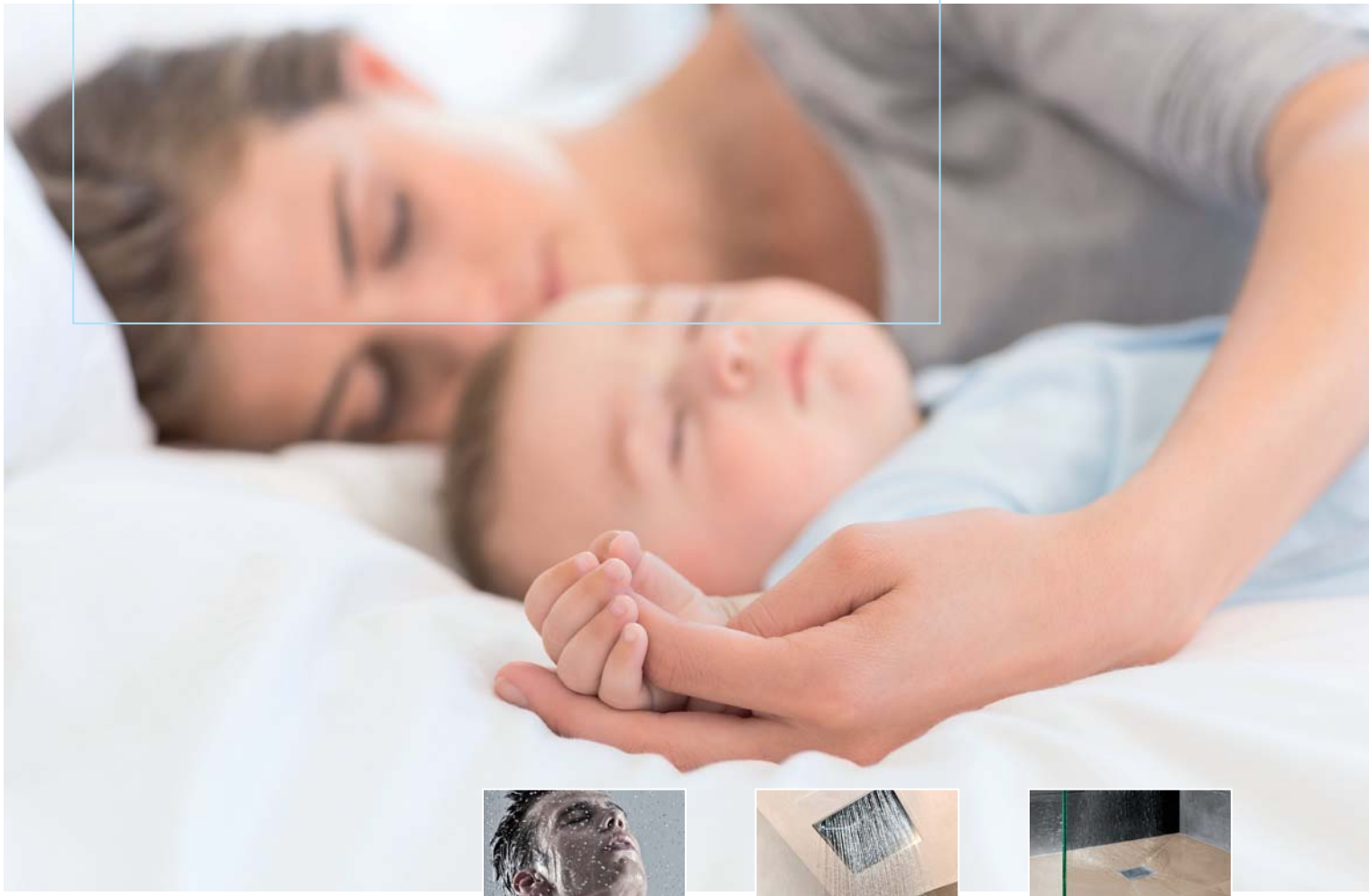
wedi sound insulation

According to DIN 4109 and VDI 4100 for floor-level showers



Sound insulation in the recognised wedi system

During showering and bathing, different types of noise occur which may be transmitted to neighbouring rooms as a sound. For this reason, regulations are put in place defining the maximum sound level to ensure that the quality of living of a building's inhabitants is not affected. wedi's sound insulation products and floor level shower elements, when installed together as a system, comply with the latest regulations, thus offer increased sound protection for a pleasant and quiet atmosphere within the walls of a home.

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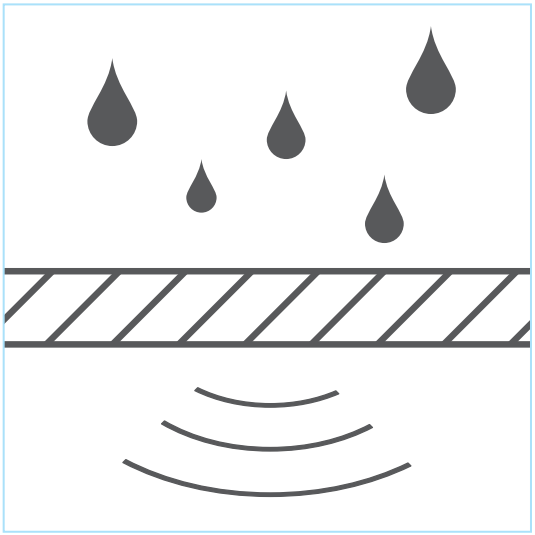
Sound insulation types

The bathroom as source of sound

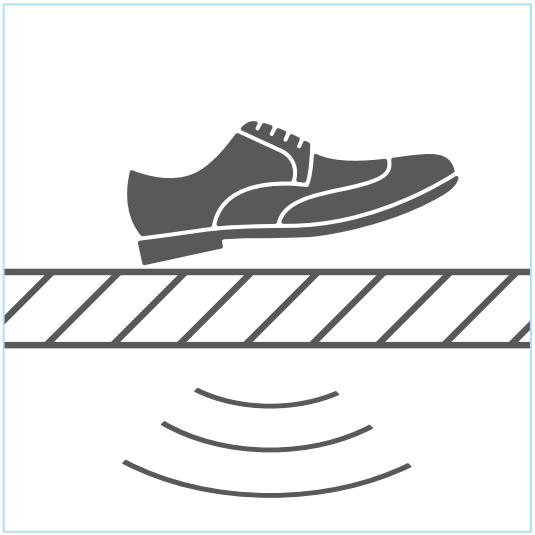
Peace and quiet is exactly what is required for a comfortable atmosphere in a home. This especially applies for areas like the living room and bedrooms. During showering, the impact of water on the floor causes high degrees of sound development (air and structure borne sound) and the occurring noises may be perceived as annoying.

Additionally, the bathroom and shower areas could also be accessed whilst wearing shoes (footsteps). A not properly decoupled bathtub or shower areas lead to considerable noise generation and disturbance in neighbouring rooms and below. We would like to point out two important types of sound insulation below:



Water impact insulation

Protection from high noise levels caused by water impact on the shower floor. Via the bathroom floor, the generated sound is transmitted to neighbouring rooms.



Footstep sound insulation

Protection from noise generated by footsteps on floors. Noises are mostly directed downwards.

Quiet rooms? A question of requirements!

To ensure that nothing gets in the way of a ‘comfortable atmosphere’, all disturbing sound transmission possibilities have to be taken into account during construction or renovation and appropriate sound insulation has to be provided. For this reason, building regulations define both the minimum requirements and the increased sound insulation to exceed these requirements.

140 dB
Pain threshold

120 dB
Admissible immission

110 dB

90 dB

80 dB

70 dB

60 dB

50 dB

40 dB

30 dB

20 dB

10 dB

0 dB
Audible threshold

Regulations

Minimum requirements and increased sound insulation

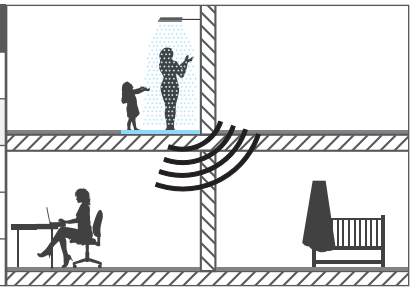
Acceptable audible sound transmissions into neighbouring rooms are described in two regulations. The minimum requirements on structural sound insulation are defined in DIN 4109 while the requirements on increased sound insulation are defined in VDI regulation 4100 by means of sound insulation levels (I, II and III). The sound levels caused by the impact of water onto a shower floor are determined according to DIN EN ISO 10052 in combination with DIN 4109-11.

Manufacturers may only specify the standard Delta impact sound level for footstep sound assessment and the standard sound pressure level for assessment of installation noise (water). According to these specifications, the sound insulation required for buildings can be determined and taken into account.

Requirements on sound insulation for water impact sound

The water impact during showering generates a sound. Bathroom and shower areas are often insufficiently decoupled and insulated which leads to noises being transmitted into neighbouring rooms. This may cause a disturbing background noise. The wedi system solutions for floor-level showers do not only comply with the minimum requirements on sound insulation for water impact noise but also with sound insulation levels I to III (according to VDI 4100) depending on the system components.

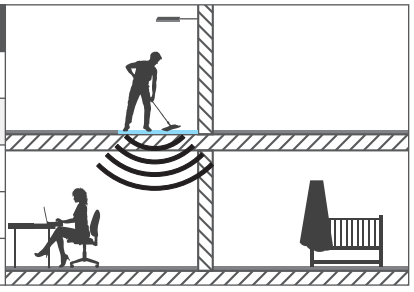
Regulation	Requirement	Admissible sound pressure level
DIN 4109	Minimum requirements	$L_{In} \leq 30$ dB(A)
DIN 4109, Bbl. 2	Increased requirements	$L_{In} \leq 25$ dB(A)
VDI 4100 Apartment buildings	Sound insulation level I	$\overline{L_{AFmax,nT}} \leq 30$ dB(A)
	Sound insulation level II	$\overline{L_{AFmax,nT}} \leq 27$ dB(A)
	Sound insulation level III	$\overline{L_{AFmax,nT}} \leq 24$ dB(A)



Requirements on sound insulation for footsteps

Particularly in the nursing and health care sectors, bathroom and shower areas are accessed by nursing or cleaning personnel wearing shoes. The occurring footsteps sound is transmitted and may cause a disturbing noise in the rooms beneath.

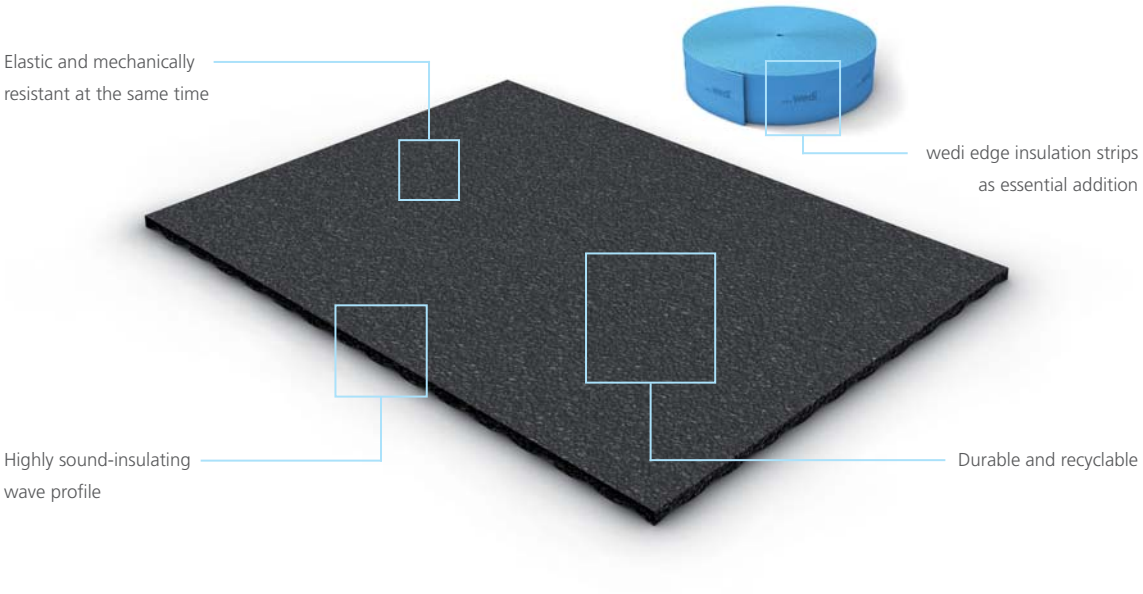
Regulation	Requirement	Admissible sound pressure level
DIN 4109	Minimum requirements	$L_{In} \leq 53$ dB(A)
DIN 4109, Bbl. 2	Increased requirements	$L_{In} \leq 46$ dB(A)
VDI 4100 Apartment buildings	Sound insulation level I	$\overline{L_{AFmax,nT}} \leq 51$ dB(A)
	Sound insulation level II	$\overline{L_{AFmax,nT}} \leq 44$ dB(A)
	Sound insulation level III	$\overline{L_{AFmax,nT}} \leq 37$ dB(A)



The latest generation of sound insulation

wedi Nonstep Pro

The wedi Nonstep Pro is the ideal product for sound insulation of both the water impact and the footstep noise and perfectly suited for installation under wedi Fundo floor elements. It does not only comply with the minimum requirements but has also been successfully tested for compliance with increased sound insulation requirements. The extremely and permanently elastic material, consisting of a combination of rubber granulate/fibres with polyurethane binding agents, ensures optimum sound insulation and vibration damping, offers high mechanical resistance and is available with a thickness of 8 or 17 mm.



Description	Length × Width × Thickness	Packing unit	Order no.
wedi Nonstep Pro	600 × 600 × 8 mm	4 units	01-12-55/000
wedi Nonstep Pro	900 × 5000 × 8 mm	1 roll	01-12-55/001
wedi Nonstep Pro	1200 × 5000 × 8 mm	1 roll	01-12-55/002
wedi Nonstep Pro	600 × 600 × 17 mm	4 units	01-12-55/003
wedi Nonstep Pro	900 × 2500 × 17 mm	1 roll	01-12-55/004
wedi Nonstep Pro	1200 × 2500 × 17 mm	1 roll	01-12-55/005
wedi edge insulation strips	150 mm × 25 m × 5 mm	1 roll	01-12-55/006

Application for point drainage

wedi Fundo Primo

For classical point drainage in showers, the wedi Fundo Primo flor elements are available in different sizes. In combination with wedi Nonstep Pro sound insulation mats, these elements together, when installed accordingly to the manufacturer's guidelines, ensure that water impact and footstep noise is considerably reduced. The minimum requirements according to DIN 4109 as well as the increased requirements according to VDI 4100 listed in the table below are complied with.

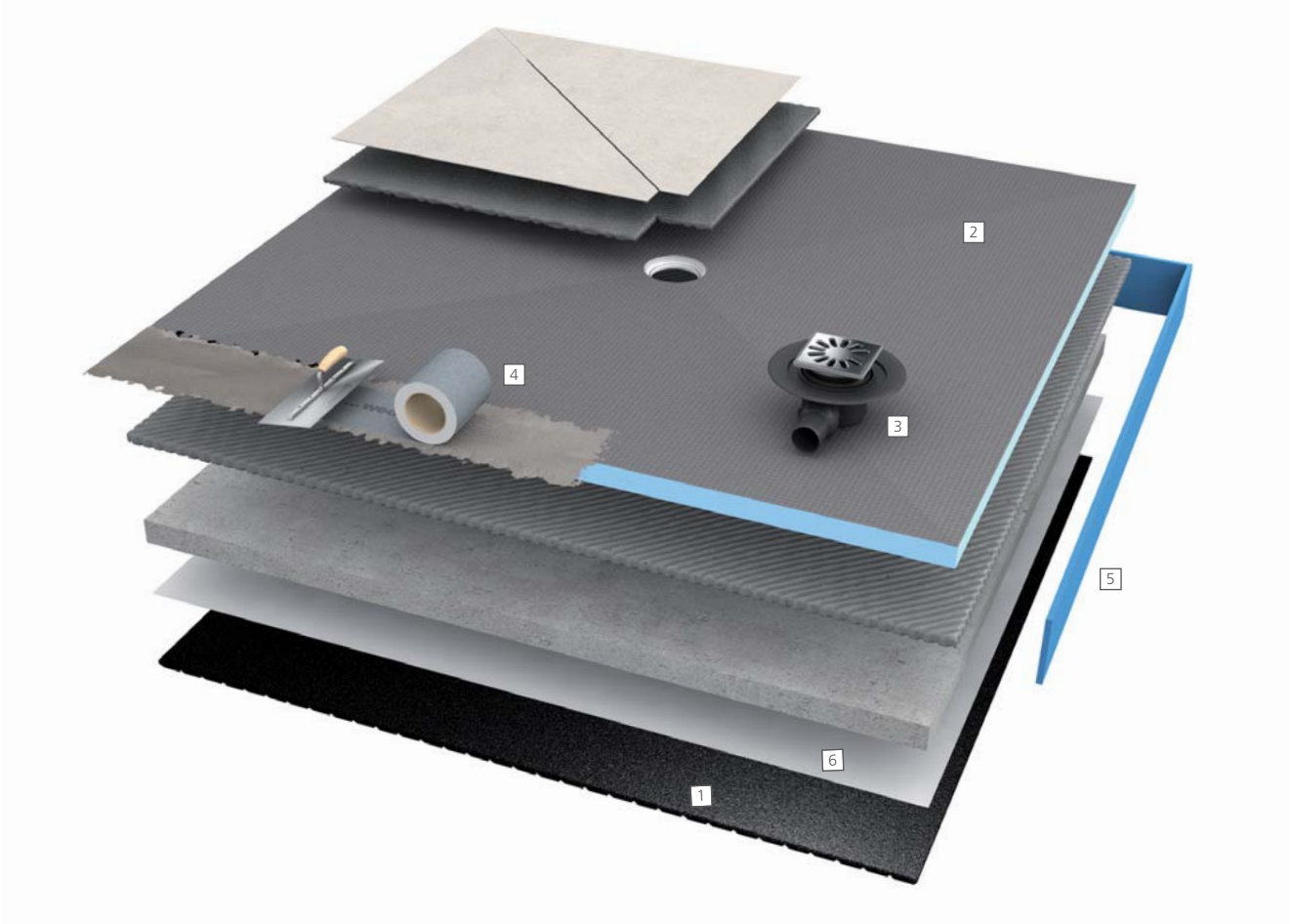
Water impact measurement results				DIN 4109		VDI 4100		
Floor element	Substructure	wedi Nonstep Pro	Installation height *	min.	in-creased	Level I	Level II	Level III
Fundo Primo	horizontal drain, DN 50, 90 mm screed	8 mm	138 mm	✓		✓	✓	
Fundo Primo	drain Mini Max, DN 40, 60 mm screed	8 mm	108 mm	✓		✓	✓	
Fundo Primo	horizontal drain, DN 50, 90 mm screed	17 mm	147 mm	✓	✓	✓	✓	✓
Fundo Primo	drain Mini Max, DN 40, 60 mm screed	17 mm	117 mm	✓	✓	✓	✓	✓

Minimum requirements on sound insulation for water impact	Increased requirements	Sound insulation level I	Sound insulation level II	Sound insulation level III
≤ 30 dB(A)	≤ 25 dB(A)	≤ 30 dB(A)	≤ 27 dB(A)	≤ 24 dB(A)

The assessment serves as example for a room requiring particular sound protection with 31 m^3 and a concrete ceiling of 20 cm.

Footstep sound reduction				
Floor element	Substructure	wedi Nonstep Pro	Installation height *	Assessed footstep sound reduction
Fundo Primo	horizontal drain, DN 50, 90 mm screed	8 mm	138 mm	$\Delta L_{w,P}$ = 27 dB
Fundo Primo	drain Mini Max, DN 40, 60 mm screed	8 mm	108 mm	$\Delta L_{w,P}$ = 27 dB
Fundo Primo	horizontal drain, DN 50, 90 mm screed	17 mm	147 mm	$\Delta L_{w,P}$ = 30 dB
Fundo Primo	drain Mini Max, DN 40, 60 mm screed	17 mm	117 mm	$\Delta L_{w,P}$ = 30 dB

* Please note: These heights do not include the adhesive thickness.



Shower situation system layout

Products used

1 **NEW:** wedi Nonstep Pro ▪ sound insulation mat for efficient sound insulation under wedi Fundo floor elements
2 wedi Fundo Primo ▪ shower element, in this case with central spot drainage
3 wedi Fundo drain ▪ in this case with a horizontal DN 50 drain including drain cover
4 wedi Fundo sealing set ▪ especially for the all-around sealing of Fundo floor elements to non-system materials such as screed
5 **NEW:** wedi edge insulation strips ▪ for prevention of sound transmission between Fundo floor elements and neighbouring areas (wall, screed, etc.)
6 PE foil ▪ standard construction sheeting as a protective layer between the sound insulation mat and mortar

Application for linear drainage

wedi Fundo Riolito/Riolito neo

The wedi Riolito and Riolito neo floor elements can be tiled individually and not only offer an attractive linear drainage but also an integrated gradient guiding the water down into the drain. In combination with the wedi sound insulation system, these elements also offer top values according to DIN 4109 and VDI 4100.

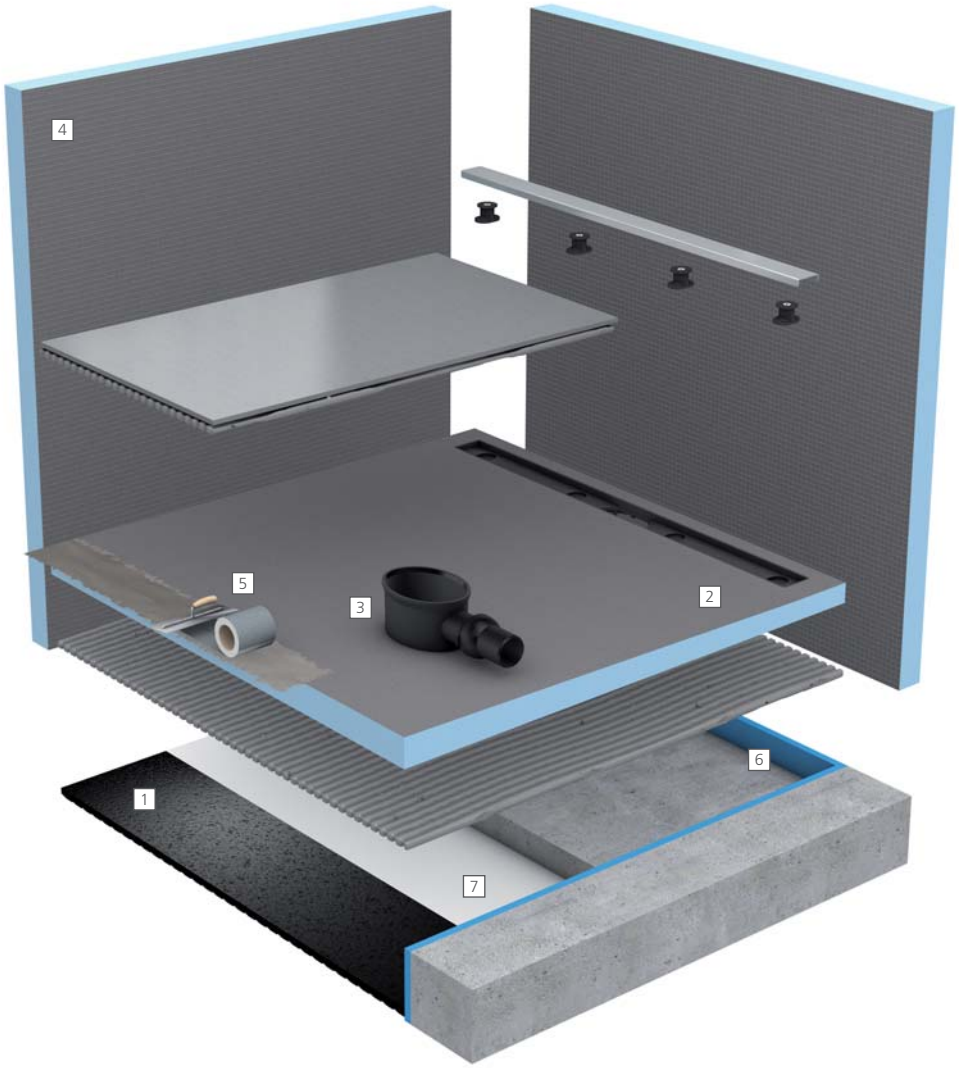
Water impact measurement results				DIN 4109		VDI 4100		
Floor element	Substructure	wedi Nonstep Pro	Installation height*	min.	in-creased	Level I	Level II	Level III
Fundo Riolito	horizontal drain, DN 50, 80 mm screed	8 mm	138 mm	✓		✓	✓	
Fundo Riolito	drain Mini Max, DN 40, 60 mm screed	8 mm	118 mm	✓		✓	✓	
Fundo Riolito	horizontal drain, DN 50, 80 mm screed	17 mm	147 mm	✓	✓	✓	✓	✓
Fundo Riolito	drain Mini Max, DN 40, 60 mm screed	17 mm	127 mm	✓	✓	✓	✓	✓

Minimum requirements on sound insulation for water impact	Increased requirements	Sound insulation level I	Sound insulation level II	Sound insulation level III
≤ 30 dB(A)	≤ 25 dB(A)	≤ 30 dB(A)	≤ 27 dB(A)	≤ 24 dB(A)

The assessment serves as example for a room requiring particular sound protection with 31 m^3 and a concrete ceiling of 20 cm.

Footstep sound reduction				
Floor element	Substructure	wedi Nonstep Pro	Installation height*	Assessed footstep sound reduction
Fundo Riolito	horizontal drain, DN 50, 80 mm screed	8 mm	138 mm	$\Delta L_{w,P}$ = 27 dB
Fundo Riolito	drain Mini Max, DN 40, 50 mm screed	8 mm	108 mm	$\Delta L_{w,P}$ = 26 dB
Fundo Riolito	horizontal drain, DN 50, 80 mm screed	17 mm	147 mm	$\Delta L_{w,P}$ = 30 dB
Fundo Riolito	drain Mini Max, DN 40, 50 mm screed	17 mm	117 mm	$\Delta L_{w,P}$ = 29 dB

* Please note: These heights do not include the adhesive thickness.



Shower situation system layout

Products used

1 **NEW:** wedi Nonstep Pro ▪ sound insulation mat for efficient sound insulation under wedi Fundo floor elements
2 wedi Fundo Riolito neo ▪ the flush to floor shower element with close-to-wall linear drainage
3 wedi Fundo Riolito neo drain ▪ in this example with the DN 50 horizontal drain
4 wedi building boards ▪ for designing wall and niche solutions
5 wedi Fundo sealing set ▪ especially for the all-around sealing of Fundo floor elements to non-system materials such as screed
6 **NEW:** wedi edge insulation strips ▪ for prevention of sound transmission between Fundo floor elements and neighbouring areas (wall, screed, etc.)
7 PE foil ▪ standard construction sheeting as a protective layer between the sound insulation mat and mortar

Application for complete systems

wedi Fundo Plano and Plano Linea

The wedi Fundo Plano (point drainage) and wedi Fundo Plano Linea (linear drainage) are both a flat complete system equipped with a fully integrated drain system and are unbeatable with an installation height of 65 mm and 70 mm. Especially designed for renovation of old buildings where every millimetre counts. In combination with the wedi Nonstep Pro, these systems also convince in terms of sound insulation thanks to low db values.

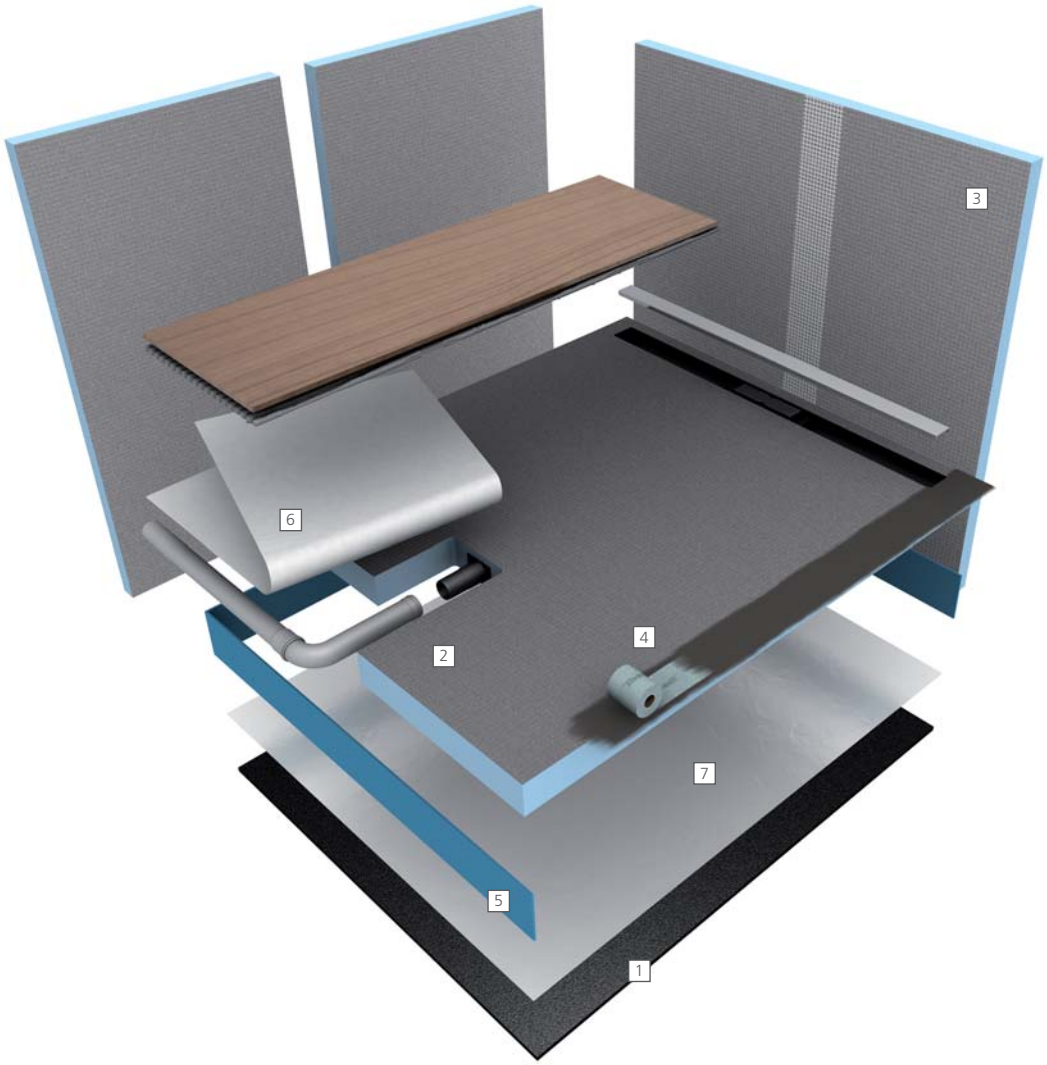
Water impact measurement results				DIN 4109		VDI 4100		
Floor element	Substructure	wedi Nonstep Pro	Installation height *	min.	in-creased	Level I	Level II	Level III
Fundo Plano	none, as fully integrated	8 mm	73 mm	✓		✓	✓	
Fundo Plano Linea	none, as fully integrated	8 mm	78 mm	✓		✓	✓	

Minimum requirements on sound insulation for water impact	Increased requirements	Sound insulation level I	Sound insulation level II	Sound insulation level III
≤ 30 dB(A)	≤ 25 dB(A)	≤ 30 dB(A)	≤ 27 dB(A)	≤ 24 dB(A)

The assessment serves as example for a room requiring particular sound protection with 31 m^3 and a concrete ceiling of 20 cm.

Footstep sound reduction				
Floor element	Substructure	wedi Nonstep Pro	Installation height *	Assessed footstep sound reduction
Fundo Plano	none, as fully integrated	8 mm	73 mm	$\Delta L_{w,P}$ = 24 dB
Fundo Plano Linea	none, as fully integrated	8 mm	78 mm	$\Delta L_{w,P}$ = 24 dB

* Please note: These heights do not include the adhesive thickness.



Shower situation system layout

Products used

1 **NEW:** wedi Nonstep Pro ▪ sound insulation mat for efficient sound insulation under wedi Fundo floor elements
2 wedi Fundo Plano Linea ▪ shower element with integrated drainage technology (linear drainage)
3 wedi building boards ▪ for constructing shower screens
4 wedi Fundo sealing set ▪ especially for the all-around sealing of Fundo floor elements to non-system materials such as screed
5 **NEW:** wedi edge insulation strips ▪ for prevention of sound transmission between Fundo floor elements and neighbouring areas (wall, screed, etc.)
6 wedi Fundo Plano Linea sealing pads ▪ for sealing the pipe connection
7 PE foil ▪ standard construction sheeting as a protective layer between the sound insulation mat and mortar

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