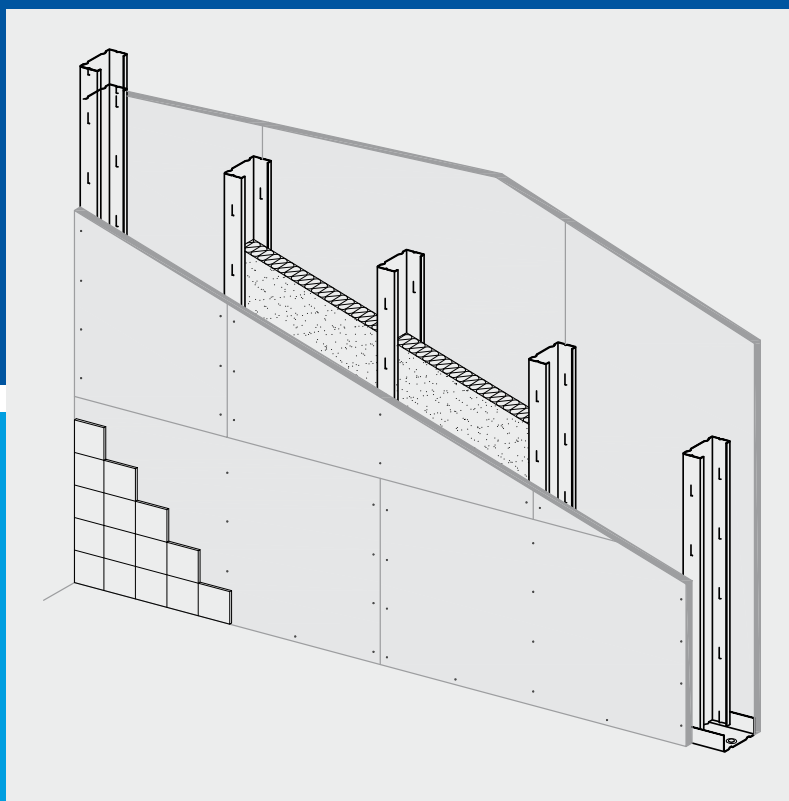


AQUAPANEL®

Cement Board

AQUAPANEL® Cement Board Indoor W381



KNAUF | **USG**
— SYSTEMS —

Walls with metal stud frame for wet and humid areas with AQUAPANEL® Cement Board Indoor

W381

Metal single stud frame wall, single-layer planking

W382

Metal single stud frame wall, double-layer planking

W386-1

Plumbing wall - fishplated double stud frame wall, single-layer planking

W386-2

Plumbing wall - fishplated double stud frame wall, double-layer planking

**Be certain,
choose AQUAPANEL®**

AQUAPANEL® Cement Board Indoor

The ideal tile backing board for wet and humid areas

Product description

AQUAPANEL® Cement Board technology has already revolutionised the design and construction of buildings world-wide. Developed by Knauf USG Systems, AQUAPANEL® Cement Board Indoor gives architects and contractors a proven tile backing board and substrate for various skim coatings that offers significant performance advantages when used in wet and humid areas.

AQUAPANEL® Cement Board Indoor is 100% water-resistant and offers a solid and durable tile substrate in damp and wet rooms, such as home bathrooms, public showers, kitchens, swimming pools and commercial areas. The cement board panels are easy to install and bring productivity gains.

- Tile backing board for wet and humid areas
- Strong as brick and block
- 100% water-resistance and moisture protection
- Strong, robust, impact-resistant and non-combustible (A1)
- Can be cut to shape using "score and snap" techniques
- Simple and easy to install
- Ecological and environmentally friendly
- Resistant to mould and mildew because non-organic
- Suitable for tiling with single-layer planking only
- Can be bent when dry - up to 1 metre bending radius

Physical properties

According to ETA-07/0173

Length (mm)	1200/2400/1250/2500	900/2000/2400/2500/2800/3000
Width (mm)	900	1200
Thickness (mm)	12.5	12.5
Min. bending radius for 900/1200 mm wide board (m)	3	3
Min. bending radius for 300 mm wide strip (m)	1	1
Weight (kg/m ²)	approx. 15	approx. 15
Dry bulk density (kg/m ³) according to EN 12647	approx. 1050	approx. 1050
Bending strength (MPa) according to EN 12647	8.75	8.75
Tensile strength perpendicular to the plane of the board (N/mm ²) according to EN 319	0.49	0.49
Shearing strength (N) according to EN 520	696	696
pH-value	12	12
Thermal conductivity (W/mK) according to EN ISO 10456	0.35	0.35
Thermal expansion (10 ⁻⁶ K)	7	7
Water vapour diffusion resistance μ (-) according to EN ISO 12572	50	50
Length variation 65% - 85% humidity (mm/m) according to EN 318	0.25	0.25
Thickness variation 65% - 85% humidity (%) according to EN 318	0.1	0.1
Building material class according to EN 13501	A1, non-combustible	A1, non-combustible

Application

AQUAPANEL® Cement Board Indoor is used for construction of indoor walls and ceilings. Here, it serves as a substrate for tiles or various skim coatings. The panel is certified according to the criteria of the Institute for Building Biology in Rosenheim, Germany, report no. 3006-214.

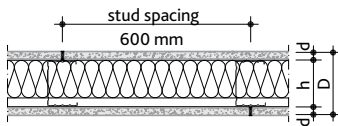
AQUAPANEL® Cement Board Indoor is attached to a vertical stud frame. Depending on requirements it is possible to use single or double-layer planking or a combination with other Knauf construction boards. In the wall area, joints are formed using a strong adhesive. In the ceilings area, joints are formed by means of joint filling and the embedding of a joint tape. All necessary accessories are available in the AQUAPANEL® accessory range.

Metal single stud frame wall and plumbing wall

Technical data / Sound insulation / Thermal insulation

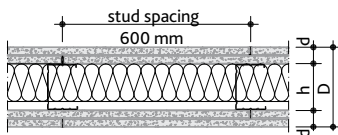
System	Dimensions				Sound insulation	Insulation layer	Thermal insulation
	Wall thickness d	Profile (cavity) h	Facing thickness d	Type	R _{w,R}	Thickness	U-Value
	mm	mm	mm		dB	mm	W/(m²K)

W381 Metal single stud frame wall *single stud frame, single-layer planking*



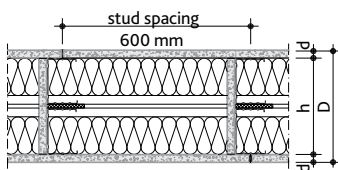
75	50	12.5	AQUAPANEL® Cement Board Indoor	42	50	0.70
100	75	12.5		–	60	0.55
125	100	12.5		44	80	0.43

W382 Metal single stud frame wall *single stud frame, double-layer planking*



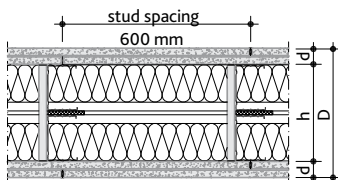
100	50	2 x 12.5	AQUAPANEL® Cement Board Indoor	49	50	0.66
125	75	2 x 12.5		–	60	0.53
150	100	2 x 12.5		49*	80	0.42

W386-1 Plumbing wall *fishplated double stud frame, single-layer planking*



130	105	12.5	AQUAPANEL® Cement Board Indoor	51/54 **	2 x 50	0.35
180	155	12.5		–	2 x 60	0.30
230	205	12.5		–	2 x 80	0.23

W386-2 Plumbing wall *fishplated double stud frame, double-layer planking*



155	105	2 x 12.5	AQUAPANEL® Cement Board Indoor	> 61 **	2 x 50	0.35
205	155	2 x 12.5		–	2 x 60	0.30
255	205	2 x 12.5		–	2 x 80	0.23

* 51 dB with sound protection profile

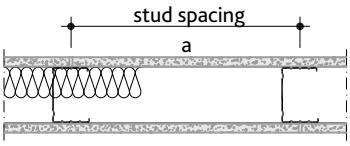
** no fishplates, vertical truss jointed with 2x 25 mm insulating

Metal single stud frame wall and plumbing wall

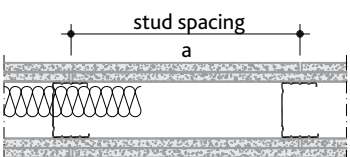
Fire protection

System	Fire	Facing	Insulation layer					Certificate
	Fire resistance class	Building material class	Min. thickness	Type	Min. thickness	Min. bulk density	Max. stud spacing	
			mm		mm	kg/m ³	mm	

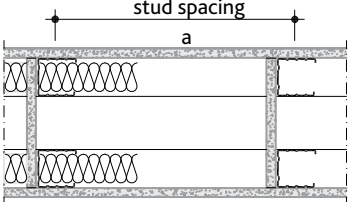
W381 Metal single stud frame wall *single stud frame, single-layer planking*

	EI 30	AQUAPANEL® Cement Board Indoor	12.5	without or with insulating material min. B2	–	–	Knauf CW profile 50/50 625	IBMB EN 1364-1 3258 / 1525
		A1						

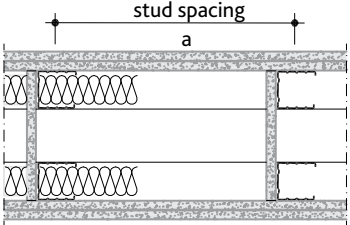
W382 Metal single stud frame wall *single stud frame, double-layer planking*

	EI 90	AQUAPANEL® Cement Board Indoor	2 x 12.5	without or with insulating material min. B2	–	–	Knauf CW profile 50/50 625	IBMB EN 1364-1 3672 / 6696
		A1						
	EI 120	AQUAPANEL® Cement Board Indoor	2 x 12.5	Mineral wool *	60	50	Knauf CW profile 75/50 625	IBMB EN 1364-1 3321 / 2155
		A1						

W386-1 Plumbing wall *fishplated double stud frame, single-layer planking*

	F 30A	AQUAPANEL® Cement Board Indoor	12.5	without or with insulating material min. B2	–	–	Knauf CW profile 50/50 625	IBMB DIN 4102 3649 / 9454
		A1						

W386-2 Plumbing wall *fishplated double stud frame, double-layer planking*

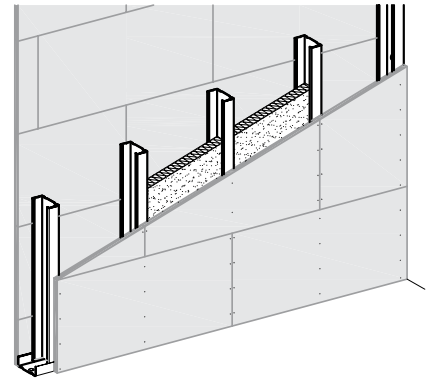
	F 90A	AQUAPANEL® Cement Board Indoor	2 x 12.5	Mineral wool *	60	30	Knauf CW profile 50/50 625	IBMB DIN 4102 3650 / 9464
		A1						

* Mineral wool - layer acc. to EN 13162; 3.1.1, Building material class A, melting point > 1000°C acc. to DIN 4102-17

Single stud frame wall, single-layer planking

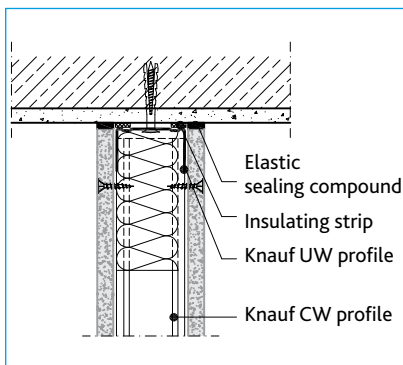
Wall heights

Profile	Stud spacing	Max. wall height	
Sheet steel thickness 0.6 mm		Installation range 1	Installation range 2
	mm	m	m
Knauf profile CW 50/50			
	600 (625)	3.00	2.75
		without fire protection requirement	
Knauf profile CW 75/50			
	600 (625)	5.00	4.00
		without fire protection requirement	
Knauf profile CW 100/50			
	600 (625)	6.00	5.00
		without fire protection requirement	

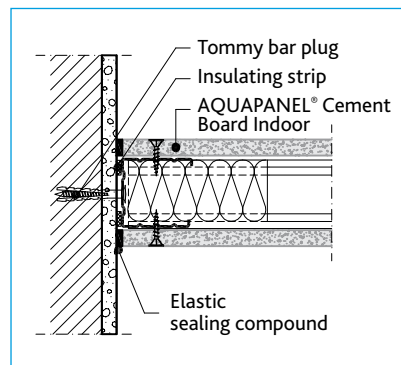


Details

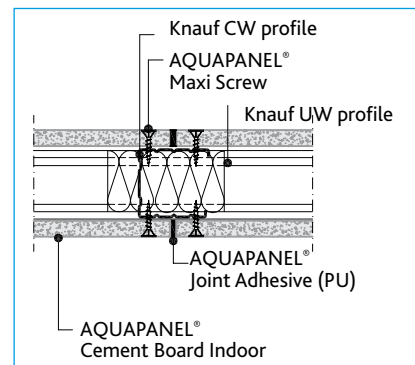
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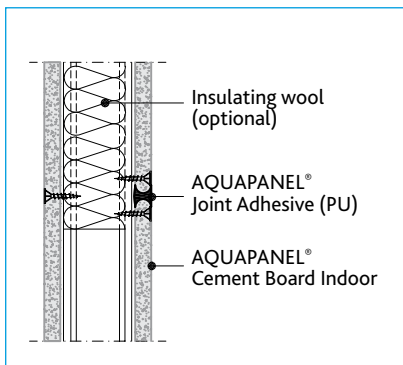
W381-VO1 Ceiling joint



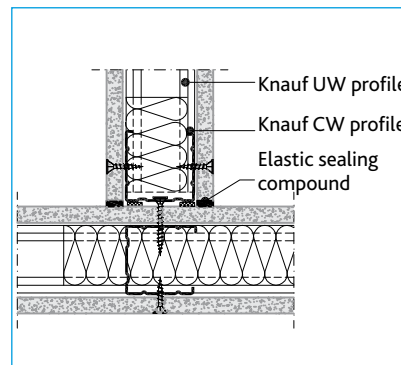
W381-A1 Connection to solid wall



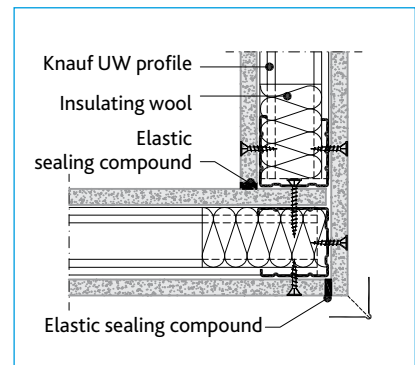
W381-B1 Board joint (V)



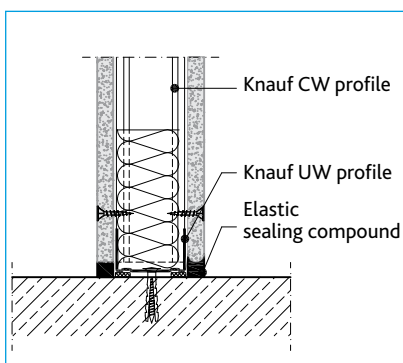
W381-VM1 Board joint (H)



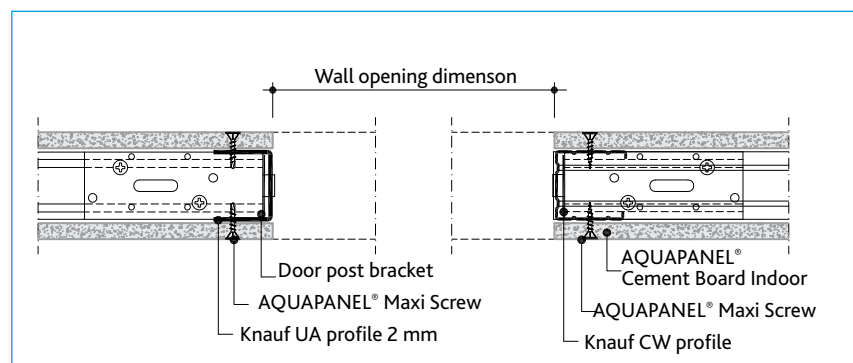
W381-C1 T-joint



W381-D1 Corner



W381-VU1 Floor connection



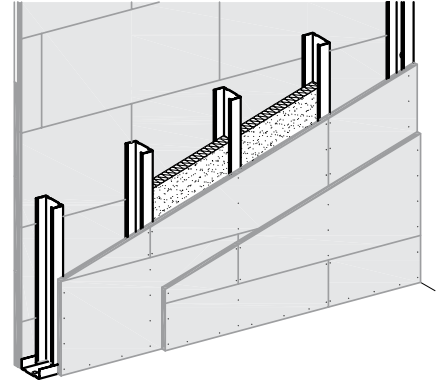
W381-E1 Door opening with UA profile

W381-E2 Door opening with CW profile

Single stud frame wall, double-layer planking

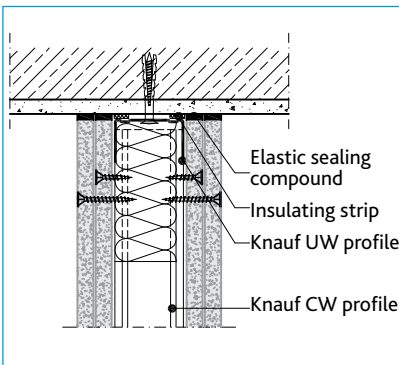
Wall heights

Profile	Stud spacing	Max. wall height	
Sheet steel thickness 0.6 mm		Installation range 1	Installation range 2
	mm	m	m
Knauf profile CW 50/50			
	600 (625)	4.00	3.50
		without fire protection requirement	
Knauf profile CW 75/50			
	600 (625)	6.00	5.00
		without fire protection requirement	
Knauf profile CW 100/50			
	600 (625)	7.00	6.50
		without fire protection requirement	

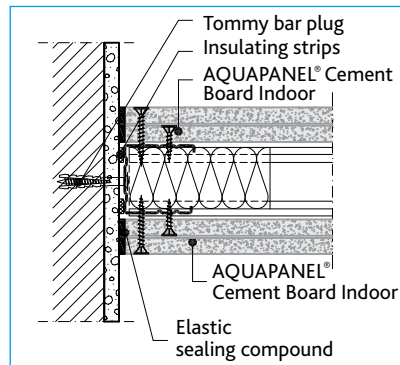


Details

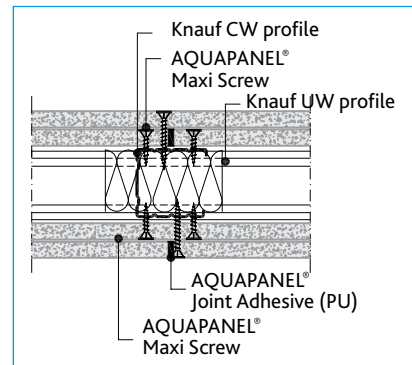
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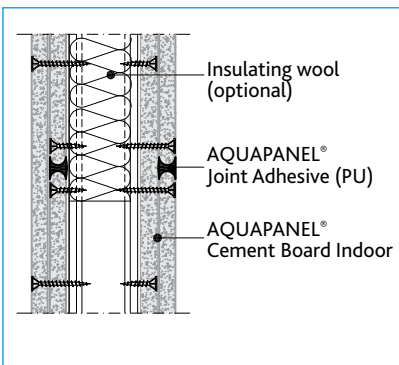
W382-VO1 Ceiling joint



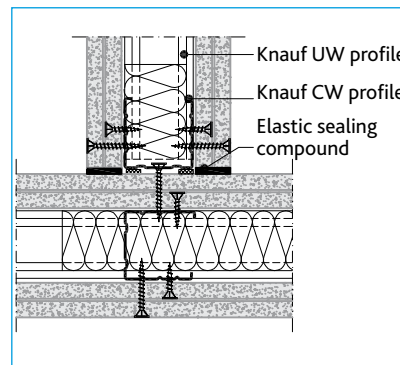
W382-A1 Connection to solid wall



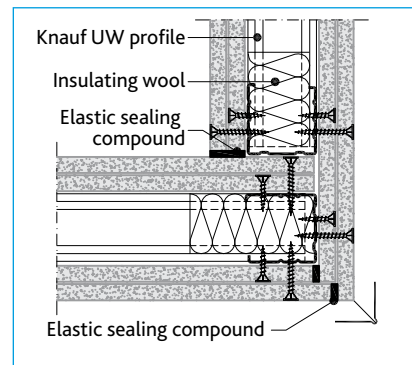
W382-B1 Board joint (V)



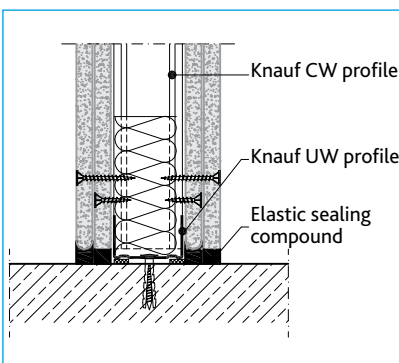
W382-VM1 Board joint (H)



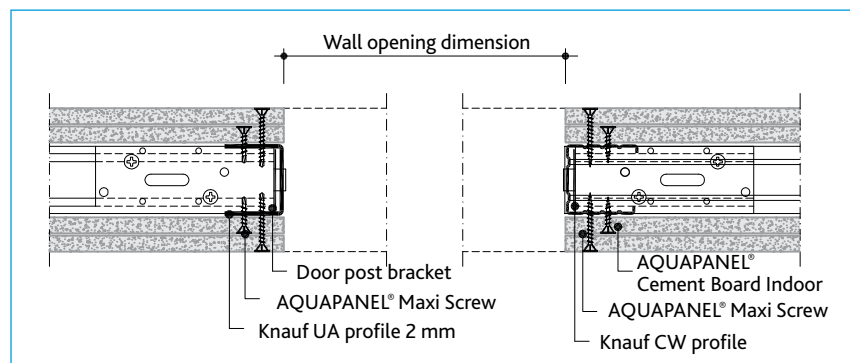
W382-C1 T-connection



W382-C2 Corner



W382-VU1 Floor connection



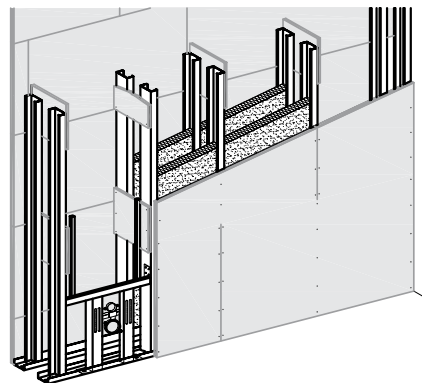
W382-E1 Door opening with UA Profile

W382-E2 Door opening with CW Profile

Plumbing wall - fishplated double stud frame wall, single-layer planking

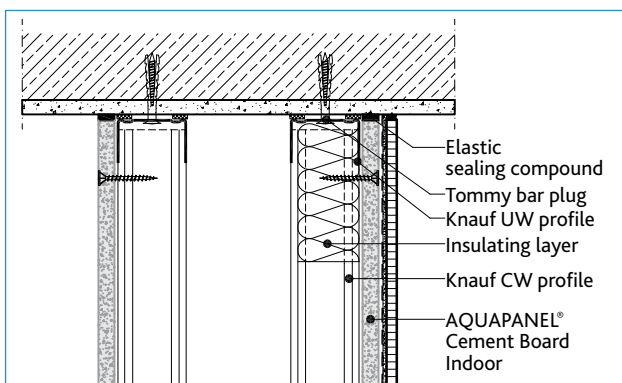
Wall heights

Profile	Stud spacing	Max. wall height	
Sheet steel thickness 0.6 mm		Installation range 1	Installation range 2
	mm	m	m
Knauf profile 2 x CW 50			
	600 (625)	3.00	2.75
		without fire protection requirement	
Knauf profile 2 x CW 75			
	600 (625)	4.50	4.00
		without fire protection requirement	
Knauf profile 2 x CW 100			
	600 (625)	5.50	5.00
		without fire protection requirement	

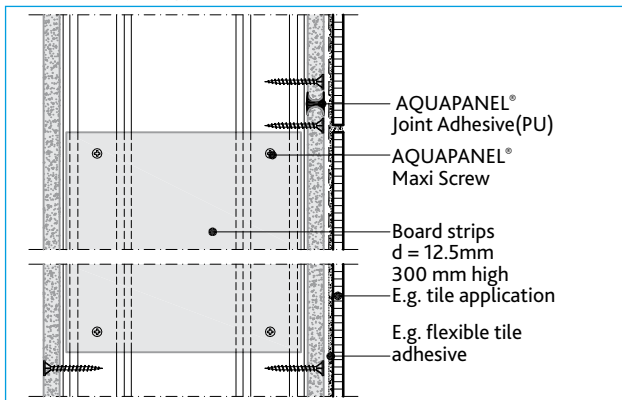


Details

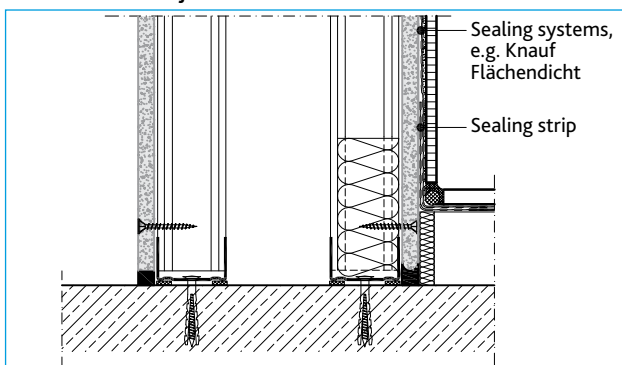
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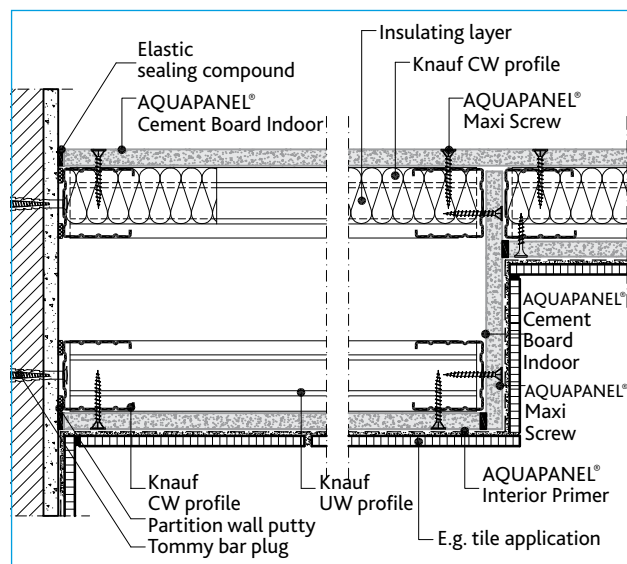
W386-VO1 Ceiling joint



W386-VM1 Board joint and vertical truss reinforcement

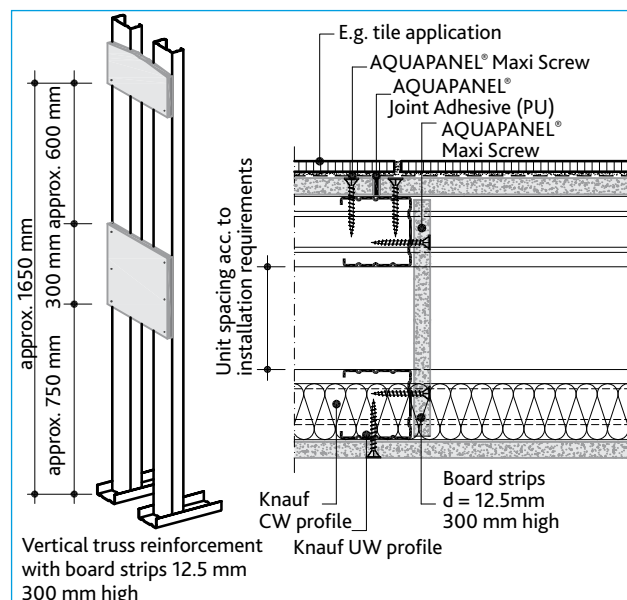


W386-VU1 Floor connection



W386-VA1 Connection to solid wall

W386-D1 Wall taper

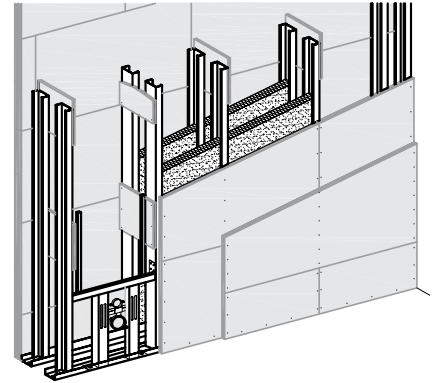


W386-B1 Board joint and vertical truss reinforcement

Plumbing wall - fishplated double stud wall, double-layer planking

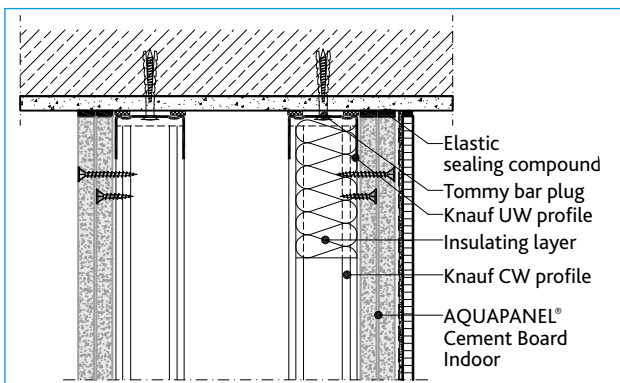
Wall heights

Profile	Stud spacing	Max. wall height	
Sheet steel thickness 0.6 mm		Installation range 1	Installation range 2
	mm	m	m
Knauf profile 2 x CW 50			
	600 (625)	4.00	3.50
		without fire protection requirement	
Knauf profile 2 x CW 75			
	600 (625)	5.40	4.90
		without fire protection requirement	
Knauf profile 2 x CW 100			
	600 (625)	7.00	6.50
		without fire protection requirement	

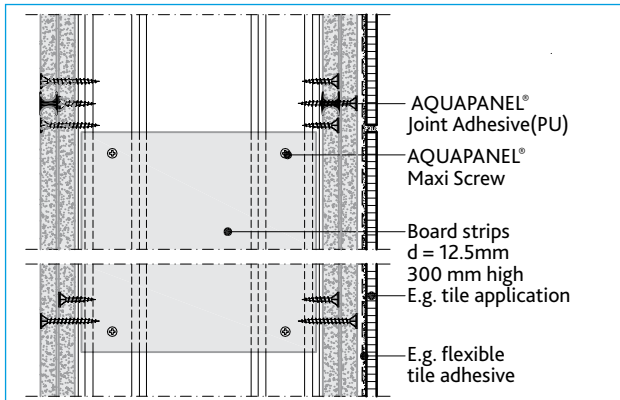


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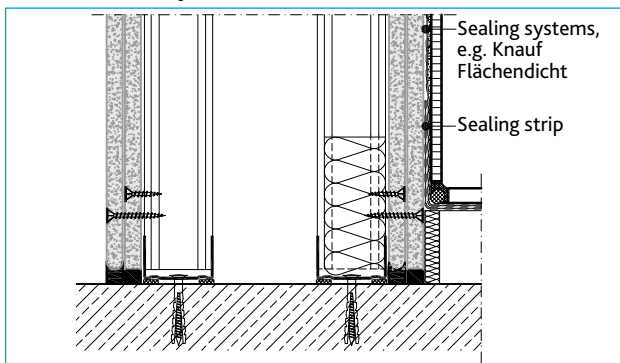
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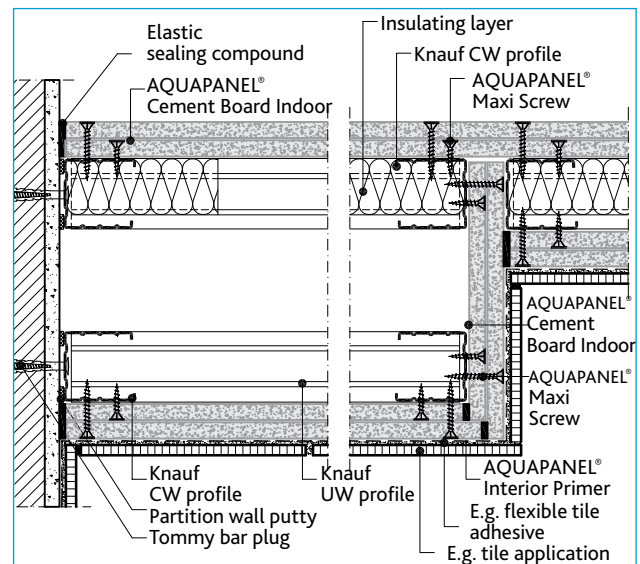
W386-VO1 Ceiling joint



W386-VM1 Board joint and vertical truss reinforcement

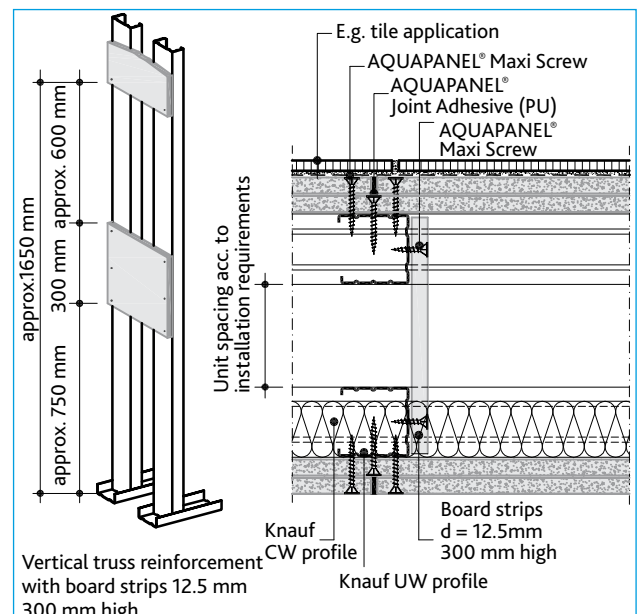


W386-VU1 Floor connection



W386-VA1 Connection to solid wall

W386-D1 Wall taper

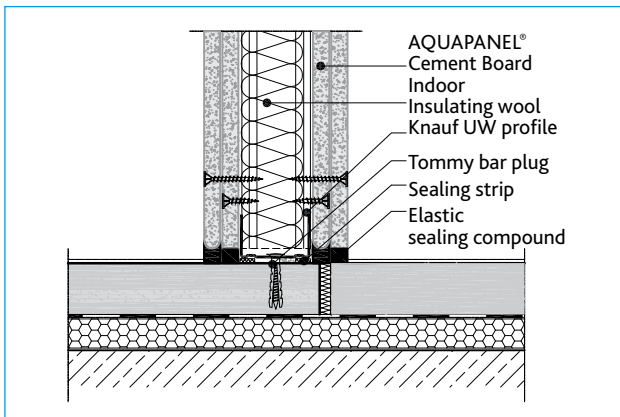


W386-B1 Board joint and vertical truss reinforcement

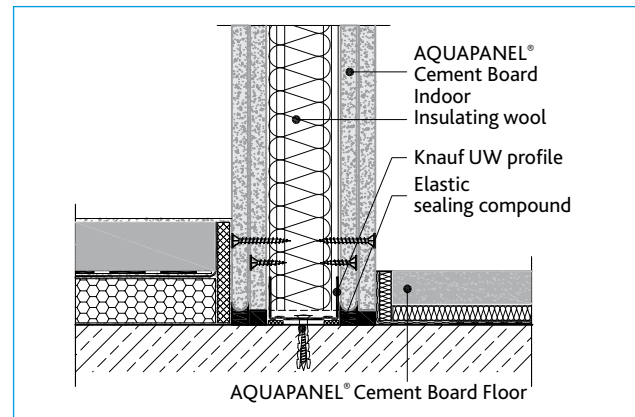
Floor connection, sliding ceiling junctions and expansion joints

Details

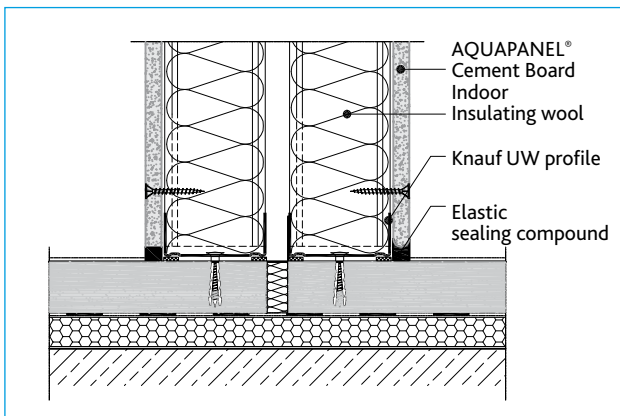
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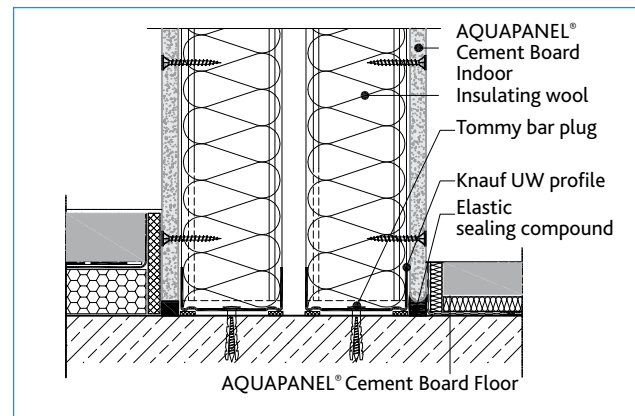
W382-VU2 Connection on wet screed



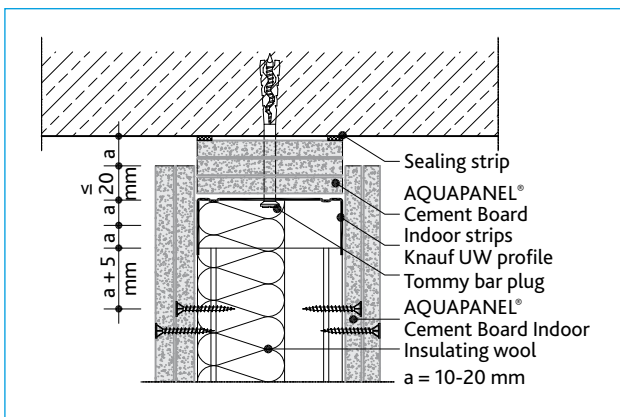
W382-VU3 Connection to unfinished floor



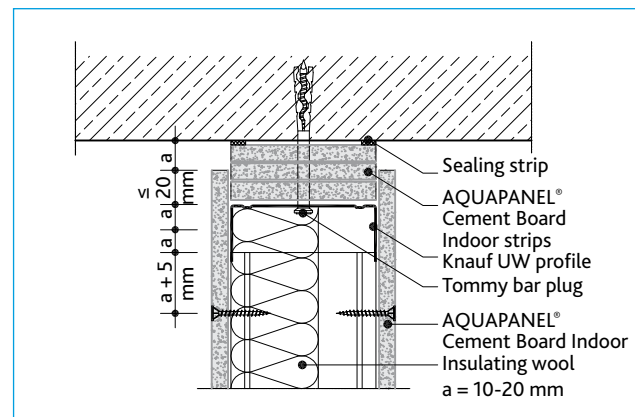
W386-VU2 Connection on wet screed



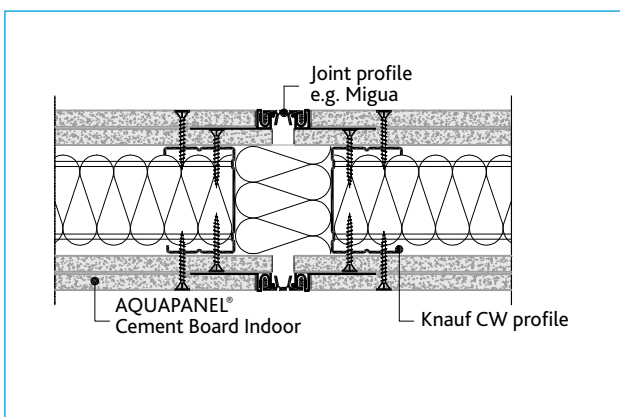
W386-VU3 Connection to unfinished floor



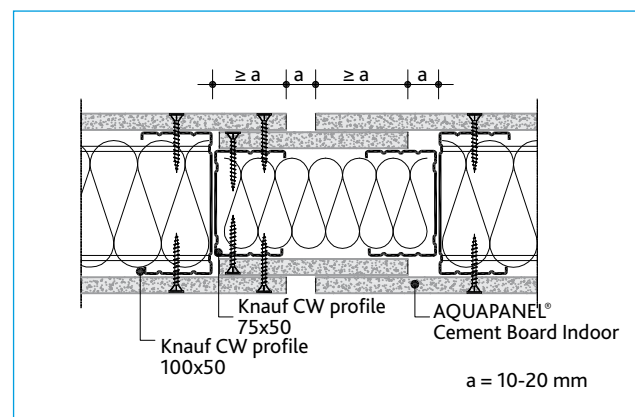
W382-VO2 Sliding ceiling junction



W381-VO3 Sliding ceiling junction



W386-BFU2 Expansion joint with joint profile



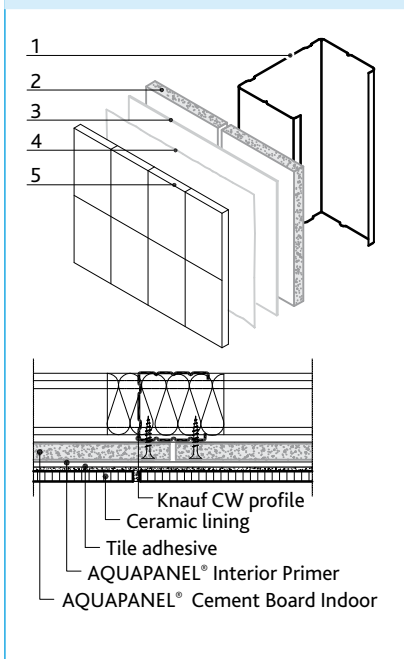
W381-BFU1 Expansion joint El 30

Coatings and facings, door openings

Coatings and facings

Ceramic lining

Tiles, boards and ceramic



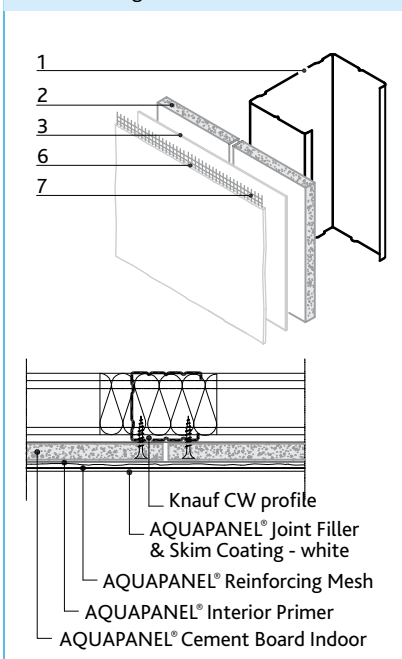
Note:

Tiles (measurements < 330 x 330 mm) have to be glued with flexible tile adhesive.

Tile adhesives must fulfil min. requirements of class C2 / S1 acc. to EN 12004 / EN 12002.

Skim coating, Option 1

Coating with AQUAPANEL® Joint Filler & Skim Coating – white

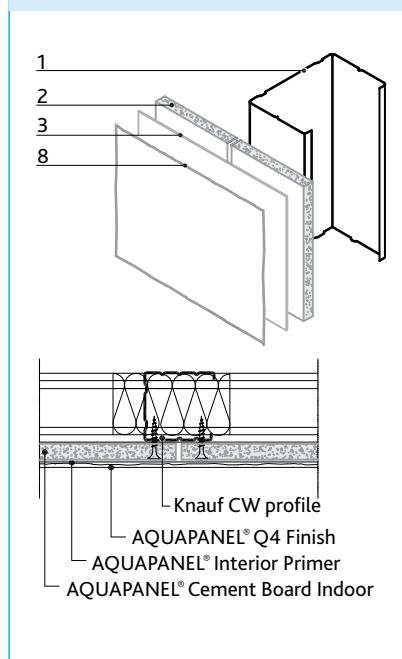


Key:

- 1 Knauf CW profile
- 2 AQUAPANEL® Cement Board Indoor
- 3 AQUAPANEL® Interior Primer
- 4 Tile adhesive
- 5 Ceramic lining

Skim coating, Option 2

Coating with AQUAPANEL® Q4 Finish

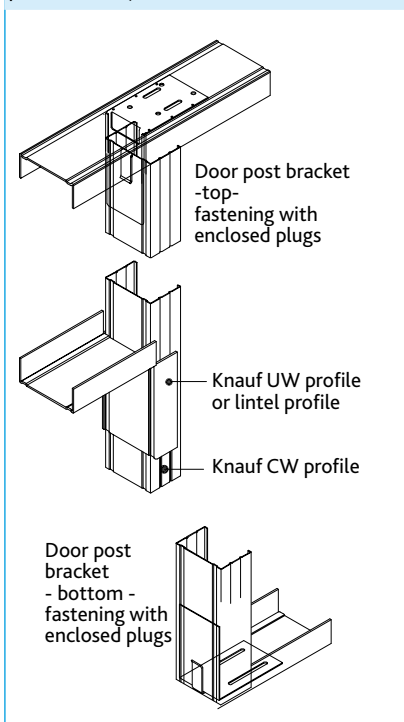


- 6 AQUAPANEL® Joint Filler & Skim Coating – white
 - 7 AQUAPANEL® Reinforcing Mesh
 - 8 AQUAPANEL® Q4 Finish
- Joints are glued with
AQUAPANEL® Joint Adhesive (PU)

Door openings - substructures and door leaf weights

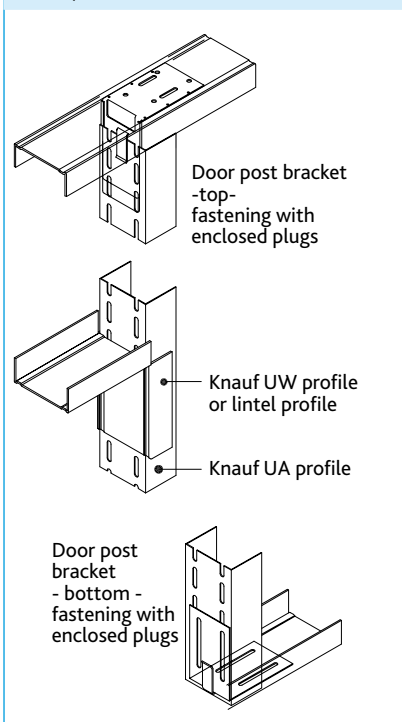
Option CW

(not in conjunction with Knauf Alutop profile frames)



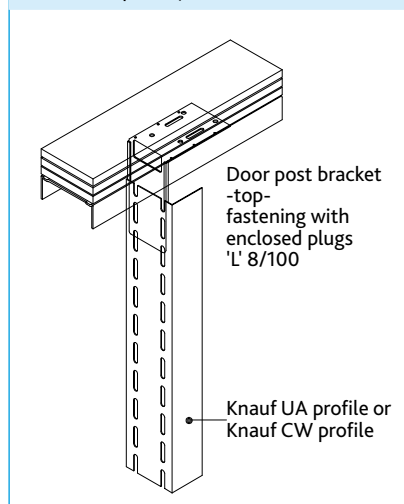
Option UA

(remove plastic strips on door post bracket)



Sliding ceiling junction

(option possible with Knauf CW profile or Knauf UA profile)



Maximum door leaf weights (in kg)

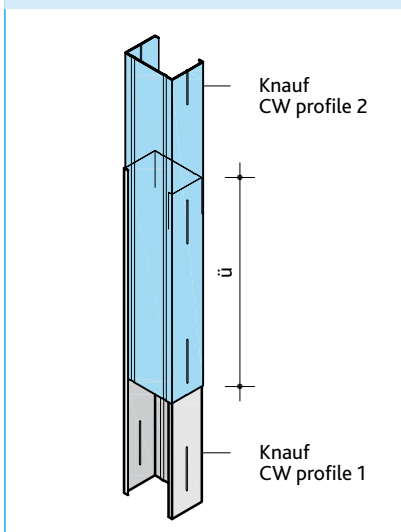
Knauf CW profile			Knauf UA profile		
50	75	100	50	75	100
kg	kg	kg	kg	kg	kg
≤ 30	≤ 40	≤ 40	≤ 50	≤ 75	≤ 100

Profile extension, details for wet rooms

Vertical profile extension, offset height of profile joints

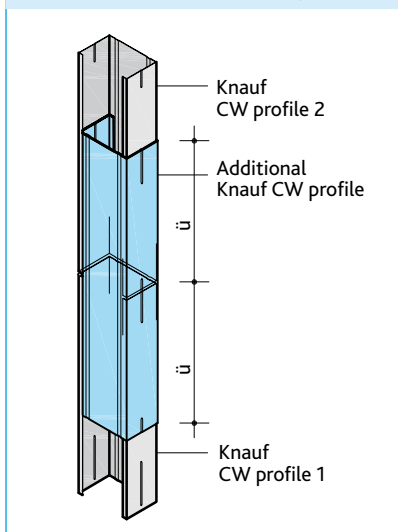
Option 1

(2 Knauf CW profiles interlocked as box)



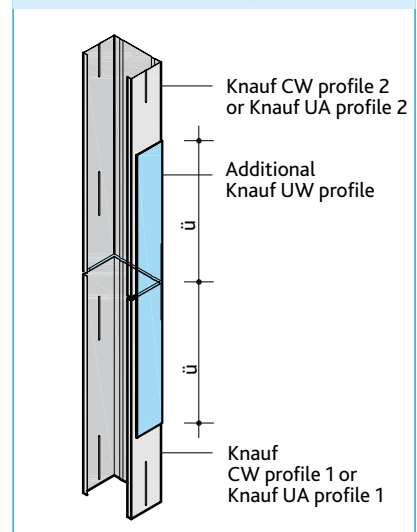
Option 2

(2 Knauf CW profiles with butt joint, interlocked with additional Knauf CW profile)



Option 3

(2 Knauf CW/UA profiles with butt joint, joined with additional UW profile)



Installation aid

Rivet, crimp or bolt the profiles in the overlap area

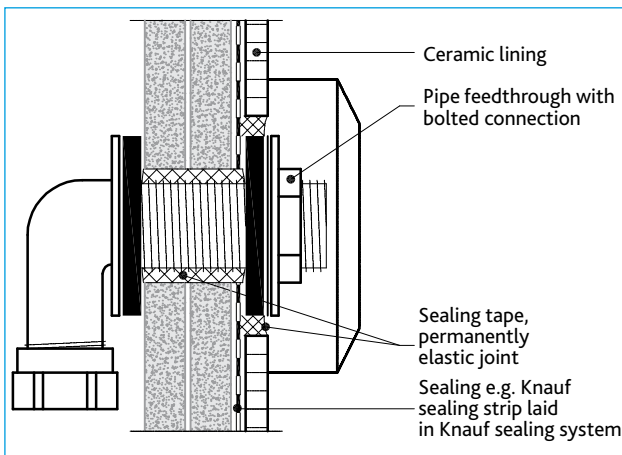


Knauf profile overlap ü (in cm)

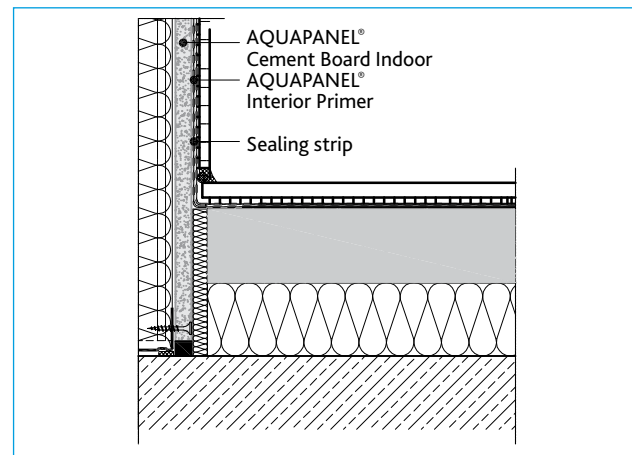
CW / UA		
50	75	100
cm	cm	cm
≤ 25	≤ 35	≤ 50

Details for wet rooms

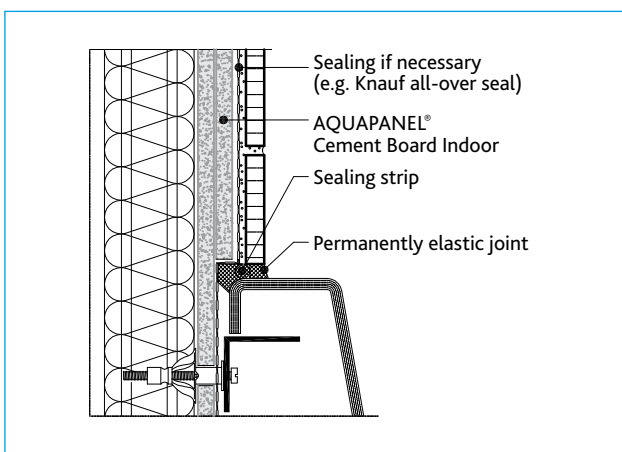
Scale 1:5



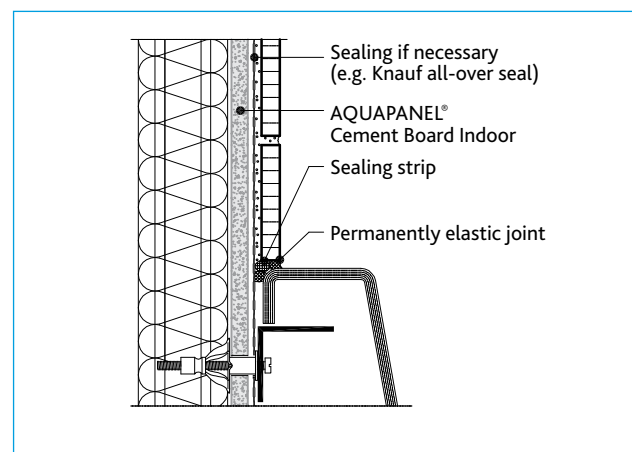
W382-ZH1 Pipe feedthrough (scale 1:2)



W382-ZH2 Wall-floor connection



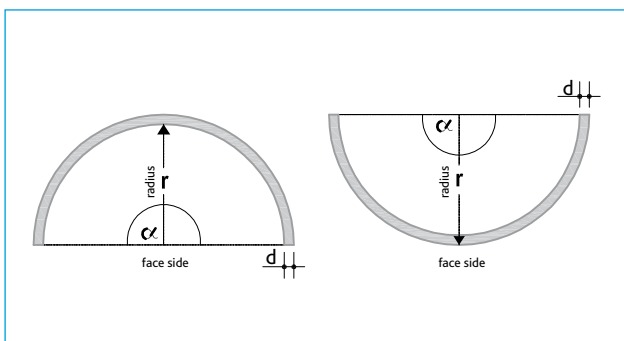
W382-ZH3 Bathtub connection (double-layer planking)



W382-ZH4 Bathtub connection (single-layer planking)

Curved wall constructions

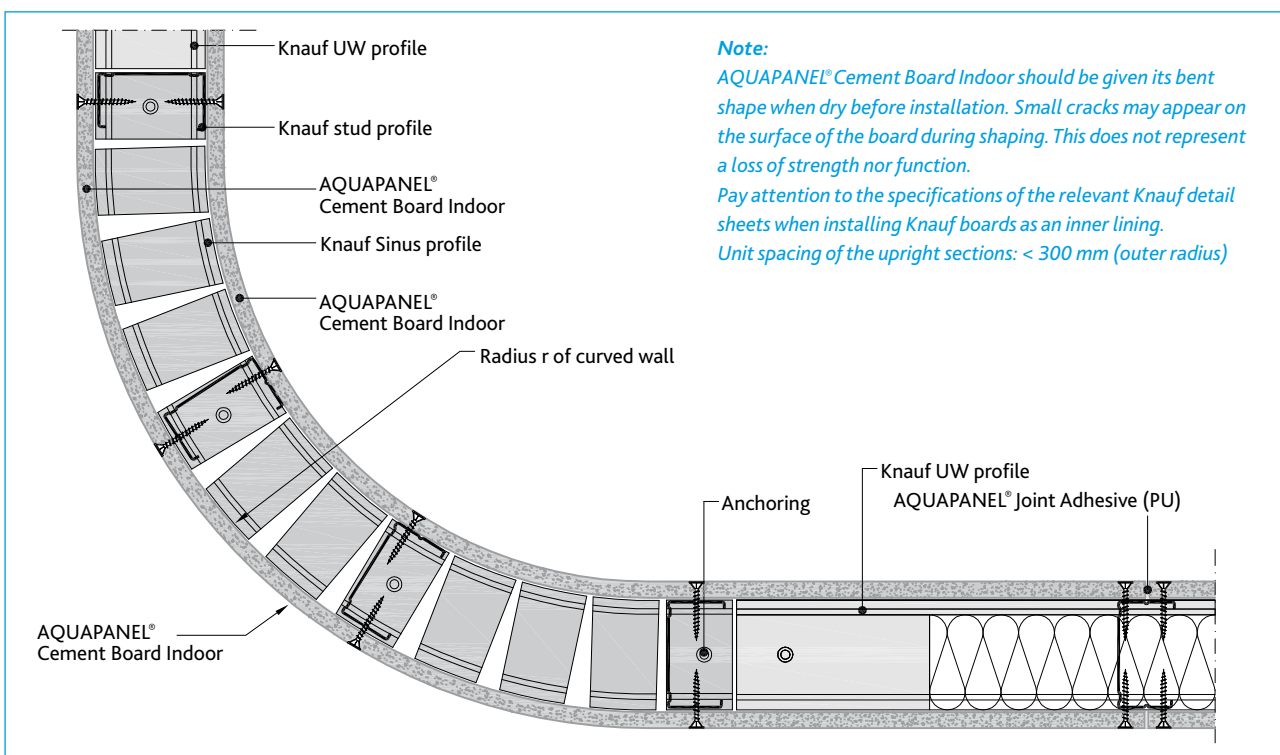
Concave shape, convex shape



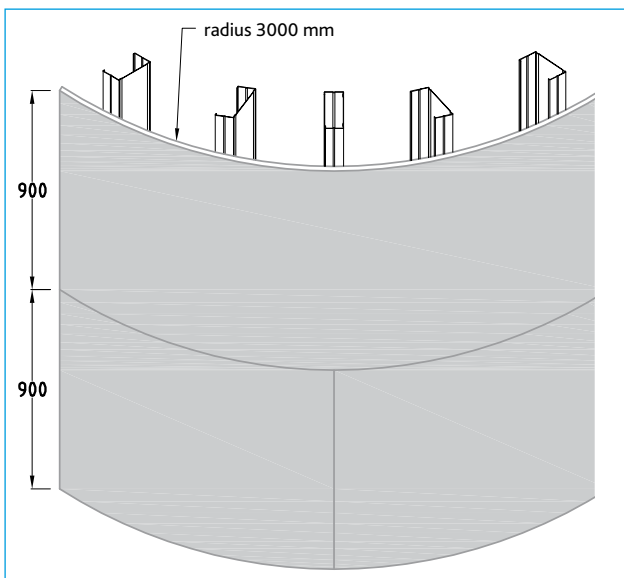
Board thickness	Bending radius r of AQUAPANEL® Cement Board Indoor	
	Width 300 mm	Width 900 mm
mm	mm	mm
12.5	≥ 1000	≥ 3000
Unwound length L		
Angel α 90°	Angel α 180°	All angles up to α 180°
$L = \frac{r \cdot \pi}{2}$	$L = r \cdot \pi$	$L = \frac{\alpha \cdot r \cdot \pi}{180}$

Details

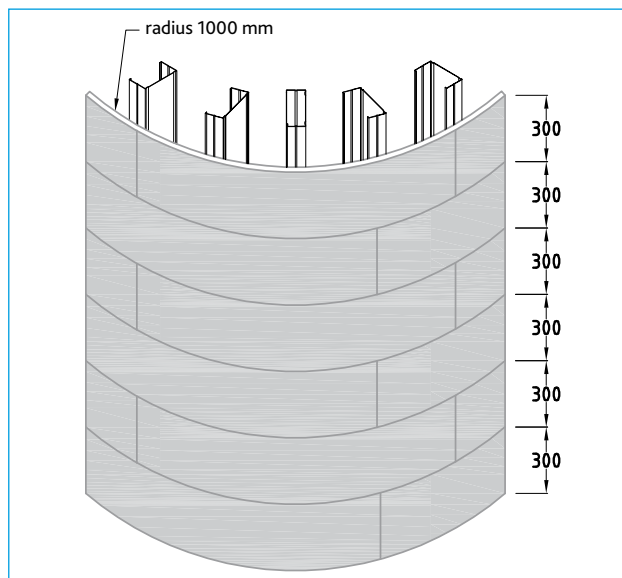
Scale 1:5



Installation of AQUAPANEL® Cement Board Indoor with different radii



Design with 900 mm wide boards for $r \geq 3.0$ m



Design with 300 mm wide boards for $r \geq 1.0$ m

Load fastening

Bracket loads up to 15 kg (hook)

Load
5 kg



Load
10 kg



Load
15 kg

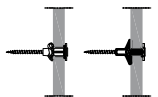


Note:

Light objects e.g. pictures can be fastened with X-hooks.

Other bracket loads up to 0.7 kN/m (plug)

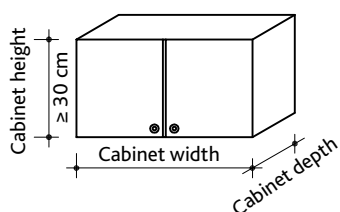
Plastic cavity fixing plugs



Metal cavity fixing plugs



Wall cabinets



Plug load, tensile and shearing load

Thickness of facing	Plastic cavity fixing plug Ø8 mm or Ø10 mm	Metal cavity fixing plugs screw M5 or M6
mm	kg	kg
12.5	20	30
2 x 12.5	40	50

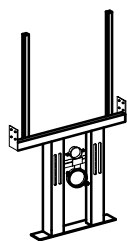
Note:

According to DIN 18183, single-layer walls may be loaded at any point by bracket loads up to 0.7 kN/m wall length taking into account the leverage (cabinet height > 30 cm) and eccentricity (cabinet width < 60 cm).

Fastening distance of the plugs is > 75 cm.

The bracket loads must be fastened with at least 2 cavity fixing plugs of plastic or metal, e.g. Tox Universal, Fischer Universal, Molly Schraubanker.

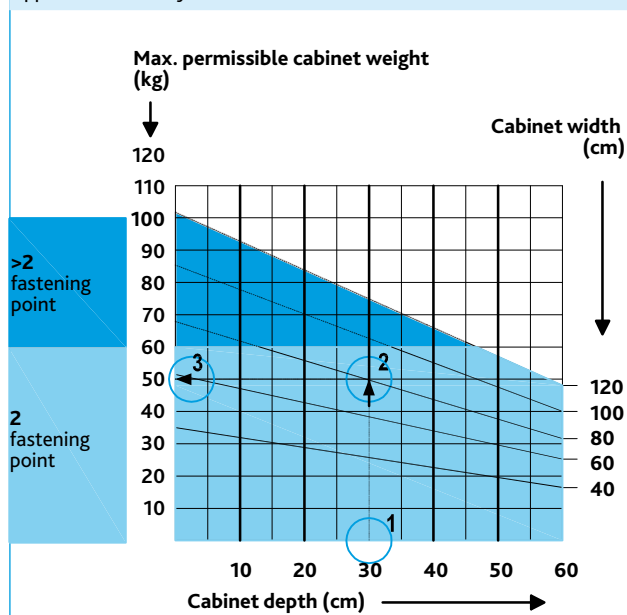
Heavy bracket loads up to 1.5 kN/m (trusses, crossbeams)



Bracket loads over 0.7 kN/m to 1.5 kN/m wall length are to be installed onto the substructure via main trusses and crossbeams.

Diagram 1

Permissible bracket loads up to 0.4 kN/m wall length applicable for the system: W38 I

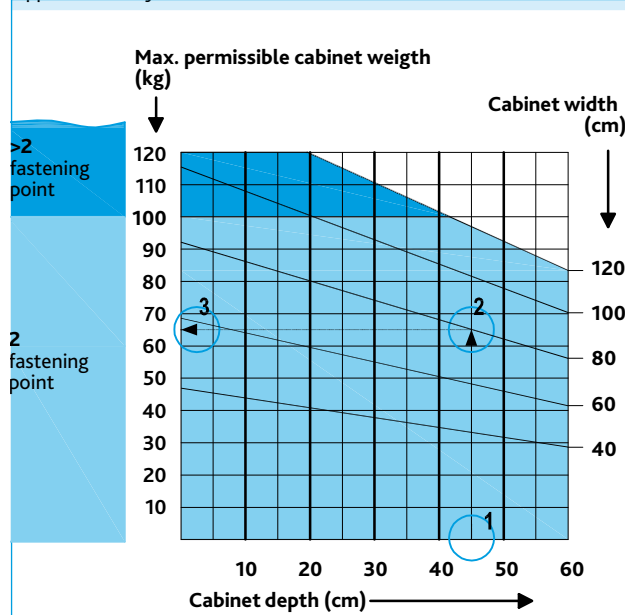


Example: Cabinet depth 30 cm, cabinet width 80 cm.

In the diagram, trace a line vertically upwards at cabinet depth 30 cm (1) to the line for cabinet width 80 cm (2), and at this intersection horizontally to the left. Read (3): 50 kg is the maximum permissible cabinet weight for this cabinet dimension.

Diagram 2

Permissible bracket loads up to 0.7 kN/m wall length applicable for system: W38 I



Example: Cabinet depth 45 cm, cabinet width 80 cm.

In the diagram, trace a line vertically upwards at cabinet depth 45 cm (1) to the line for cabinet width 80 cm (2), and at this intersection horizontally to the left. Read (3): 65 kg is the maximum permissible cabinet weight for this cabinet dimension.

Material requirements

Material requirements per m ² The quantities relate to wall area of h = 2.75 m, l = 4 m; A = 11 m ²						
Description <i>italic = material of other producers</i>	Unit per m ²	Quantity (average value)				
Base		W381 single-layer	W382 double-layer	W386-1 single-layer	W386-2 double-layer	
Knauf UW profile 50 x 40 x 0.6 (4 m long) or Knauf UW profile 75 x 40 x 0.6 (4 m long) or Knauf UW profile 100 x 40 x 0.6 (4 m long)	m	0.7	0.7	1.4	1.4	
Knauf CW profile 50 x 50 x 0.6 or Knauf CW profile 75 x 50 x 0.6 or Knauf CW profile 100 x 50 x 0.6	m	2.0	2.0	4.0	4.0	
Knauf partition wall putty (billet 550 ml) or Knauf sealing strip (30 m roll)	pieces	0.3	0.3	0.6	0.6	
50/3.2 mm 70/3.2 mm 95/3.2 mm	m	1.2	1.2	2.4	2.4	
Means of fastening	pieces	1.6	1.6	3.2	3.2	
Insulating layer (for fire protection) mm thickness	m ²	as required	as required	as required	as required	
Facing						
AQUAPANEL® Cement Board Indoor 12.5 mm	m ²	2	4	2.1	4.1	
AQUAPANEL® Maxi Screw (for board fastening) SN 25 mm (SB 25 mm) SN 39 mm (SB 39 mm) SN 55 mm	pieces	30	60	38	68	
Bonding and skim coating						
AQUAPANEL® Joint Adhesive (PU) (cartridge 310 ml)	ml	100	200	100	200	
AQUAPANEL® Interior Primer	kg	0.1	0.1	0.1	0.1	
AQUAPANEL® Joint Filler & Skim Coating – white	kg	7	7	7	7	
AQUAPANEL® Reinforcing Mesh (role 50 m ²)	m ²	2.2	2.2	2.2	2.2	
AQUAPANEL® Q4 Finish	m ²	approx. 6.8	approx. 6.8	approx. 6.8	approx. 6.8	
Knauf glass fibre covering strip (role 25 m)	m	2.1	2.1	2.1	2.1	

Note:

Data is without sound or fire protection requirements.

Data applies for complete construction with facing and coating on both sides.

AQUAPANEL® Interior Primer should be deluted at a ratio of 1:2 (concentrate/water) before use.

The consumption data above relates to the amount of concentrate.

AQUAPANEL® Joint Filler & Skim Coating - white is processed with a nominal layer thickness of 4 mm.

The consumption data above relates to d = 4 mm.

AQUAPANEL® Q4 Finish is processed with a nominal layer thickness of 4 mm.

The consumption data above relates to d = 2 mm.

Basis for calculation

Material consumption			
Facing and coatings	Description	Unit	Quantity / m ²
AQUAPANEL® Cement Board Indoor	single, single-layer sheeting	m ²	1.0
AQUAPANEL® Maxi Screw (SN, SB)	unit spacing of posts = 600 or 625 mm	pieces	15
AQUAPANEL® Joint Adhesive (PU)	1 cartridge for 6.5 m ²	ml	50
AQUAPANEL® Interior Primer	Concentrate diluted 1:2	g	50
AQUAPANEL® Joint Filler & Skim Coating – white	dry, thickness of 4 mm	kg	3.5
AQUAPANEL® Reinforcing Mesh		m ²	1.1
AQUAPANEL® Q4 Finish	per mm thickness	kg	1.7

Installation times		
Facing and coatings	Per m ² manual processing	Per m ² mechanical processing
AQUAPANEL® Cement Board Indoor		
AQUAPANEL® Maxi Screws (SN, SB)	15 minutes	-
AQUAPANEL® Joint Adhesive (PU)		
AQUAPANEL® Interior Primer	1 minute	-
AQUAPANEL® Joint Filler and Skim Coating – white	12-15 minutes	7 minutes
AQUAPANEL® Reinforcing Mesh	4-5 minutes	-
AQUAPANEL® Q4 Finish	approx. 9 minutes	-

Information on AQUAPANEL® Maxi Screw (corrosion resistant)					
AQUAPANEL® Maxi Screw is specially designed for fastening AQUAPANEL® Cement Board Indoor on metal and timber substructures with different sheet thicknesses. Both types, with needle tip and drill point, are designed with a flat head. AQUAPANEL® Maxi Screw can be used for interior wall and ceiling applications. The screws have a special corrosion protection coating, which gives a guaranteed 500 hours corrosion resistance in salt spray test.		Sheet steel thickness 0.6 - 0.7 mm		Sheet steel thickness > 0.7 - 2.0 mm	
		single-layer	double-layer	triple-layer	
AQUAPANEL® Maxi Screw SN 25		x			
AQUAPANEL® Maxi Screw SN 39		x	x		
AQUAPANEL® Maxi Screw SN 55			x	x	
AQUAPANEL® Maxi Screw SB 25					x
AQUAPANEL® Maxi Screw SB 39					x

Corrosion protection

Humid and warm air can cause damage and corrosion to metal substructures. Care must be taken to ensure adequate corrosion protection of the metal furring and connectors, particularly in humid indoor areas such as swimming pools, public showers or canteens, etc. EN 13964 can be regarded as being decisive for corrosion protection.

According to EN 13964, metal profiles Z 100 (zinc coating 100 g/m²) with an additional organic coating of 20 µm per side are necessary for load class C. Special measures have to be taken for load class D depending on use and corrosive contamination. National standards and regulations may specify stricter requirements on corrosion protection and must be followed (e.g. DIN 18168).

Necessary corrosion protection class is to be specified by the planning office and thus taken into account during all further planning, specification and application.

