Drywall Systems | 2014-11

W112C.de

Knauf Cleaneo® Akustik Partition

Note on English translation / Hinweise zur englischen Fassung

This is a translation of the system catalogue valid in Germany.
All stated details and properties are in compliance with the regulations of the German standards and building regulations. They are only applicable for the specified products, system components, application rules, and construction details in connection with the specifications of the respective certificates and approvals.
Knauf Gips KG denies any liability for applications outside of Germany as this requires changes acc. to the respective national standards and building regulations.

Dies ist eine Übersetzung des in Deutschland gültigen Detailblattes. Alle angegebenen Werte und Eigenschaften entsprechen den in Deutschland gültigen Normen und bauaufsichtlichen Regelungen. Sie gelten nur bei Verwendung der angegebenen Produkte, Systemkomponenten, Anwendungsregeln und Konstruktionsdetails in Verbindung mit den Vorgaben der bauaufsichtlichen Nachweise.
Die Knauf Gips KG lehnt jegliche Haftung für Einsatz und Anwendung außerhalb Deutschlands ab, da in diesem Fall eine Anpassung an nationale Normen und bauaufsichtliche Regelungen notwendig ist.

► **Good to know**

Screw fastening for optimum sound insulation

Knauf Absorber Partition

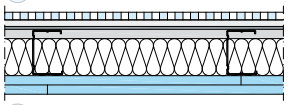
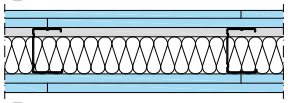
Sound absorption and sound insulation combined in a system!

The absorber partition is a hybrid construction that meets the sound insulation requirements while improving the acoustic quality of the room thanks to its sound absorbing properties.
In schools and office buildings, it is essential to meet the challenges of the required sound insulation and room acoustics, and to combine them with the limited slim construction component thicknesses.

Particularly in office buildings, the necessity to clad free surfaces with sound absorbers no longer applies because of the architectural trends to a reduced, understated visual appearance and the integration of glass and exposed concrete surfaces. This is why it is even more important to effectively use the available upright surfaces and to apply multiple-properties to the partitions.

Contents

Technical and building physical data Scheme drawings

Knauf System	Cladding 1 Partition side: Cleaneo Akustik	Diamant	Min. thickness mm	2 Partition side: Diamant	Min. thickness mm	Profile Cavity h mm	Wall thickness D mm	Weight approx. kg/m²	Area ratio Knauf Cleaneo® Akustik 12/25 Q %	Sound insulation: Knauf CW Stud $R_{w,R}$ [1] dB	Insulation layer min. thickness mm
W112C.de											Knauf partition with integrated absorber
■ Perforated area ratio 1  2 ■ Unperforated area ratio 1  2	●		12.5	●	2x 15	75 + 15	132.5	60	0	**59**	60 mm [2] partition cavity + 20 mm [3] hat-shaped channel cavity
									20	**54**	
									33	**53**	
		●	15 + 12.5						50	**51**	
									100	**48**	

1) $R_{w,R}$ = calculation value of the weighted apparent sound reduction index of the separating component acc. to DIN 4109, without longitudinal sound transmission via flanking constructional components

2) Insulation layer G (mineral wool insulation layer acc. to DIN EN 13162, building material class A), airflow resistivity acc. to DIN EN 29053; r ≥ 5 kPa·s/m², insulation layer fill level 80 %; e.g. Knauf Insulation Trennwand-Dämmplatte TI 140 T

3) Insulation layer G (mineral wool insulation layer acc. to DIN EN 13162, building material class A), airflow resistivity acc. to DIN EN 29053; r ≥ 10 kPa·s/m², e.g. Knauf Insulation Trennwand-Dämmplatte TI 120 A

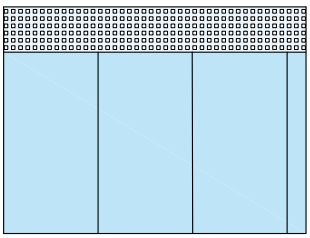
■ The perforated surface of the absorber partition can be implemented with all common perforations without a negative effect on the sound insulation, as the tested partition has been measured with respect to unfavourable sound insulation perforation design (12/25 Q, perforation ratio 23 %).

Proof:
■ A 010-05.14

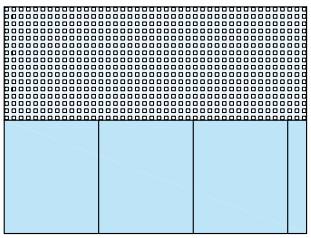
Sound insulation

In dependence on the ratio of the perforated surface

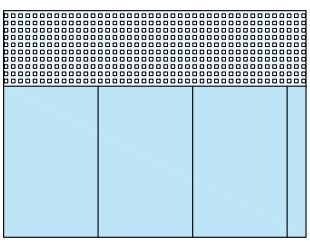
Surface perforation ratio of Knauf Cleaneo® Akustik 12/25 Q



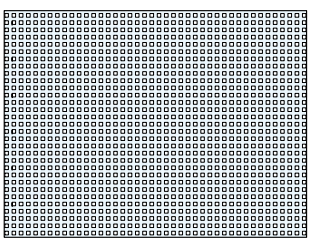
20 % perforation ratio of the surface Knauf Cleaneo® Akustik board



50 % perforation ratio of the surface Knauf Cleaneo® Akustik board



33 % perforation ratio of the surface Knauf Cleaneo® Akustik board



100 % perforation ratio of the surface Knauf Cleaneo® Akustik board

Requirements and recommendations for sound insulation

Application in schools (recommendations according to DIN 4109)	Partitions between classrooms / classrooms and corridors	**47 dB**
	Partitions between classrooms and stairways	**52 dB**
Application in office buildings (recommendations according to DIN 4109, supplement 2)	Partitions between rooms with normal office activity	**37 dB**
	Partitions to rooms for intellectual activity requiring high levels of concentration or when dealing with confidential matters	**45 dB**

Rated sound absorption coefficient and classification acc. to DIN EN ISO 11654

Rated sound absorption coefficient α_w	Sound absorption class	Rating
≥ 0.9	A	extremely absorbing
0.8 and 0.85	B	extremely absorbing
0.6 to 0.75	C	highly absorbing
0.3 to 0.55	D	absorbing
0.15 to 0.25	E	hardly absorbing
≤ 0.1	F [1)]	reflecting

1) in DIN EN ISO 11654 designated as "Not classified"

- Should the frequency-dependent sound absorption coefficient in one or more frequency bands exhibit an increased effectiveness, it must be assigned with the corresponding shape indicators. These indicators are necessary as soon as a frequency band exceeds the shifted reference curve by 0.25 or more according to DIN EN ISO 11654. The following shape indicators are used
  - (L) where the sound absorption coefficient is exceeded in the 250 Hz frequency band
  - (M) where the sound absorption coefficient is exceeded in the 500 Hz or 1000 Hz frequency bands
  - (H) where the sound absorption coefficient is exceeded in the 2000 Hz or 4000 Hz frequency bands

Sound absorbing properties of the absorber partition

The measured test specimen consists of both an unperforated and perforated surface ratio. For extensive test specimens, the specification of the frequency-dependent, practical sound absorption coefficient according to DIN EN ISO 354 is intended. The acoustically effective surface is not just limited to the perforated section of the absorber wall. The partition cavity underneath the perforation as well as underneath the non-perforated section influence the acoustic effectiveness to a degree which cannot be precisely determined. For this reason, the equivalent sound absorption surface with respect to the entire test specimen (12 m²), as well as to the weighted sound absorption coefficient are specified with respect to the perforated area ratio.

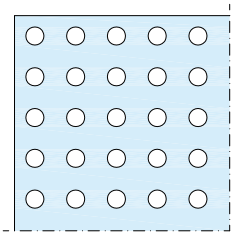
The exact procedure for determineing the acoustic effectiveness is laid out in test report A 010-05.14 and can be requested from the Technical Advisory Service at Knauf Gips KG.

Assuming a perforated surface ratio of the absorber partition of 33 %, the following acoustic qualities listed are achieved in dependence on the perforated board type used.

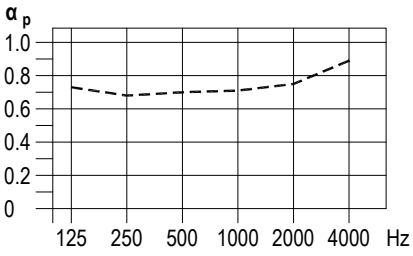
Sound absorption - continuous perforation / area ratio 33%

Design and perforation	Sound absorption coefficient α_p related to a surface area of 4 m²	Equivalent sound absorption area A related to the entire test surface area of 12 m²

Standard circular perforation 8/18 R

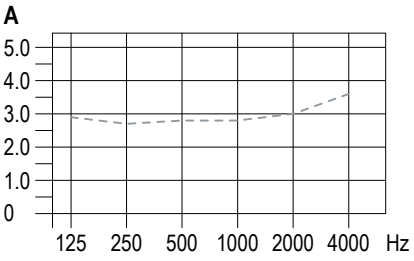


Perforation ratio: **15.5 %**
Proof: A 010-05.14



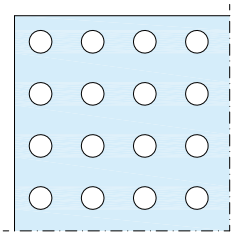
α_p	0.73	0.68	0.70	0.71	0.75	0.89

α_w = **0.75** (H) Class: **C** (highly absorbing)

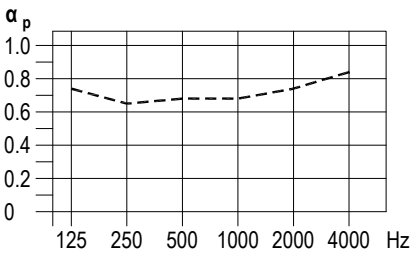


A	2.9	2.7	2.8	2.8	3.0	3.6

Standard circular perforation 10/23 R

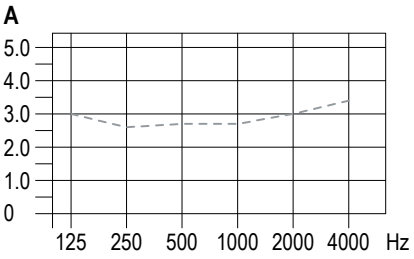


Perforation ratio: **14.8 %**
Proof: A 010-05.14



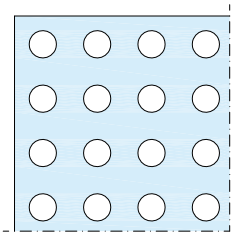
α_p	0.74	0.65	0.68	0.68	0.74	0.84

α_w = **0.75** Class: **C** (highly absorbing)

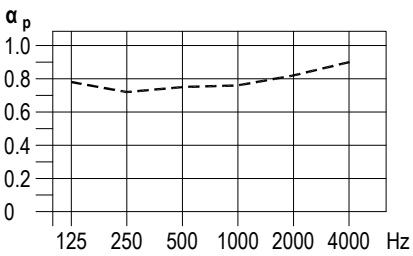


A	3.0	2.6	2.7	2.7	3.0	3.4

Standard circular perforation 12/25 R

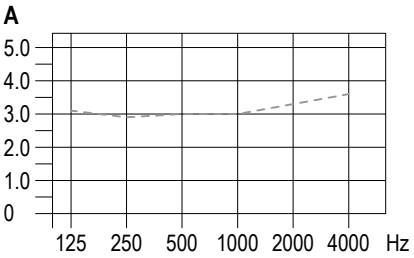


Perforation ratio: **18.1 %**
Proof: A 010-05.14



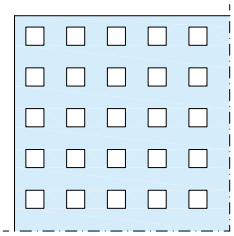
α_p	0.78	0.72	0.75	0.76	0.82	0.90

α_w = **0.80** Class: **B** (extremely absorbing)

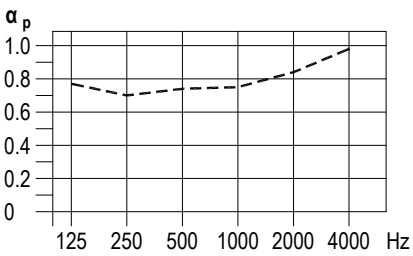


A	3.1	2.9	3.0	3.0	3.3	3.6

Standard square perforation 8/18 Q

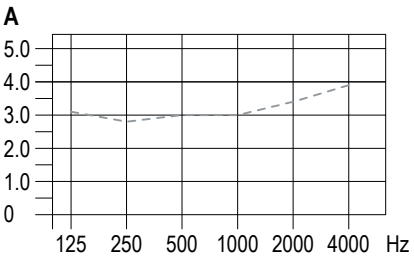


Perforation ratio: **19.8 %**
Proof: A 010-05.14



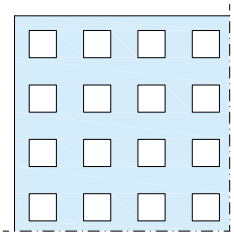
α_p	0.77	0.70	0.74	0.75	0.84	0.98

α_w = **0.80** (H) Class: **B** (extremely absorbing)

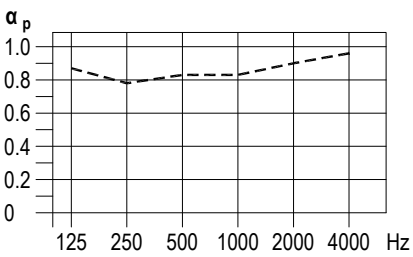


A	3.1	2.8	3.0	3.0	3.4	3.9

Standard square perforation 12/25 Q

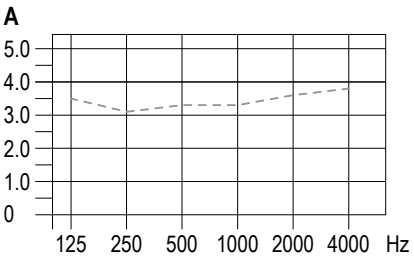


Perforation ratio: **23.0 %**
Proof: A 010-05.14

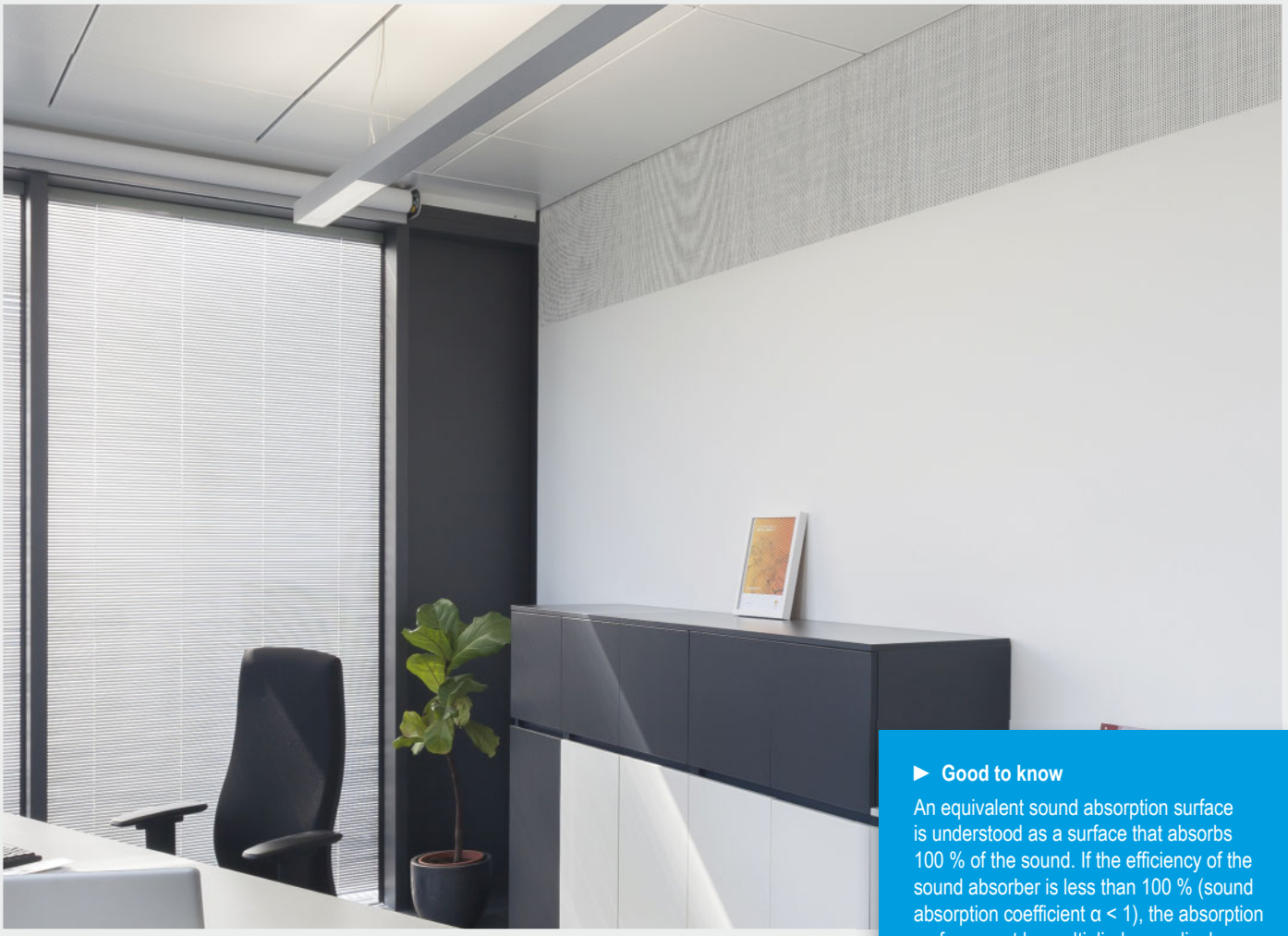


α_p	0.87	0.78	0.83	0.83	0.90	0.96

α_w = **0.90** Class: **A** (extremely absorbing)



A	3.5	3.1	3.3	3.3	3.6	3.8



► Good to know

An equivalent sound absorption surface is understood as a surface that absorbs 100 % of the sound. If the efficiency of the sound absorber is less than 100 % (sound absorption coefficient $\alpha < 1$), the absorption surface must be multiplied accordingly.

Requirements and recommendations for sound absorption

Application in office buildings, recommendations according to DIN 18041

Every square metre of space is valuable in an office building. For this reason, the partitions should be as slim as reasonably possible so that the additional potential adapted 50 mm to 100 mm thick absorber surfaces are not lost. At a standard thickness of max. 135 mm, the absorber partitions combine the building acoustic and room acoustic requirements in a single product.

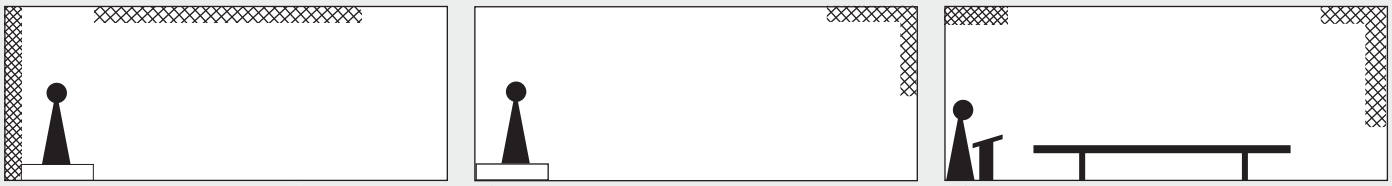
For office buildings there are no requirements stipulated just recommendations with regard to the acoustic quality of the room, which should however be observed to guarantee the concentration and performance capabilities of the occupants.

The DIN 18041 does not make any recommendations to this usage type with regard to a target reverberation time, but rather in table 6 defines orientation values for sound absorbers to clad free ceiling and wall surfaces as multiples of the room floor space per common room height averaging 2.5 m.

Furthermore, the standard states that additional sound absorbing measures only need to be implemented if a noise level reduction of at least 3 dB can be assumed after their application. In order to guarantee this, the existing equivalent sound absorbing surface in the room must at least be doubled.

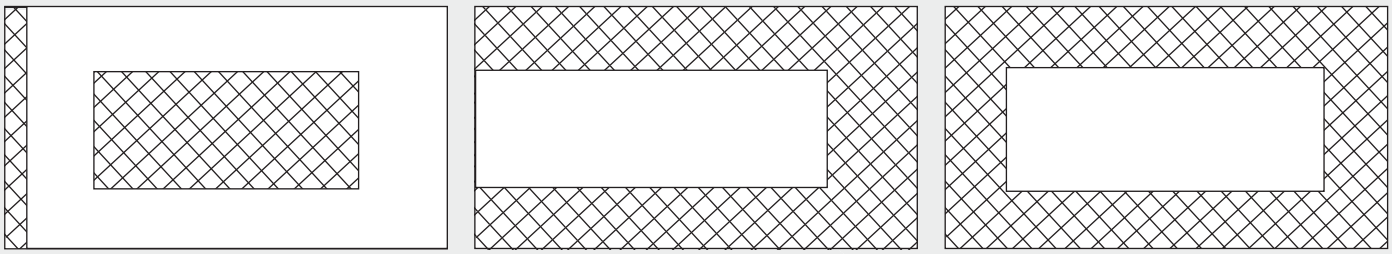
Absorber positions according to DIN 18041

Section



(a) unfavourable (b) favourable (c) favourable

Ceiling view



(a) (b) (c)

Application in schools, recommendations according to DIN 18041

For usage in classroom lessons according to DIN 18041, a target reverberation time in dependence on volumes [V] can be specified according to the following calculation formula:

$$T_{target} = \left(0.32 \cdot lg \frac{V}{m^3} - 0.17 \right) s$$

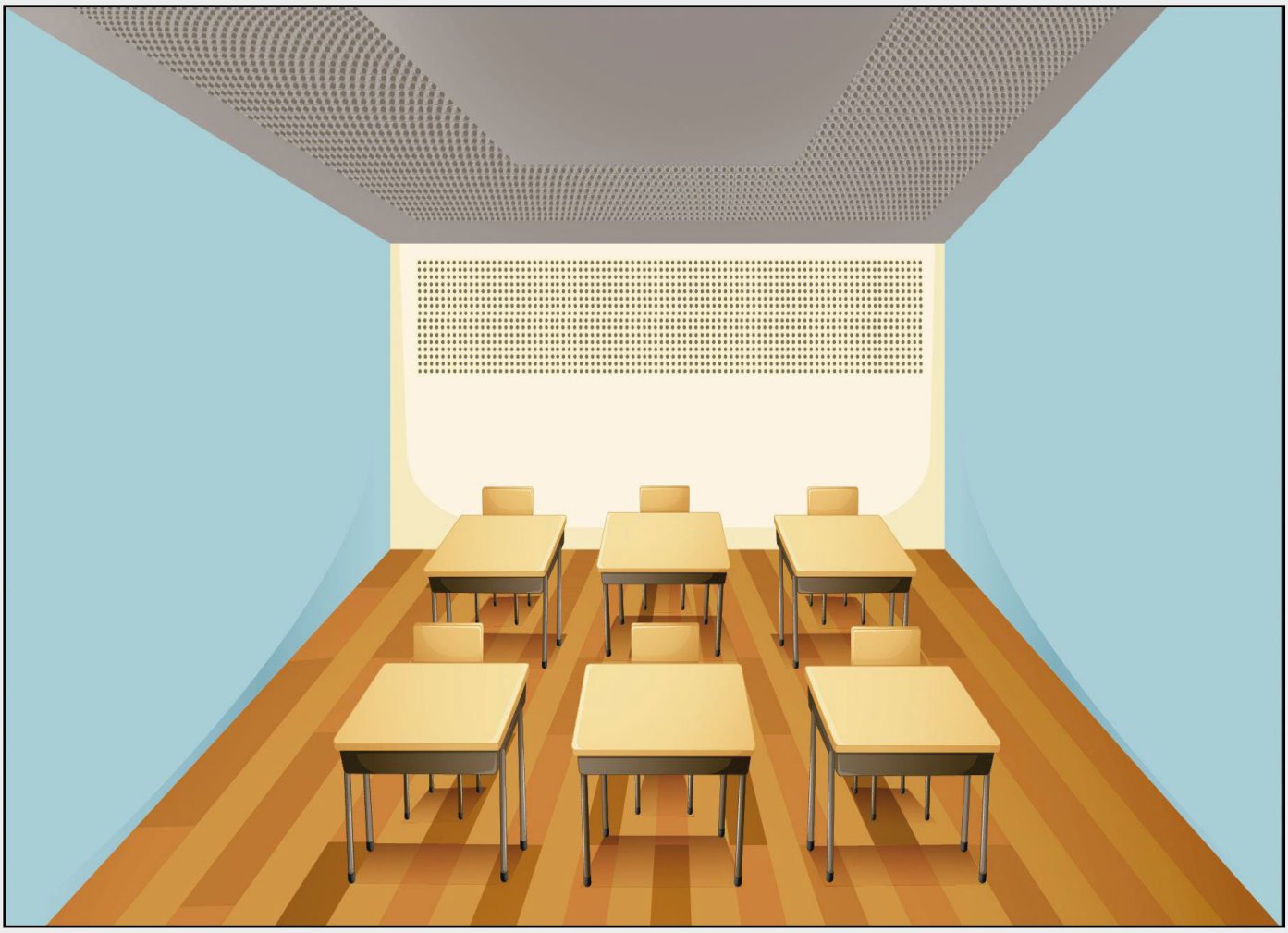
Furthermore, suitable positions to be clad on free walls and ceilings with the absorber are specified.

The positions suitable for sound absorbing materials result from the necessary quantity of absorber surfaces to be applied and the sound distribution in the room required for conservational purposes. With school lessons from the front of the class the spoken word must reach the furthest corners without a loss in the intelligibly, according to the motto from the German author Wilhelm Busch: “When everything is silent and only one speaks, this is called a lesson”. Sound reflection from the wall and ceiling surfaces assist the speaker. These transmission paths in this case are referred to as useful sound reflection. If the temporal difference between the direct sound and the sound reflection is too long (more than 50 ms ≙ a path differential of ≥ 17 m), the reflections are received as echo's and have a negative effect on the intelligibility of the speech. In these cases it is referred to as disruptive sound reflection. Further information on this topic can be found in the brochure “Schlau gemacht! Knauf Cleaneo® Akustik in Klassenräumen.” (German only).

In order to direct the useful sound reflection into the listener areas furthest to the back, the middle section of the ceiling must have an acoustically hard area in the centre of the ceiling. The absorber surfaces should be implemented analogue to the representation to comply with the target reverberation time and avoid disruptive sound reflections.

Generally the target reverberation time in classrooms is between 0.4 and 0.7 seconds depending on the volume.

Classroom concept with absorber partition



Example

Concept for integration of the absorber partition in classrooms

Initial situation

Length: 9.0 m / Width: 6.0 m / Height: 3.0 m

- Corridor partition
  Knauf drywall partition W112.de
  CW 75, 2x 12.5 mm Knauf Bauplatte GKB,
  Sound reduction index R_w = 53 dB
- Classroom partition
  Knauf drywall partition W112.de
  CW 75, 2x 12.5 mm Knauf Bauplatte GKB
- Exterior wall
  soild construction
  with 9.0 m² window surface
- Ceiling
  suspended ceiling, e.g. D112.de with
  2x 12.5 mm Knauf Bauplatte GKB
- Floor
  PVC or linoleum cover

Demands on the room acoustic quality acc. to DIN 4109

$$T_{target} = \left(0.32 \cdot lg \frac{162\ m^3}{m^3} - 0.17 \right) = \mathbf{0.54\ s}$$

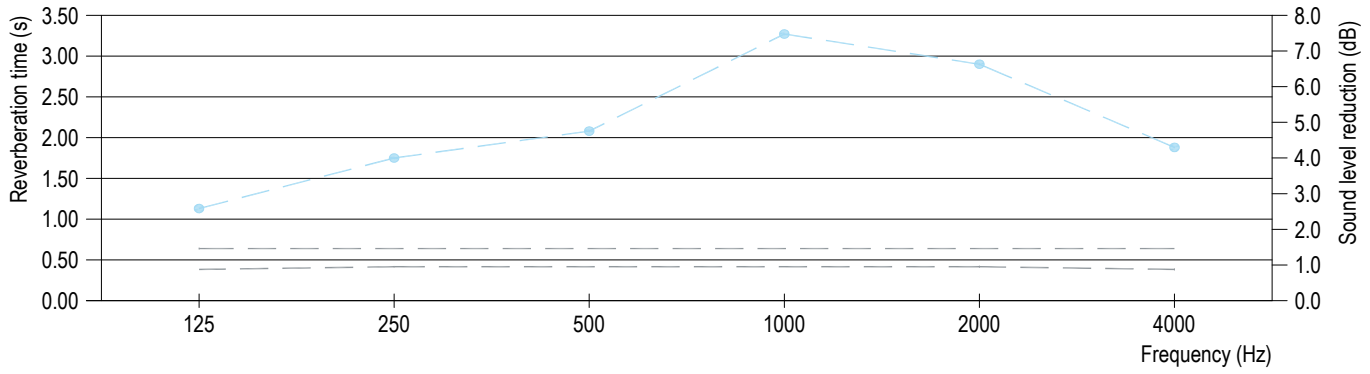
Calculation basis

To improve the room acoustic quality, the absorber partition is intended to be combined with the acoustic ceiling Cleaneo 12/25 Q.

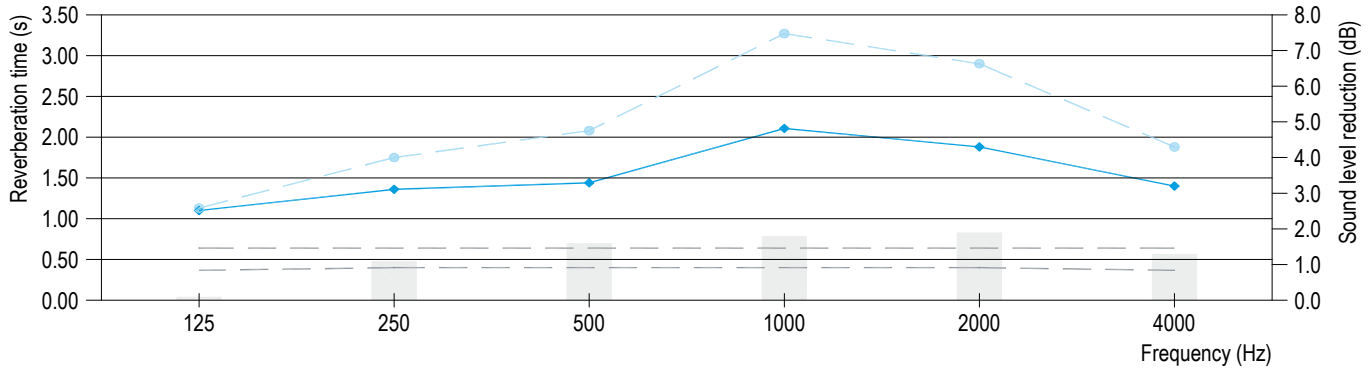
- Absorber partition
  CW 75 with 2x 12.5 mm Diamant board,
  perforated wall area ratio 33%
  (1.0 m x 6.0 m),
  perforated board 12/25 Q, α_w = 0.90
  sound reduction index R_w = 54 dB
- Acoustic ceiling
  standard square perforation 12/25 Q,
  perforation ratio 23 % with mineral wool lining
  and a construction depth of 200 mm
  α_w = 0.80

Result

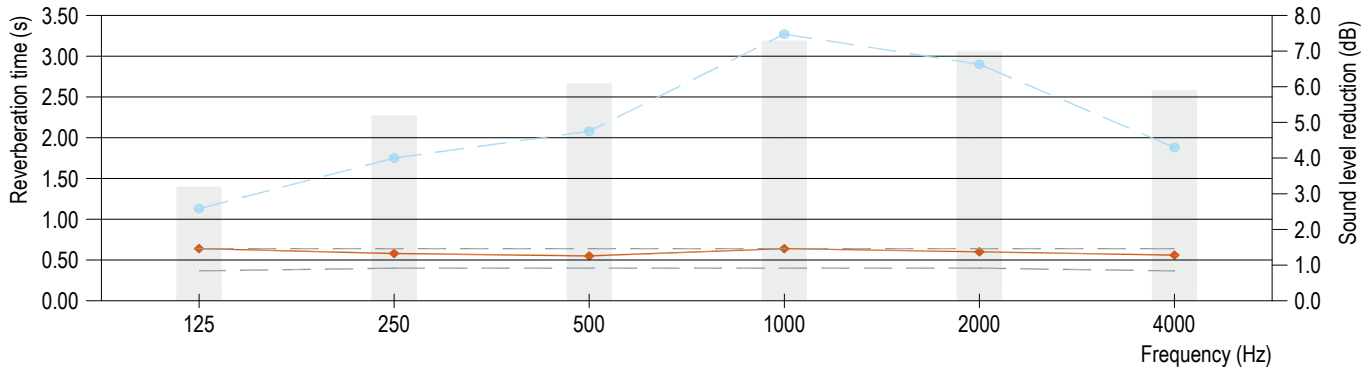
■ Characteristic of the reverberation time without absorber partition and acoustic ceiling



■ Characteristic of the reverberation time and resulting reduction in the sound pressure level taking an occupancy level of 80% acc. to DIN 18041 into account (80 % of the students are present)



■ Characteristic of the reverberation time and resulting reduction in the sound pressure level taking the absorber wall and 35 m² acoustic ceiling 12/25 Q as well as an occupancy level of 80 % into account



Tolerance range of the target reverberation time
Frequency-dependent characteristic of the reverberation time without room acoustic measures
Frequency-dependent characteristic of the reverberation time with 13 students present without room acoustic measures
Frequency-dependent characteristic of the reverberation time with 13 students, an absorber partition and 35 m² acoustic ceiling type Cleaneo 12/25 Q
Sound level reduction in (dB)

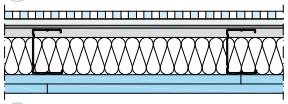
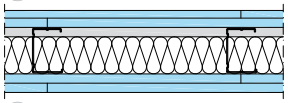
Summary

The combination of acoustic ceiling and absorber partition ensures that the requirements prescribed acc. to DIN 4109 and DIN 18041 are duly observed. Furthermore, the absorber partition reduces the effect of flutter echo's between two parallel bordering surfaces. In addition to compliance with the demands of the target reverberation time, noises occurring in the room will be effectively reduced. On average a physical reduction in the noise level of approx. 6 dB can be expected.

The main source of noise in communication intensive environments is caused by the communicators themselves, and in addition to the level reduction, there is an effect that occurs where the person adapts to their environment (also with respect to the audile speech volume), and there may even be a significantly higher reduction in the noise level without a loss in speech comprehension.

Fire resistance

Scheme drawings

Knauf System	Fire resistance class	Cladding 1 Partition side: Cleaneo Akustik	Cladding 1 Partition side: Diamant	Cladding 1 Partition side: Min. thickness mm	Cladding 2 Partition side: Diamant	Cladding 2 Partition side: Min. thickness mm	Profile: Cavity h mm	Wall thickness D mm	Weight approx. kg/m²	Insulation layer (sound insulation)
W112C.de										Knauf partition with integrated absorber
■ Perforated area ratio 1  2 ■ Unperforated area ratio 1  2	F30 plus	●	●	12.5 15 + 12.5	●	2x 15	75 + 15	132.5	60	see Page 4

■ **Recommendation**
To provide the best possible protection against vandalism, it is recommended that the perforated surface area is applied only above a height of 2.00 m.

Proof:

plus Fire resistance:
ABP P-3393/172/08-MPA BS

Coordination with building supervisory authority necessary

W112C.de Knauf Cleaneo® Akustik Partition

Technical data

Max. partition height

Knauf profile Metal gauge 0.6 mm	Stud spacing mm	W112C.de double-layer m
CW 75	625	4

Max. permissible fastener spacings

Supporting fastening perimeter runner (UW) connection on basic floor and ceiling				
Partition height m	Knauf Deckennagel 1x (with reinforced concrete) mm	Knauf Drehstiftdübel 1x (nailable plugs) mm	Knauf Universalschrauben FN 2x mm	Knauf Universalschrauben FN 1x mm
≤ 3	1000	1000	1000	500
> 3 to ≤ 4	1000	500	500	250

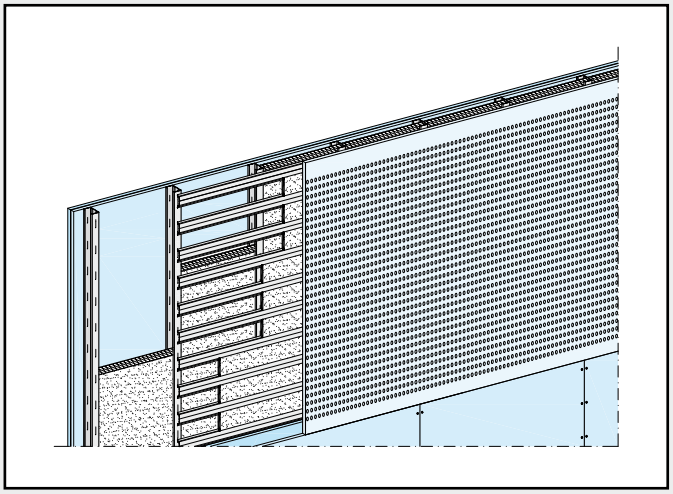
■ Anchoring of the wall connection profiles (CW) to the flanking walls at centres of 1000 mm (min. 3 anchoring points).

Note

plus

This system data sheet based on the cover sheet ABP P-3393/172/08-MPA BS. Constructions that are building authority certified by a so-called "Cover sheet ABP" (valid up to 31.12.2014), contain information such as design variants, detailed drawings and assembly procedures on the basis of the ABP of the same name valid up to 01.04.2014. These details have been assessed by Knauf as non-significant divergences in accordance with the letter from the expert building engineering commission of the building ministers conference of 11.03.2014 and 24.03.2014. The divergences must be agreed upon by the user and building supervisory authority in conjunction with the proof valid up to 01.04.2014.

Scheme drawing



Ball impact safety acc. to DIN 18032-2 (without built-ins)
Proof: PZ 902 2507 000-2
PZ 902 2507 000-3

Ball impact safe construction design

- **Substructure**
  - Knauf CW single profile: a ≤ 625 mm
  - Knauf Hat-Shaped Channel: **a ≤ 200 mm**
  - Fastening: Knauf Universalschraube (multi-purpose screw) FN 4.3x35 mm
- **Cladding**
  - **15 mm** Knauf Cleaneo Akustik 8/18 R from 2 m completed floor upper edge
  - Counter-sunk screw SN 3.5x30, a ≤ 250 mm
  - **2x 15 mm** Diamant in unperforated surface area

Cantilever loads for unperforated surfaces

Max. permissible cabinet weight in kg

Cabinet width mm	**Cabinet depth** (mm) **100**	**200**	**300**	**400**	**500**	**600**
Cantilever loads up to 0.7 kN/m (70 kg/m) partition length Cladding thickness: ≥ 15 mm Diamant						
400	43	40	37	34	31	28
600	64.5	60	55.5	51	46.5	42
800	86	80	74	68	62	56
1000	107.5	100	92.5	85	77.5	70
1200	129	120	111	102	93	84

- With intermediate values assume the worst-case value.

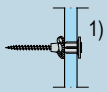
Fasteners for unperforated surfaces

Up to 15 kg X-Hooks
(shear loading)

Max. hook load capacity		
Up to **5 kg**	Up to **10 kg**	Up to **15 kg**
		

- Light objects: e.g. picture frames

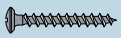
Up to 65 kg cavity dowels (combined tension and shear loading of cantilever loads up to 0.7 kN/m)

Cladding thickness Diamant mm	**Max. dowel load capacity** **Plastic cavity dowel** Ø8 mm / Ø10 mm kg	**Metal cavity dowel** Screw M5 / M6 kg	**Knauf Hartmut** M5 screw kg
	 1)	 1)	
2x 12.5	45	55	60
≥ 2x 15	50	60	65

1) e.g. Tox Universal, Fischer Universal, Molly Screw Anchor or equivalent

- Higher fixing loads: e.g. handles
- Cantilever loads: e.g. book shelves

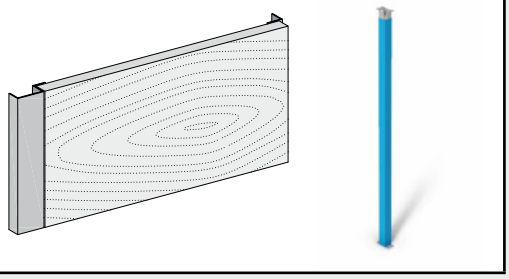
Up to 24 kg Knauf Fixing Screws
(tension or shear loading)

Cladding thickness Diamant mm	**Fixing screw** 	**Max screw load capacity** kg
2x 12.5	LG 35	24

- Light objects: e.g. anti-tilt units for shelves

Up to 150 kg traverses / sanistands

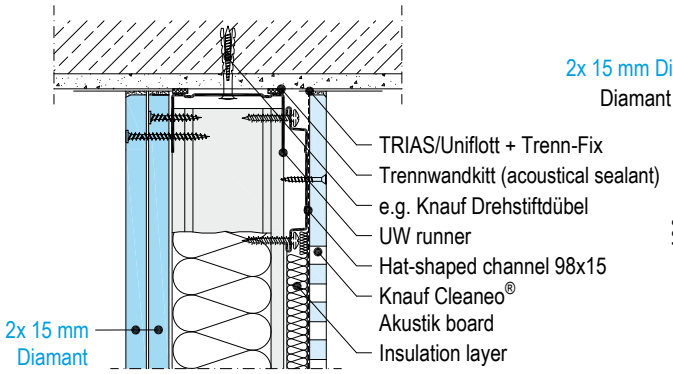
Cantilever loads exceeding 0.7 kN/m to 1.5 kN/m partition length (e.g. blackboards, TVs) transfer the load via traverses or sanistands [2] to the substructure



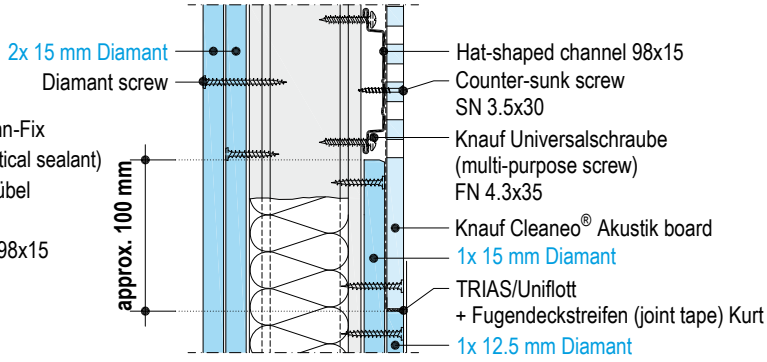
2) e.g. Knauf Statikstütze or Sanistands from Glock GmbH (www.glockgmbh.de)

Details, scale 1:5

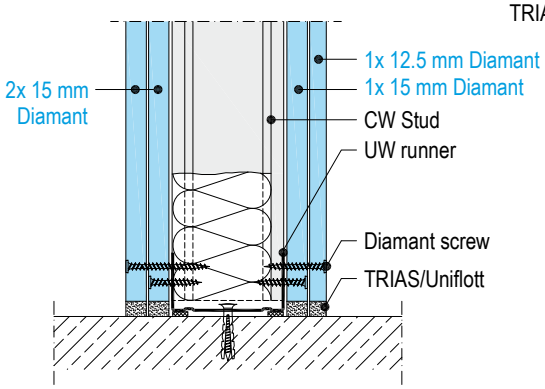
W112C.de-VO1 Connection to basic ceiling



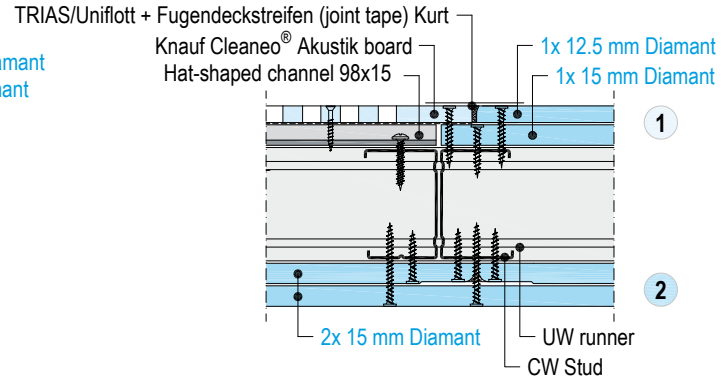
W112C.de-VM1 Board joint Vertical section



W112C.de-VU1 Connection to basic floor



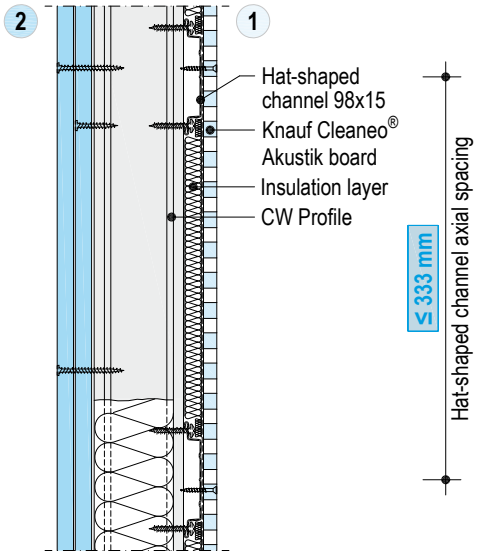
W112C.de-B1 Board joint Horizontal section



W112C.de Knauf Cleaneo® Akustik Partition

Details, scheme sections

Perforated area scheme drawing

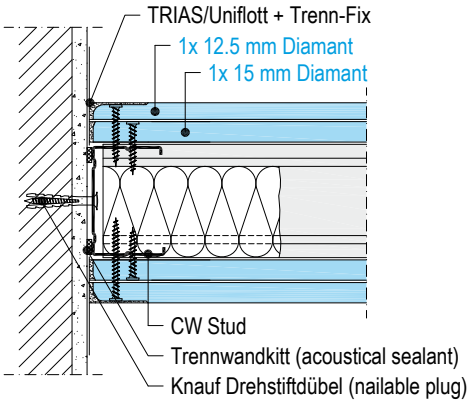


► System characteristics absorber wall perforated area

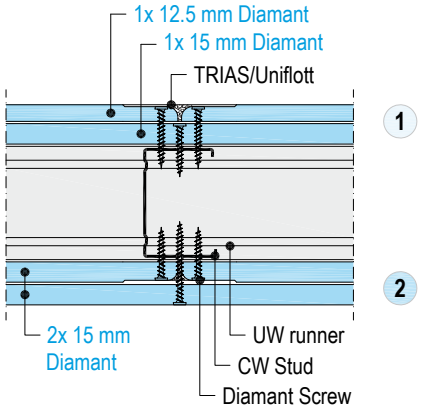
- Spacing of studs CW Profile standard section ≤ 625 mm
- Hat-Shaped Channel stud spacing standard section ≤ 333 mm
- CW Stud 75
- (2) 2x 15 mm Diamant
- (1) 1x 12.5 mm Knauf Cleaneo Akustik

Details, scale 1:5

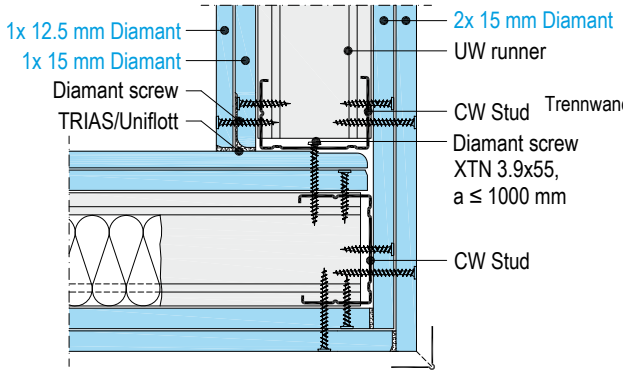
W112C.de-A1 Connection to solid wall - unperforated surface



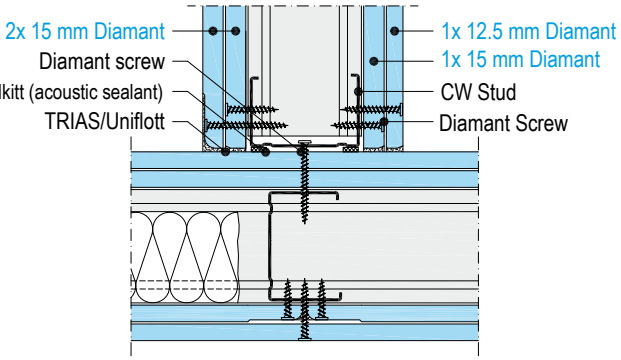
W112C.de-B2 Board joint - unperforated surface



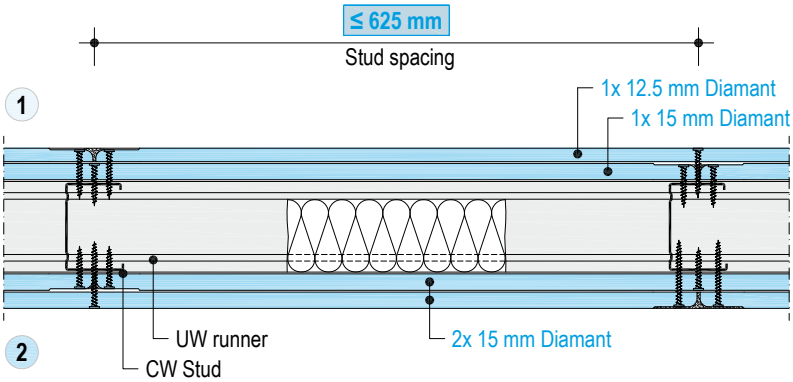
W112C.de-D1 Corner - unperforated surface



W112C.de-C1 T connection - unperforated surface



Scheme drawing unperforated surface

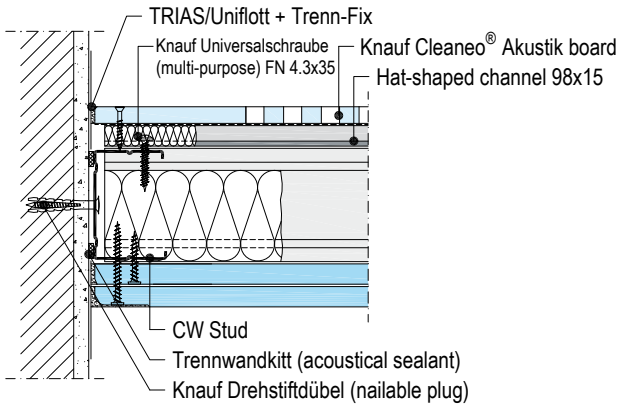


► System characteristics absorber wall non-perforated area

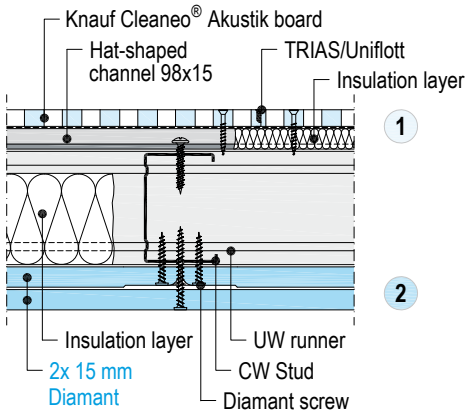
- Spacing of studs CW Profile standard section ≤ 625 mm
- CW Stud 75
- (1) (2) 1st layer 15 mm Diamant per side
- (2) 2nd layer 1x 15 mm Diamant
- (1) 2nd layer 1x 12.5 mm Diamant

Details, scale 1:5

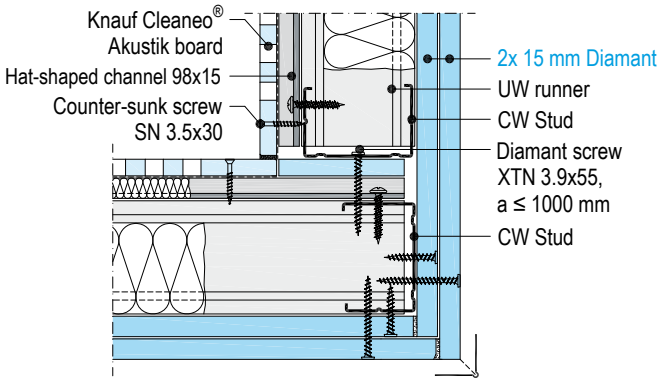
W112C.de-A2 Connection to solid wall - perforated surface



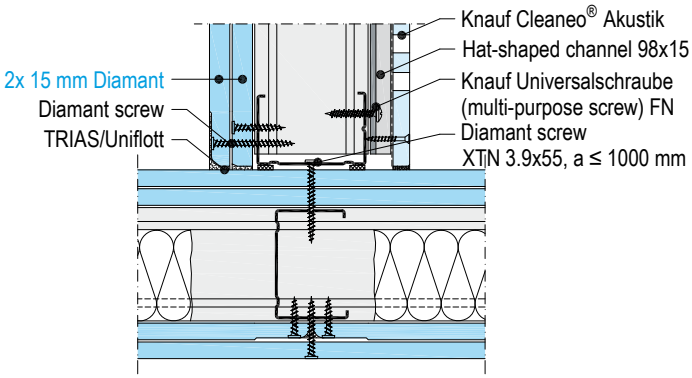
W112C.de-B3 Board joint - perforated surface



W112C.de-D2 Corner - perforated surface



W112C.de-C2 T connection - perforated surface



W112C.de Knauf Cleaneo® Akustik Partition

Details, assembly, application

Frame assembly

- Apply Acoustical Sealant (two strings) to rear side of runners for the connection to flanking constructional components. Porous sealing strips, such as sealing tape is generally unsuitable for sound insulation constructions.
- If a deflection of the ceiling ≥ 10 mm can be expected, install deflection heads.
- Fix wall perimeter runners to the floor and ceiling. Fix wall perimeter runners with suitable dowels to flanking walls. Anchor spacing on ceiling and floor to suit wall height and anchors in accordance with the table on page 12. Spacing of dowels at wall max. 1000 mm with at least 3 fixing points.
  Use suitable fasteners:

Anchors for solid flanking components: Knauf Drehstiftdübel (nailable plugs) for masonry or Knauf Deckennagel (ceiling steel dowels) (European Technical Approval ETA -07/0049) with reinforced concrete.
Anchors for non-solid constructional components: Special anchors suitable for the building materials, e.g. Knauf Universalschraube (multi-purpose screws) with wooden substrates, metal stud partitions, etc.

- Insert the CW Stud profiles arranged along the length into the UW runners and align them.
- Insert the mineral wool insulation material between the studs along the entire surface and ensure that it does not slip.
- Connect a horizontal hat-shaped channel in the area of the perforated cladding with a spacing ≤ 333 mm using 2 metal screws FN 4.3x35 per stud.

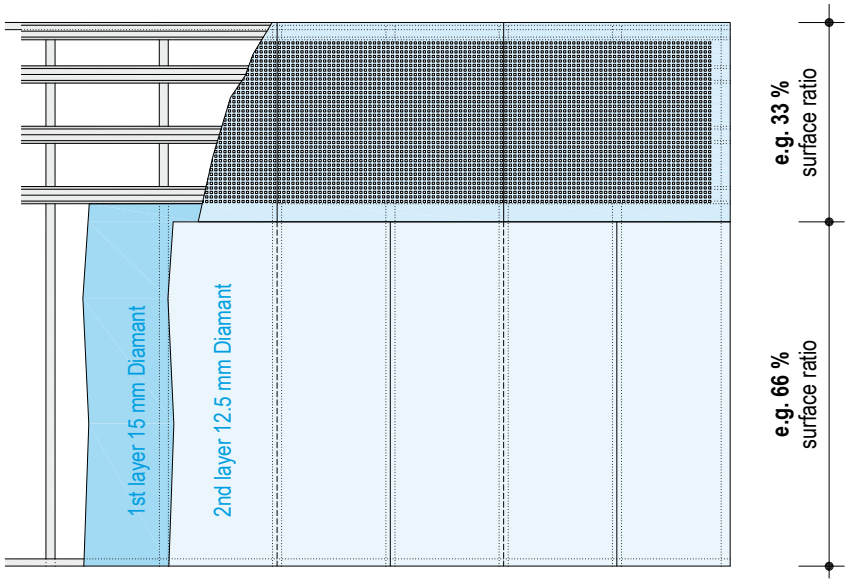
► Good to know

The structural, statical properties, and characteristic building physics of Knauf systems can solely be ensured with the exclusive use of Knauf system components, or other products expressly recommended by Knauf.

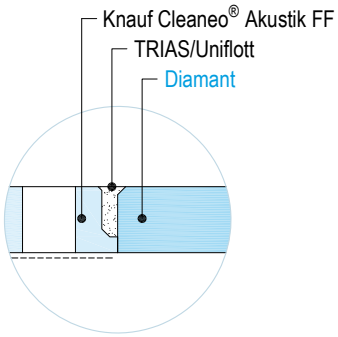
Application of Knauf boards

Scheme drawings

Vertical application Diamant
Vertical application Knauf Cleaneo® Akustik



■ **Version with FF edge**



■ With cut edges, SK edges and linear, a joint of 3 – 4 mm is required.

Fastening of the cladding to the grid with Knauf screws

Cladding	Metal grid (penetration ≥ 10 mm) Metal gauge **s ≤ 0.7 mm**	
Thickness in mm	Diamant Screw	Counter-sunk screws
1x 12.5 Cleaneo Akustik	–	SN 3.5x30 mm
1x 12.5 + 1x 15 Diamant	XTN 3.9x33 + XTN 3.9x38 mm	–
2x 15 Diamant	XTN 3.9x33 + XTN 3.9x55 mm[1)]	–

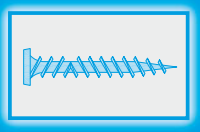
1) Instead of Diamant screws XTN 3.9x55 mm Diamant screws HGP 3.9x55 mm are possible

Max. fastener spacings

Cladding	Boards	
	1st layer	2nd layer
2x Diamant	750 mm	250 mm
1x 12.5 Cleaneo Akustik	170 mm	–

► Good to know

Always use Diamant Screws when cladding using Diamant board



Cladding

- Cladding with vertically arranged and preferably uncut Knauf boards.
- Long edge board joints must be staggered by at least one stud spacing.
- Stagger the board joints between the cladding layers and between opposite cladding layers.
- Commence fastening of the Knauf boards in the board centre or on the board corner to avoid buckling.
- Push Knauf boards firmly onto the stud frame when fastening with screws.
- Do not apply board joints to door opening profiles (danger of cracking).

Cladding Knauf Cleaneo Akustik boards

Application of the Knauf Cleaneo® Akustik boards vertically and on the cross joint (with Knauf Cleaneo® Akustik SK 2-4 mm joint width, depending on the perforation design). Score and prime with a sanding mesh before applying edges on the face side with Knauf Cleaneo® SK. The edges of Knauf Cleaneo® Akustik FF are bevelled and primed in the factory. Knauf Cleaneo® Akustik SK boards with straight perforation are marked red and blue on the front and long edges. During installation, always arange the red board marking to the blue board marking (front and long edge).

Align Knauf Cleaneo® Akustik boards using a laser or a reference cord for alignment and installation, and ensure that the perforation rows are aligned continuously in the diagonal, longitudinal and lateral direction beyond the board joint. Use the installation aid with the knobs that fit the perforation pattern to ensure that the board spacings are correct (does not replace the need for alignment). With Knauf Cleaneo® Akustik FF boards, the correct perforation spacing results automatically when the boards are arranged edge to edge. After installation is complete, clean the joints with a brush to remove any dust deposits that may have formed.

Material requirement per m² of partition

Description	Unit	Amount as average value W112C.de
Stud frame		
Knauf UW Runner 75x40x0.6; 4 m long	m	0.7
Knauf CW Stud 75x50x0.6	m	2.0
Knauf Hutprofil (hat-shaped channel) 98x15x0.6; 4 m long	m	1.3
Knauf Universalschrauben FN 4.3x35 mm (connection hat channel to CW Profile)	pcs	5
Metal blind rivet ≥ 3x8 mm (connection CW Stud with UW runner)	pcs	3
or Knauf Trennwandkitt (acoustical sealant)	pcs	0.3
or Knauf Dichtungsband (sealing tape) (70/3.2 mm)	m	1.2
alt. Knauf Drehstiftdübel (nailable plug) "K" 6/35 alt. Knauf Drehstiftdübel (nailable plug) "K" 6/50 (with plastered connection surfaces)	pcs	2.4
Insulation layer 80 mm thick; e.g. Knauf Insulation Trennwand-Dämmrolle TI 140 T	m²	1.0
Insulation layer 20 mm thick; e.g. Knauf Insulation Akustik-Dämmplatte TP 120 A	m²	0.2
Knauf board cladding		
15 mm Diamant	m²	2.7
12.5 mm Diamant	m²	0.66
12.5 mm Knauf Cleaneo® Akustik	m²	0.33
Screw fastening		
(Fastening of boards - Knauf fasteners, see page 17)		
Fastening 15 mm Diamant		
1st layer	pcs	9
2nd layer	pcs	14
Fastening 12.5 mm Diamant		
2nd layer	pcs	9
Fastening 12.5 mm Knauf Cleaneo®Akustik		
1st layer	pcs	8
Joint filling		
or TRIAS; with hand filling or Uniflott; with hand filling	kg	0.8
Fugendeckstreifen (joint tape) Kurt (for front edges)	m	as req.
Trenn-Fix; 65 mm wide, self-adhesive	m	as req.
Knauf Kantenschutzprofil (edge trim) 23/13; 2.75 m long	m	as req.
Knauf Eckschutzschiene (corner trim) 31/31; 2.6/3 m long	m	as req.
Alux-Kantenschutz (edge trims); 50 mm wide	m	as req.

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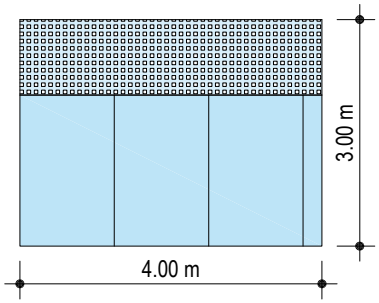

■ Area ratio Knauf Cleaneo® Akustik: 33%

- The quantities relate to a partition area of: H = 3.00 m; L = 4.00 m; A = 12.00 m²
- Underlined values are dependent on the surface share Knauf Cleaneo® Akustik
- Without allowance for loss and waste
- Details without specific requirements on the building physics
- as req. = as required
- *Material not provided by Knauf = printed in italics*

Jointing

Surface quality

- Jointing of the boards in the required quality level Q1 to Q4 in accordance with Code of Practice no. 2 “Verspachtelung von Gipsplatten, Oberflächengüten” [1].

Filling materials

Appropriate joint filling materials:

- TRIAS: Hand filling without board tape in the long joint edges; easy blending, very smooth application and easy to sand, with high strength and suitable for areas of high humidity, reduced absorption for surfaces with uniform appearance, the ideal filler particularly for systems with Diamant boards
- Uniflott: Hand filling without joint tape strips in the long joint edges

Finishing filler to achieve the desired surface quality:

- Q2, hand application: Readygips, Sheetrock® Fill&Finish Light
- Q3/Q4, hand application: Readygips, Sheetrock® SuperFinish
- Q3/Q4, machine application: Readygips, Sheetrock® ProSpray Light

Gypsum board joints

- For multi-layer cladding, fill the lower layers with filler; fill the joints of the visible layer. Filling the joints of covered cladding layers with multi-layer cladding is necessary to provide technical fire protection and sound insulation properties as well as the structural properties!
- Recommendation: Front edge and cut edge joints as well as mixed joints (e.g. HRAK + cut edge) of the visible cladding layers filled using Uniflott or TRIAS, will require the application of Knauf Fugendeckstreifen Kurt (joint tape) as well.
- Fill in visible screw heads.
- Lightly sand visible surfaces after drying of the filler material, if required.
- **Knauf Cleaneo® Akustik SK and FF**
  Hand filling with TRIAS or Uniflott without joint tape. Fill in screw heads as well. Knauf Cleaneo® Akustik boards: Prime the joints before filling. Fill the joints with TRIAS or Uniflott using a manual spray gun, in the 2nd stage fill with Knauf Finish-Pastös. Any perforations that may have been filled should be freed from filler using a suitable pilot wheel before the compound sets.

Connection joints

- Apply connections to the flanking drywall construction (ceiling/wall), dependent on the conditions and the demands on crack resistance with Trenn-Fix or Knauf Fugendeckstreifen (Joint Tape) Kurt.
- Observe Code of Practice no. 3 “Gipsplattenkonstruktionen - Fugen und Anschlüsse” [1].
- Apply Trenn-Fix when filling joints to adjacent solid construction components.
- With fire protection demands, seal the connection to the floor with joint filler, for sound insulation demands only acrylate or Trennwandkitt (acoustical sealant) may be used.

Application temperature/climate

- Filling and covering of joints should only take place when no more longitudinal changes can be expected, e.g. expansion or contraction due to humidity or temperature changes.
- Do not apply jointing at room or substrate temperatures below approx. +10 °C.
- In case of mastic asphalt screed, cementitious screed and self-levelling screed, fill in board joints only after screed has been applied.
- Observe Code of Practice no. 1 “Baustellenbedingungen” [1].

Coatings and linings

For direct application of a coating, the surface must be at least quality level Q2.

Pre-treatment

Before further coatings are applied, the filled surface must be free of dust and the surface of the gypsum boards should always be primed, acc. to code of practice no. 6 of the BVG “Vorbehandlung von Trockenbauflächen aus Gipsplatten zur weitergehenden Oberflächenbeschichtung bzw. –bekleidung” [1].

The primer must suit the subsequent coating compound/linings.

In order to regulate the absorption properties of the surface, coatings of primers such as Knauf Tiefengrund/Spezialgrund/Putzgrund are suitable.

Suitable coatings and linings

The following coatings/linings can be applied to Knauf boards:

- Ceramic coverings (on Diamant)
- Plasters: (Diamant only)
  - Finishing (top) coats (e.g. Knauf Noblo, Diamant Spritzputz, Rotkalk Filz) or full surface skim coat (e.g. Knauf Readygips, Multi-Finish).

  Application of plaster layers only in conjunction with Knauf Fugedeckstreifen Kurt (joint tape).
- Coaings (do not spray on Knauf Cleaneo)
  - Dispersion paints (e.g. Knauf Intol E.L.F., Malerweiss E.L.F.), multi-coloured (rainbow) emulsion, silicate-based emulsion paints with a suitable primer.

Unsuitable are:

- Alkaline coats such as lime, water glass paints and silicate-based paints.

Note

After wallpapering or after application of plasters, quick drying must be ensured through adequate airing.

Gypsum board surfaces that have constantly been exposed to light without any protection can cause yellowing. Therefore, a trial coat is recommended that will extend across several board widths including all joints. Yellowing can, however, be successfully avoided only by using a special primer, such as Knauf Aton Sperrgrund for top coats, Knauf Atonol for paint coats.

1) Issued by the Industriegruppe Gipsplatten im Bundesverband der Gipsindustrie e.V. (may only be available in German)

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www.knauf.de

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97346 Iphofen, Germany

Knauf AMF
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Knauf AQUAPANEL
AQUAPANEL® Cement Board
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Floor Systems

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Knauf Integral
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Knauf PFT
Machine Technology and Plant Engineering

Knauf riessler
Competence in surfaces

Marbos
Mortar systems for cobblestone paving

Sakret Bausysteme
Dry mortars for new projects and renovations