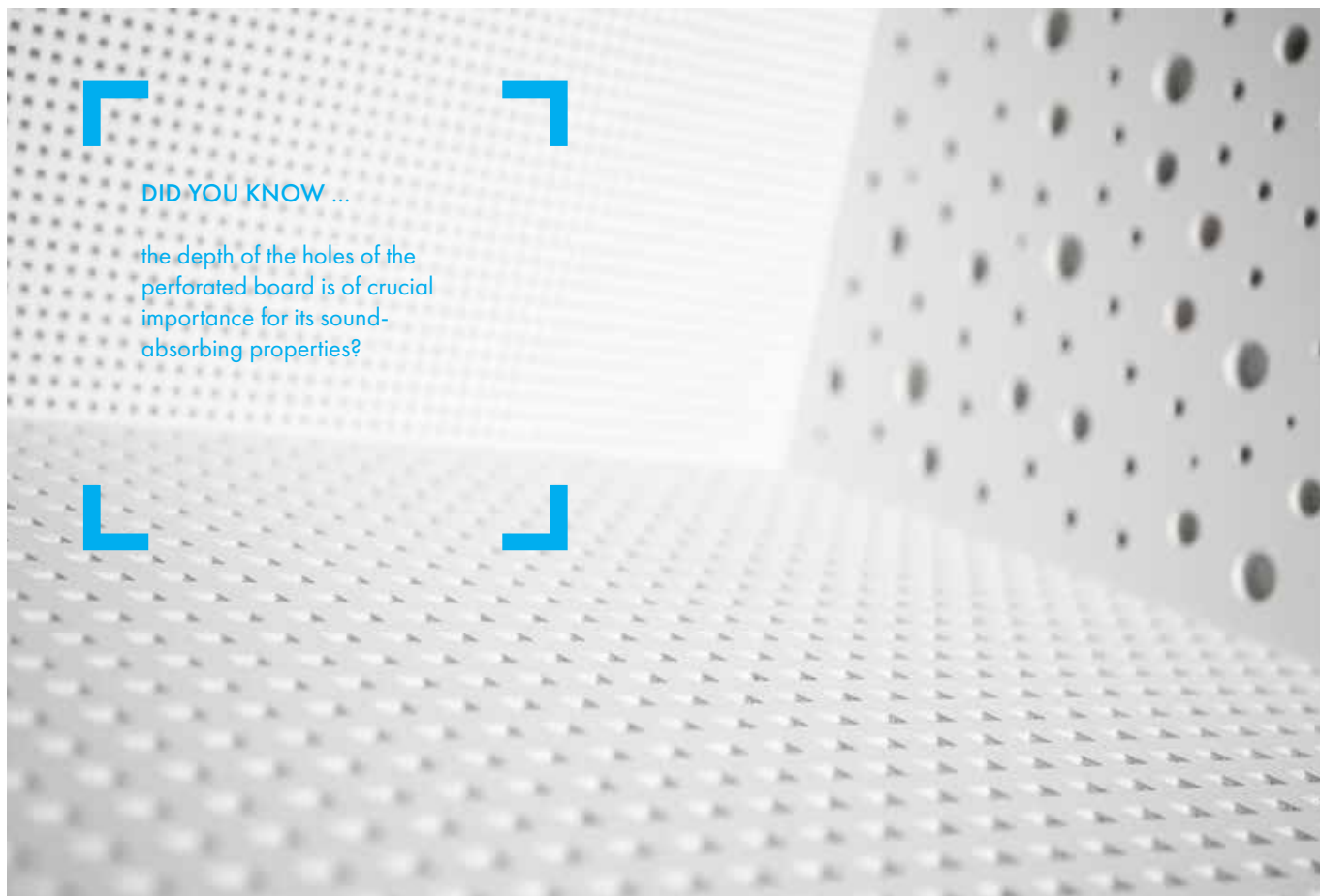


The text "CLEANEO ACOUSTIC TILES" is displayed in a white, uppercase, sans-serif font within a white rectangular box that overlaps the top of the main image. The background of the entire page is a photograph of a modern office interior with a grid of acoustic ceiling tiles, recessed lighting, and glass-walled meeting rooms.The text "Acoustics and design with no restrictions" is written in a white, lowercase, sans-serif font on a solid blue horizontal bar that spans the width of the page, positioned below the section header.

TILES CEILING SYSTEM



DID YOU KNOW ...

the depth of the holes of the perforated board is of crucial importance for its sound-absorbing properties?

The Knauf tiles ceiling system is based on the concept of modular suspended ceilings and is ideal for hiding of various installations, cables and air ducts. Additional devices such as detectors or lights can be installed in these ceilings.

In addition, the Knauf tiles ceiling system can significantly improve the acoustic environment in the rooms. The Knauf tiles ceiling system consists of a suspended gridwork (made of lightweight metal profiles T15 or T24) and Cleaneo tiles.

The structure is suspended to the main ceiling by adjustable hangers, and the tiles are placed on the profiles of the gridwork.

Knauf tiles ceiling system

The Knauf Cleaneo tiles for ceilings are gypsum boards with dimensions 600 x 600 mm, which are produced in two variants: without perforation - ordinary and acoustic - perforated.

Ordinary Knauf tiles without perforation

- » Painted

Acoustic Knauf tiles - perforated*

- » Knauf Cleaneo acoustic gypsum tile 8/18 Q
- » Knauf Cleaneo acoustic gypsum tile 8/18 R
- » Knauf Cleaneo acoustic gypsum tile 12/25 Q
- » Knauf Cleaneo acoustic gypsum tile 12/25 R
- » Knauf Cleaneo acoustic gypsum tile 8/8/20 R

* Acoustic gypsum boards are produced painted in white.

ADVANTAGES

- » Drywall construction with easy and quick installation
- » Easy maintenance and repair
- » Easy access to installations, air ducts and pipes
- » Excellent acoustic characteristics of the perforated tiles
- » The tiles are non-combustible - reaction to fire class A2-s1, d0 acc. to EN 13501-1

Exceptional acoustic characteristics

The main property of Cleaneo® acoustic tiles is their high ability to absorb sound. The fleece on the back of the tile absorbs sound and reduces the echo (using an additional layer of mineral wool can increase the level of sound absorption).

Acoustic panels are ideal for buildings such as schools, offices, conference rooms and others where acoustic requirements must be observed.

Guarantee for clean air

The Knauf Cleaneo tiles are perforated gypsum panels that contain the volcanic mineral zeolite in their gypsum core. It carries out a catalytic process of decomposition of harmful gases in the room, thanks to its increased ability for ion exchange, which allows it to receive and release molecules and ions of various substances.

The duration of action of Knauf Cleaneo® is practically unlimited. The period of decomposition of harmful substances depends on the portion of application in the room of Knauf Cleaneo® tiles. In order to use their capacity to full extent, it is recommended to apply at least 0.2 m² per cubic meter /m³/ of the volume of the room.

Areas of application



Offices



Hospitals



Shopping centers



Hotels



Residential buildings



Exhibition halls and congress centers



In all places where a high level of acoustic sound absorption is required



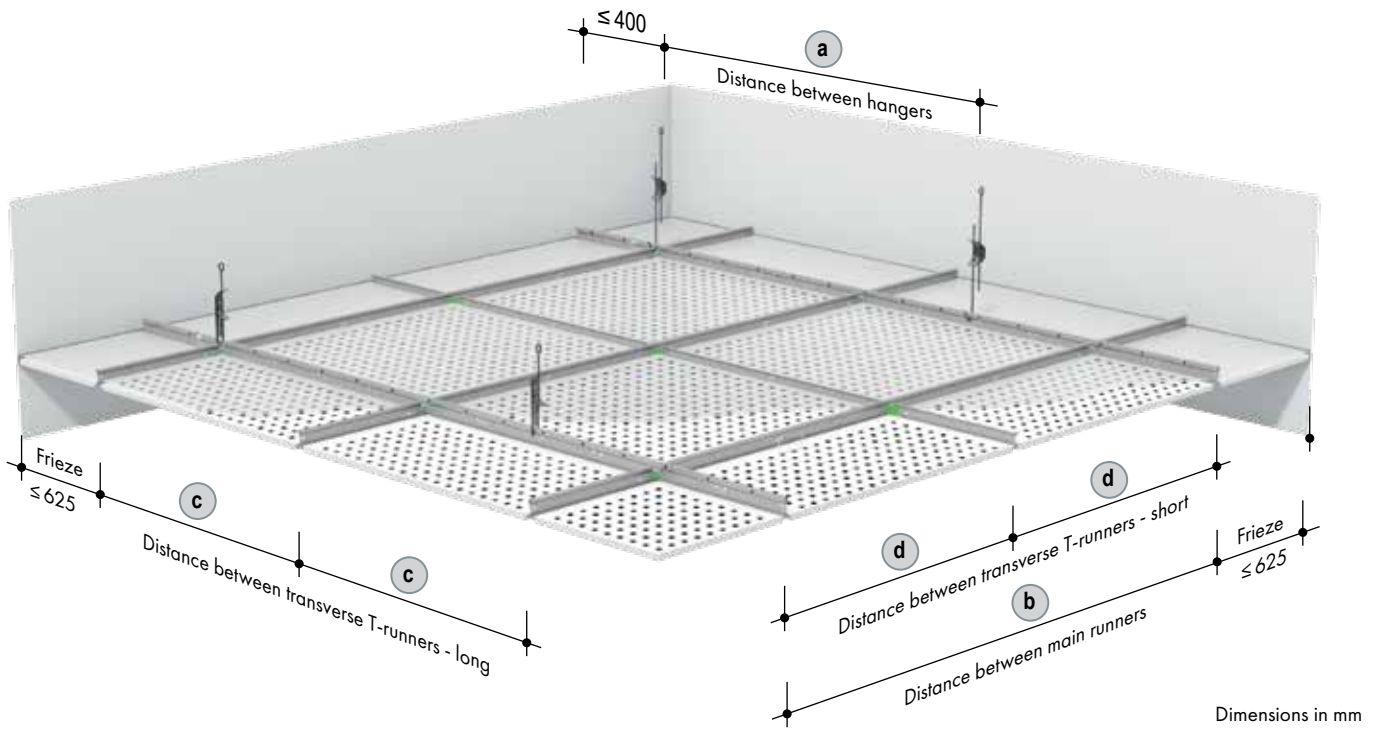


DID YOU KNOW THAT ...

Gypsum ($\text{Ca SO}_4 + 2 \text{ H}_2\text{O}$) is a natural material that is also produced synthetically by the reaction of limestone with the SO_2 emissions in power plants? The process of their processing reduces acid rain.



Configuration of the gridwork



Dimensions in mm

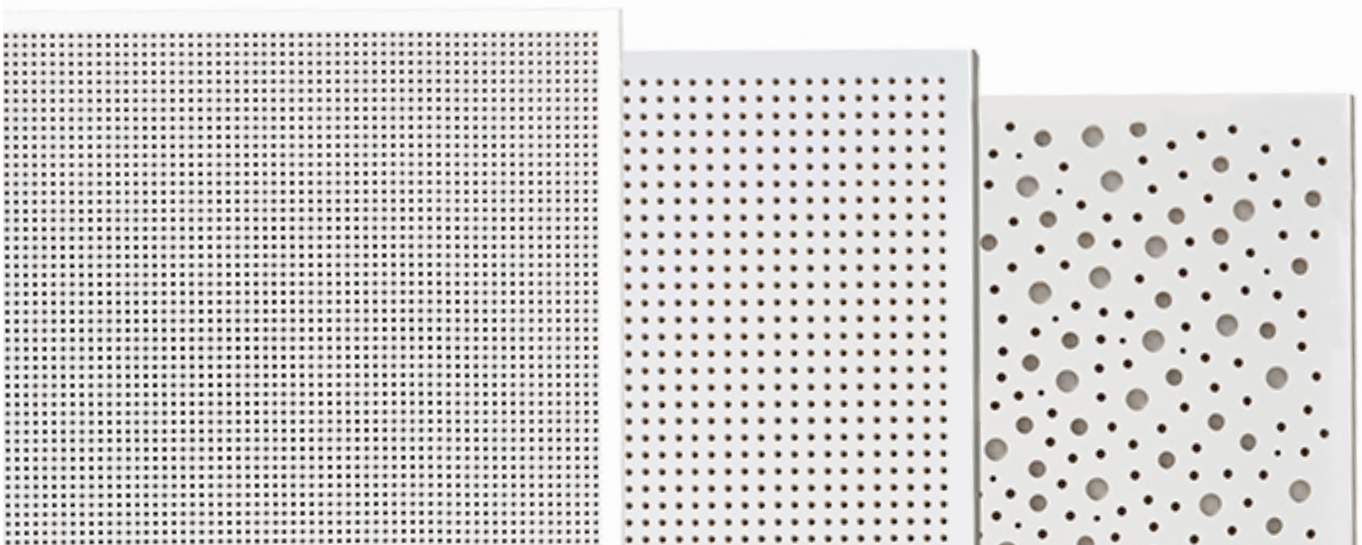
Minimum cavity height 120 mm

Edge detail - width of the bearing rail


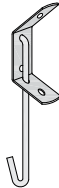
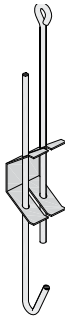
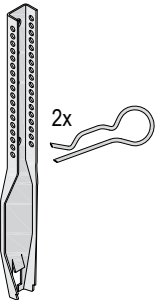
Edge of the Tile	Runner T 15	T 24
SK		




Main distances of the grid

Modul	a	b	c	d
600 x 600	≤ 1000	≤ 1200	600	600
600 x 1200	≤ 1000	≤ 1200	600	-

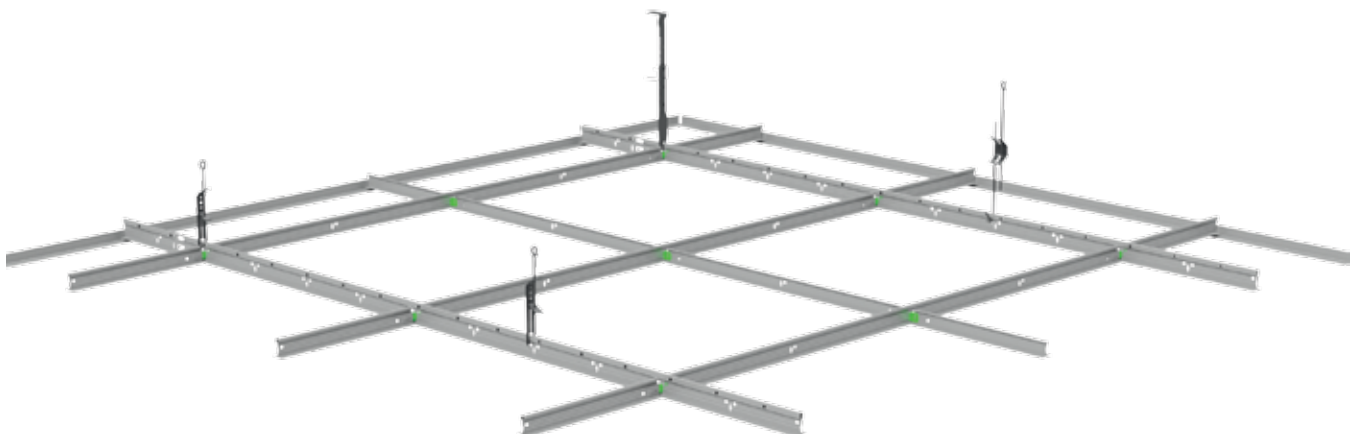


Hangers and their elements

Hangers and their elements				
	Quick hanger SAH -10 plus	Quick hanger SAH-150	Quick hanger SoS/10/30	Nonius hanger Nr.228 with paper clip DPK607
				
Description	Quick hanger with spring	Quick hanger with spring	Quick hanger with double spring and wire with ear	Nonius hanger - lower part with nonius pin
T-profile	DX24	DX15	DX24	DX24
Load-bearing capacity ¹⁾	0,20 kN	0,15 kN	0,15 kN	0,30 kN
Minimum suspension height	175 mm	180 mm	220 mm	240 mm

Hanger elements				
	Hanging wire	Nonius hanger - upper part	Nonius connector for extension if necessary	
				Fastening to the ceiling with wooden joists with Knauf FN 4,3x35. Fastening to the reinforced concrete slab with steel Knauf dowel - nail
Load-bearing capacity ¹⁾	0,25 kN	0,30 kN	0,30 kN	

1) according to EN 13964



Design of the elements

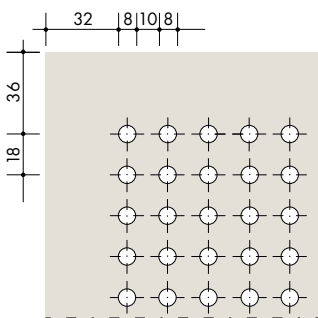
Knauf Cleaneo Tiles	Perforation	Axial distance of the perforation	Tile perforation - % of the module 600/600 mm	Module Width x Length	Profile raster Width x Length		Edge	Width	Tile weight mm
					T-Profile S15	T-Profile S24			
	mm	mm	mm	mm	mm	mm	EN 13964		kg/m ²
8/18 R	Ø 8	18	12,57	600x600	600x600	600x600	SK	9,5	5,6
								12,5	7,5
8/18 Q	8x8	18	16,00	600x600	600x600	600x600	SK	9,5	5,3
								12,5	7,4
12/25 R	Ø 12	25	15,21	600x600	600x600	600x600	SK	9,5	5,3
								12,5	7,5
12/25 Q	12x12	25	19,36	600x600	600x600	600x600	SK	9,5	5,0
								12,5	7,5
8/15/20 R	Ø 8/15/20	-	6,70	600x600	600x600	600x600	SK	9,5	6,0
								12,5	7,5
Unperforated	-	-	0,0	600x600	600x600	600x600	SK	9,5	6,1
								12,5	9,5

Note: Knauf Cleaneo Tiles with dimensions 600x1200 mm can be delivered on request.

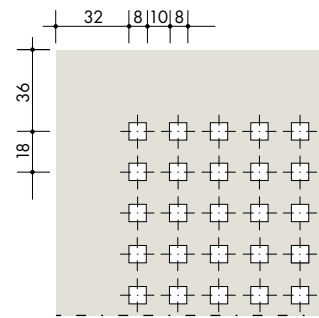
Knauf Cleaneo Tiles for suspended ceilings

Schemes – Dimensions in mm

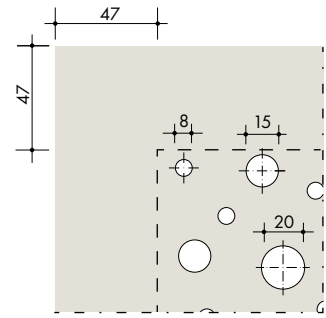
8/18 R (Circular perforation Ø 8)



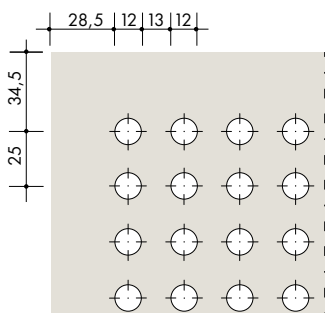
8/18 Q (Square perforation 8x8)



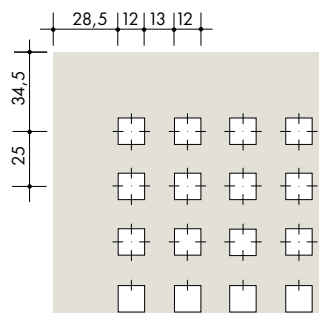
8/15/20 R (Scattered perforation Ø 8/15/20)



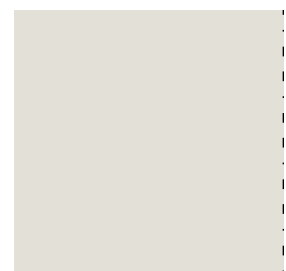
12/25 R (Circular perforation Ø 12)



12/25 Q (Square perforation 12x12)



Non-perforated



Knauf non-perforated tiles

Knauf non-perforated ceiling tiles are non acoustic. They can be ordered painted white or unpainted.

No perforation

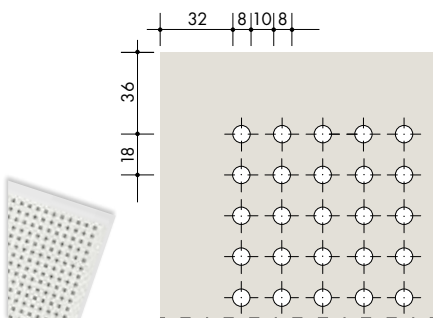


Module dimensions: 600 x 600 mm
Tile thickness: 9.5 mm

Knauf Cleaneo Acoustic tiles 8/18 R

Knauf tile for raster ceiling 8/18 R with circular perforation is an element with sound-absorbing properties. The diameter of the holes is 8 mm and their axial distance is 180 mm.

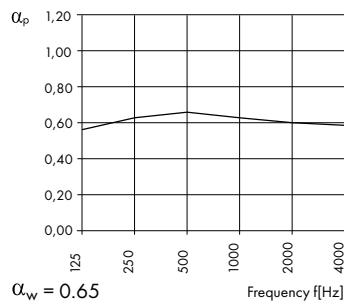
Perforation: 12,57%



Module dimensions: 600 x 600 mm
Panel thickness: 9.5 mm

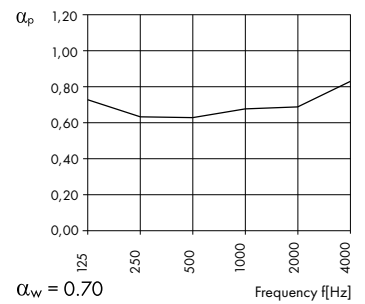
Knauf Cleaneo Acoustic Tiles 8/18 R sound absorption coefficient

Air gap - 200 mm



$\alpha_w = 0.65$

Air gap - 400 mm



$\alpha_w = 0.70$

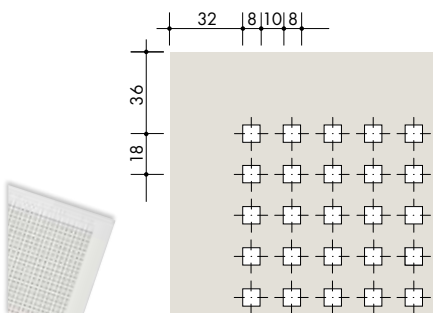
f, Hz	Reference curve	Sound absorption coefficient, α_p
125	-	0,56
250	0,40	0,63
500	0,60	0,66
1000	0,60	0,61
2000	0,60	0,60
4000	0,50	0,59

f, Hz	Reference curve	Sound absorption coefficient, α_p
125	-	0,73
250	0,40	0,63
500	0,60	0,63
1000	0,60	0,68
2000	0,60	0,69
4000	0,50	0,83

Knauf Cleaneo Acoustic tiles 8/18 Q

Knauf tile for raster ceiling 8/18 Q with square perforation is an element with sound-absorbing properties. The side of the square is 8 mm and the axial distance is 180 mm.

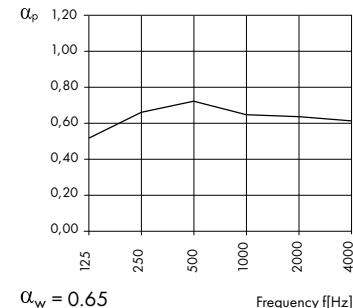
Perforation: 16,00%



Module dimensions: 600 x 600 mm
Panel thickness: 9.5 mm

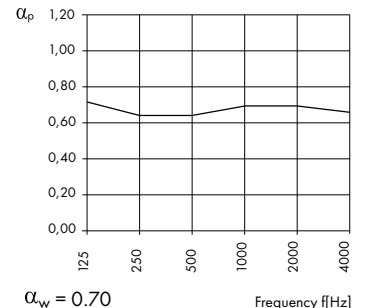
Knauf Cleaneo Acoustic Tiles 8/18 Q sound absorption coefficient

Air gap - 200 mm



$\alpha_w = 0.65$

Air gap - 400 mm



$\alpha_w = 0.70$

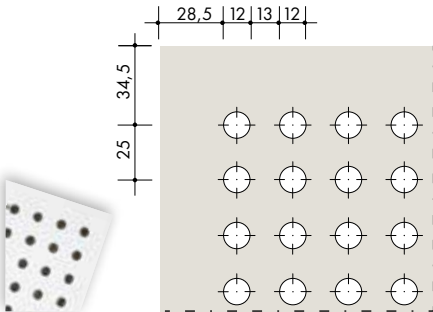
f, Hz	Reference curve	Sound absorption coefficient, α_p
125	-	0,53
250	0,40	0,66
500	0,60	0,73
1000	0,60	0,65
2000	0,60	0,64
4000	0,50	0,62

f, Hz	Reference curve	Sound absorption coefficient, α_p
125	-	0,72
250	0,40	0,64
500	0,60	0,64
1000	0,60	0,69
2000	0,60	0,69
4000	0,50	0,66

Knauf Cleaneo Acoustic tile 12/25 R

Knauf tile for raster ceiling 12/25 R with circular perforation is an element with sound-absorbing properties. The diameter of the holes is 12 mm and their axial distance is 250 mm.

Perforation: 15,21%

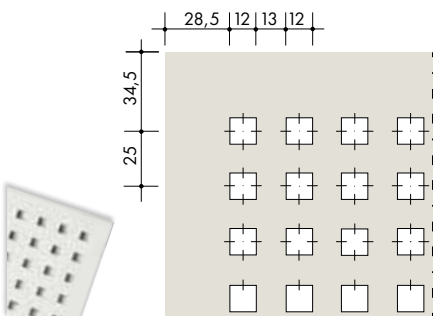


Module dimensions: 600 x 600 mm
Panel thickness: 9.5 mm

Knauf Cleaneo Acoustic tile 12/25 Q

Knauf tile for raster ceiling 12/25 Q with square perforation is an element with sound-absorbing properties. The side of the squares is 12 and their axial distance is 250 mm.

Perforation: 19,36%

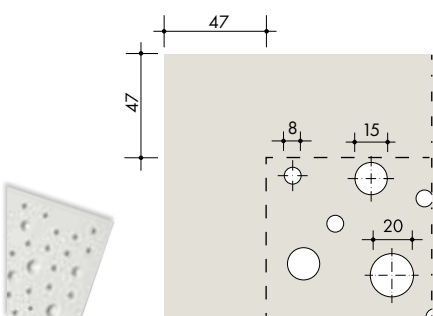


Module dimensions: 600 x 600 mm
Panel thickness: 9.5 mm

Knauf Cleaneo Acoustic tile 8/15/20 R

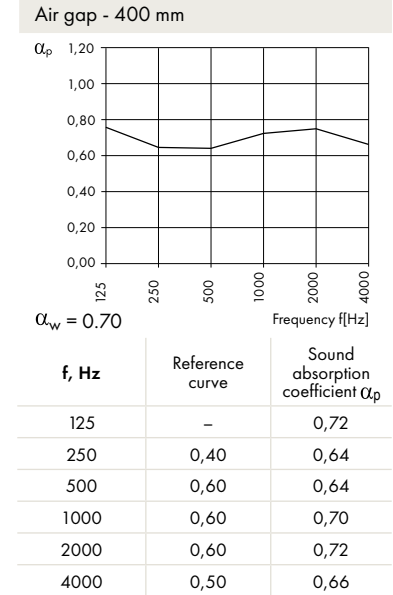
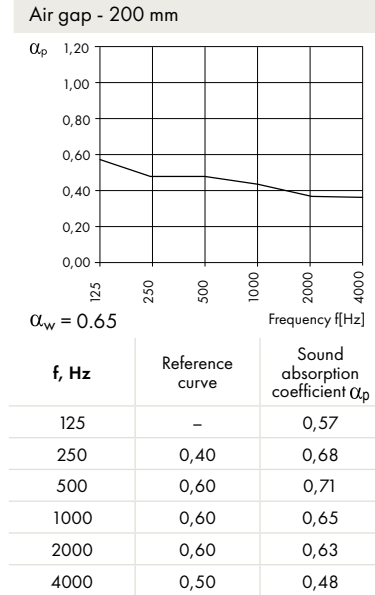
Knauf tile for raster ceiling 8/15/20 R with scattered perforation is an element with sound-absorbing properties. The diameters of the circular holes are 8, 15 and 20 mm.

Perforation: 6,70%

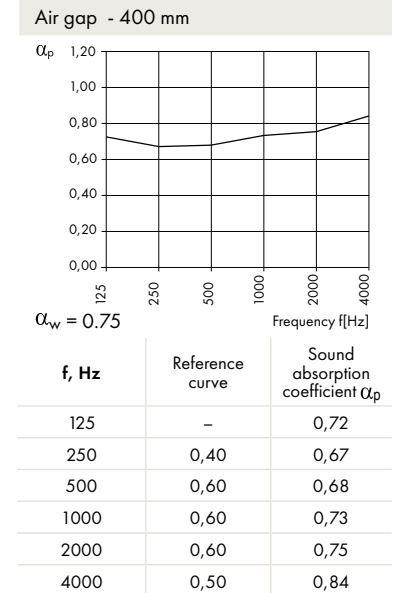
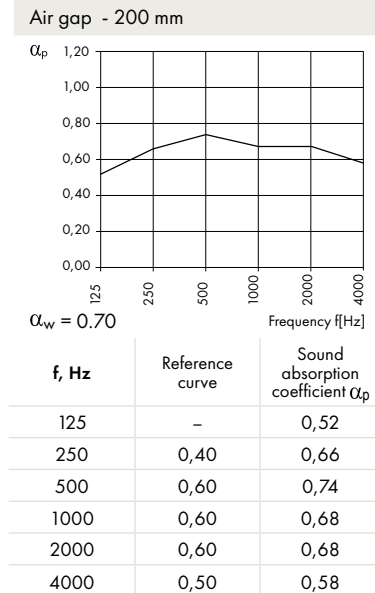


Module dimensions: 600 x 600 mm
Panel thickness: 9.5 mm

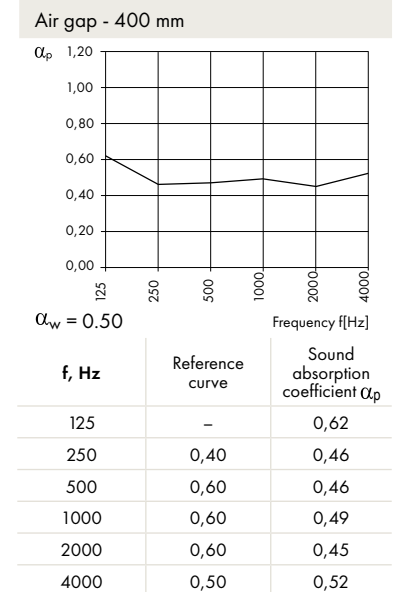
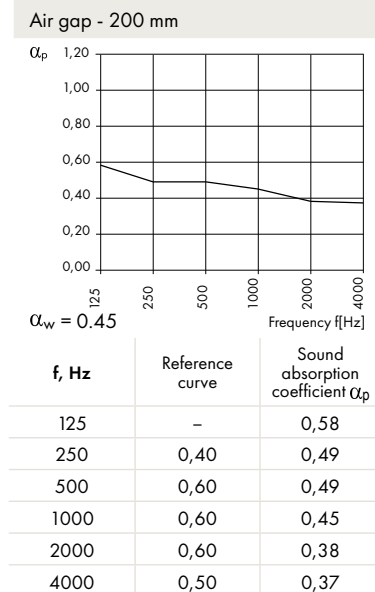
Knauf Cleaneo Acoustic Tiles 12/25 R sound absorption coefficient



Knauf Cleaneo Acoustic Tiles 12/25 Q sound absorption coefficient



Knauf Cleaneo Acoustic Tiles 8/15/20 R sound absorption coefficient



Installation

The locations of the Knauf ceiling hangers are marked and the hangers are fixed with steel dowels suitable for the main structure. The distances between the hangers, profiles and friezes are determined in advance based on the ceiling system according to the specified scheme. For mounting with spring hangers in the T-profile there is a special hole in which the hook of the hanger ends, which must be tightly closed.

The T profiles on both sides are shaped by means of special joints at their ends so that they will be able to extend.

The joints of the T profiles are located evenly at a maximum distance of 10 cm from the point of suspension. Perpendicular to the T-profiles in their punched holes, the cross-sections are mounted so as to obtain the desired grid.

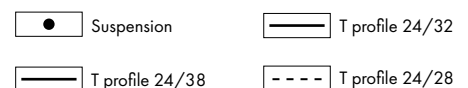
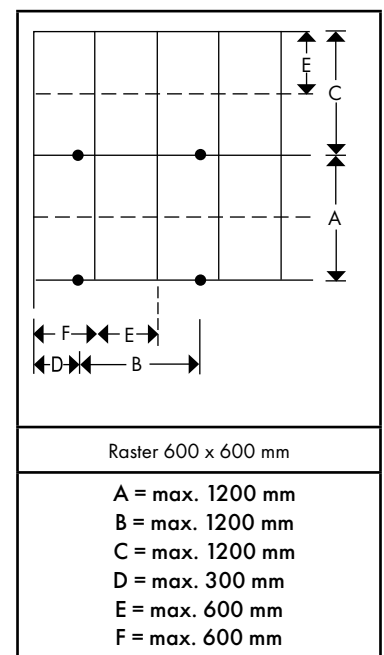
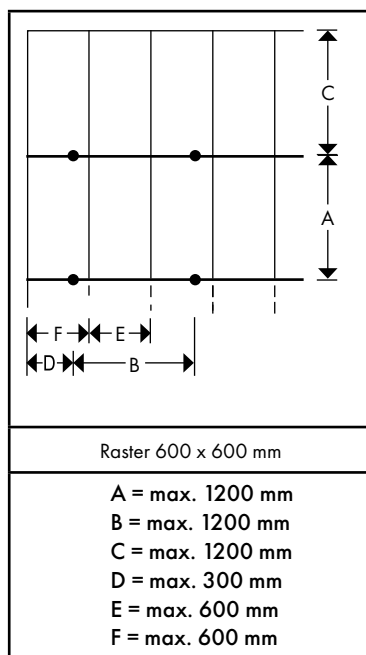
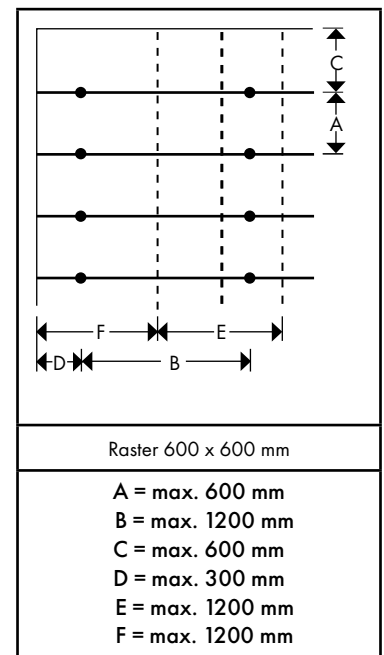
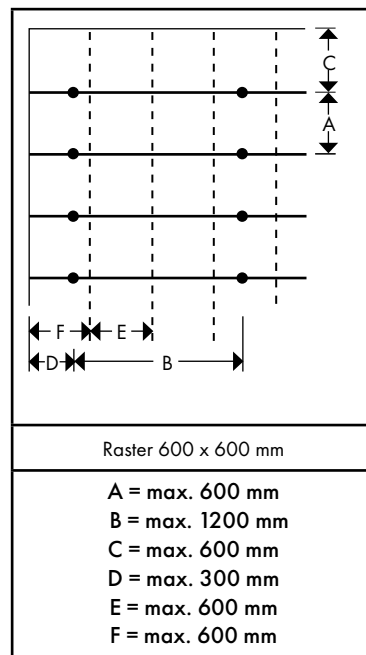
The arrangement of the transverse T profiles is based on the dimensions of the tile. At all intersections of the raster, the profiles must close 90 degrees.

The finish of the ceiling to the wall is accomplished with a corner profile, which is attached to it with dowels. The bearing components of the grid must not be fixed to the L profiles. Finally, Knauf ceiling tiles are placed through the profile grid. When installing lighting, sound and other fixtures, the structure of the raster ceiling must not be affected. The load-bearing capacity of the tile on the suspended grid ceiling complies with the requirements of EN 13964:2014. The tiles can be applied under normal living conditions. Luminaires weighing up to 1.8 kg can be built into 12,5 mm elements in an opening designed for them in the tiles with a diameter of 65 to 265 mm without reinforcing the structure. If the openings diameter is greater than or equal to 160 mm, the built-in body can weigh up to 2.5 kg. Luminaires weighing up to 0.9 kg can be built into tiles with a thickness of 9.5 mm in a hole designed for them in the tiles with a diameter of 65 to 265 mm without reinforcing the structure. Under these conditions, the ceilings correspond to deformation class 1 - deflection is less than 1,2 mm.

For larger elements, it is necessary to add additional reinforcing elements. These additional elements must reach and transfer their load to the bearing profiles of the system. The suspended structure must be checked for load-bearing capacity, taking into account these additional loads.

Suspension of loads larger than the specified ones is done independently, without loading the ceiling.

Data for planning



Bill of materials

Material cost for m² ceiling without losses

Designation - position		Unit	Average quantity	
			Module 600 x 600	
			1	2
Connection to the wall				
Option	L profile MIE 20/24/0,5; 3,00 m	m	0,4	0,4
	L profile MS15 W 25/15/8/15/0,5; 3,00 m		0,4	0,4
Dowels suitable for the respective base, e.g. steel Knauf dowel-nail for reinforced concrete		pcs.	1,4	1,4
Substructure				
Anchoring element for example steel Knauf dowel-nail		pcs.	1,0	0,9
	Quick hanger SAH10-Plus		1,0	0,9
Variant	Quick hanger SAH-150		1,0	0,9
Variant	Quick hanger SoS/10/30		1,0	0,9
Variant	Nonius hanger Nr. 228			
	Nonius hanger upper part			
	2xNonius pin DPK607		1,0	0,9
Main T runners, e.g. DX3		m	0,83	0,83
Transverse short T runners, e.g. DX24			0,83	0,83
Transverse long T runners, e.g. DX24			1.67	1.67
Insulation layer				
Insulation layer		m ²	if necessary	if necessary
Ceiling elements				
Tile for module 600 x 600 x 12,5		pcs.	2,8	2,8
Tile for module 600 x 1200 x 12,5		pcs.	-	-
Pressing clip for T-profiles		pcs.	if necessary	if necessary

Quantities are calculated based on a ceiling sizes 10 x 10 m = 100 m².

Distance between hangers	
1	Distance between hangers = 800 mm
2	Distance between hangers = 1000 mm



Gypsum Plasterboards Plant Maritsa



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