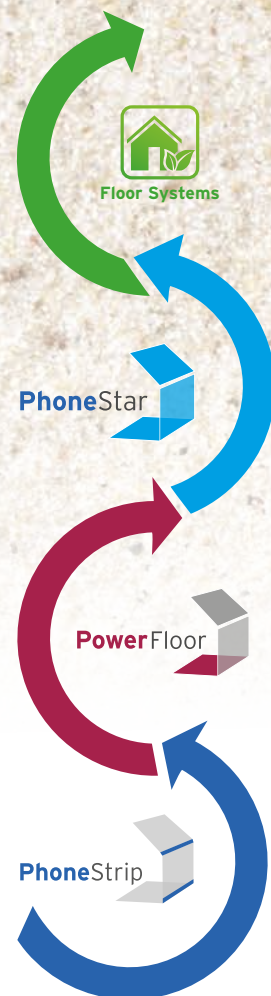


SOUND INSULATION UNDERFLOOR HEATING DRY SCREED

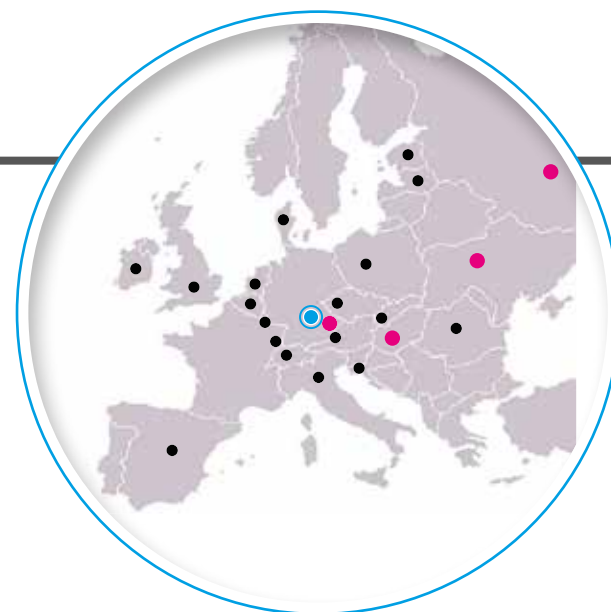


DRY SYSTEM SOLUTIONS AND DECOUPLING

Suitable for floors, walls and ceilings
in new build and retrofit



Wolf Bavaria GmbH - has been a successful, innovative and expanding company in the international dry construction industry since 2004. As experts, we advise and support hundreds of construction projects worldwide for a wide variety of customer groups. We offer simple and effective solutions for sound insulation, underfloor heating and dry screed flooring. In 2019 we introduced products to sound insulate the junctions between load-bearing components. Our products are optimized for retrofit and new build.

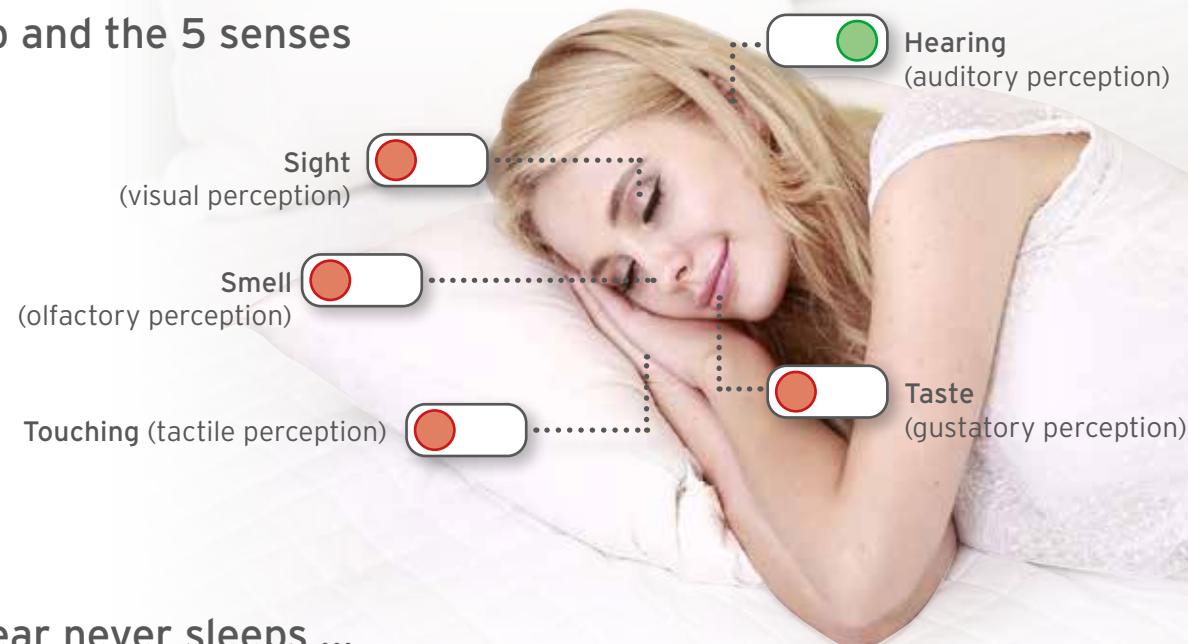


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Why sound insulation is so important

Sleep and the 5 senses



The ear never sleeps ...

because it is a very sensitive organ that even notices the slightest noise during sleep. How else would you hear the alarm clock?

This is why even more environmental agencies and government institutions are now dealing with the prevailing noise problem.

Excessive noise is proven to be harmful to human health and affects us in terms of school, home and work routine. It can lead to insomnia, cause cardiovascular or psychophysiological impairments, reduce performance and cause irritability or behavioural changes in social interaction. (WHO, 2017)

PhoneStar from Wolf Bavaria can provide very effective protection against these noise disturbances.

This is how PhoneStar works

Sound wave before



PhoneStar



Microscopic vibrations

Sound wave after

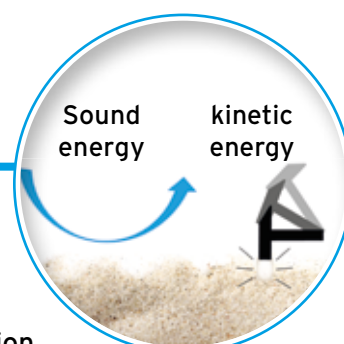


Longitudinal sound wave transmission

Longitudinal sound waves affect flanking noise transmission. PhoneStar has a high internal damping capacity due to the heavy, but soft, sand filling. The principle is similar to striking sand with a hammer. There is no sound wave created, therefore no longitudinal sound waves and no flanking conditions.

PhoneStar 3 in 1

The multilayer structure and irregular shaped casing, the soft loose sand filling and the high mass of the PhoneStar board all contribute to substantially reducing the energy in the sound wave.



Our solution against noise

PhoneStar is approved as a sound insulation panel for use on floors, walls, ceilings and sloping ceilings in ETA 20/0371.

At the same time, PhoneStar is certified as a sound-absorbing dry screed.

- + Reduces airborne and impact sound
- + Made from natural materials - sand and cardboard



✓environmentally friendly ✓effective

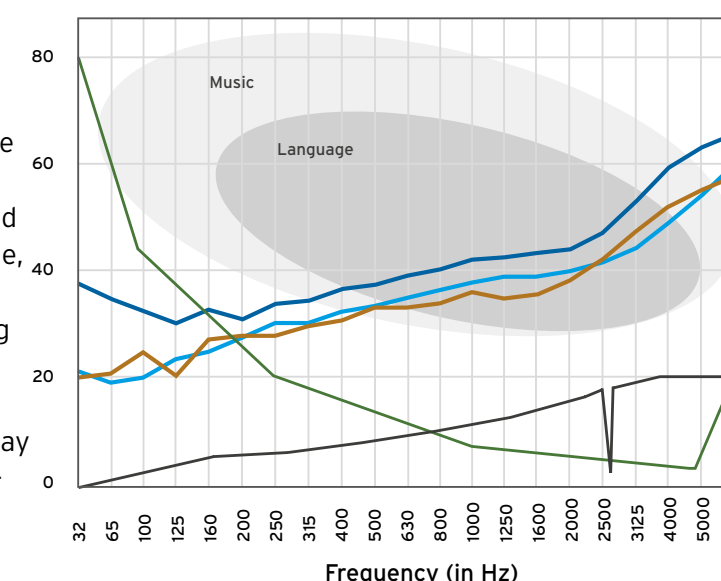


PhoneStar can be doubled up to achieve even better Sound Insulation results.

The results on the graph clearly show the outstanding airborne sound insulating attributes of the PhoneStar boards. They substantially reduce sound in the low frequency range, rising up to 40-45 dB in the typical human hearing range. Additionally, the coincidence dip does not affect PhoneStar in the way that it does with homogeneous building materials.

Acoustic insulation measure (in dB)

The pain threshold is at 120 dB



PhoneStar Plus Tri $R_W = 42$ dB
Test report no.: E140124/1a_rev00

PhoneStar Tri $R_W = 38$ dB
Test report no.: E170606/1a_rev00

PhoneStar ST Tri $R_W = 36$ dB
Test report no.: E170606/2a_rev00

Typical coincidence dip of homogeneous building materials
Auditory threshold

✓Mass ✓Multilayer structureeffect ✓Bending flexibility



Easy installation



CUTTING

Quick & easy, e.g. with a utility knife or a hand-held circular saw.

TAPING

Tape cut edges with Wolf Tape.

INSTALLATION

The PhoneStar boards are laid in a brickwork formation either floating or glued onto floors, depending on the final floor covering.

PhoneStar boards are installed either directly or preferably on to a sub-structure, on walls or ceilings.



FLOOR FINISHES

Any type of final floor covering can be installed over PhoneStar boards with appropriate preparation.

WALL AND CEILING SURFACES

Any type of final floor covering can be installed over PhoneStar boards with appropriate preparation.

DRILLING SOCKET HOLES

Holes can be drilled easily. To prevent a slight trickle, seal with acrylic.



See current installation instructions on:
www.wolf-bavaria.com/downloadcenter/



PhoneStar boards are installed to timber or metal stud wall using the appropriate drywall screws.

PhoneStar boards are installed to the wall on Wolf TPS 25, Battens or with Wolf wall plug fixings.



Delivery program and certification

PhoneStar PREMIUM-Line for best possible improvement

	Product illustration	Weight [kg/m²]	Thickness [mm]	Item number	Length x Width [mm]	Quantity [per pallet]
PhoneStar Plus Tri		29	15	1015	1250 x 625	31.25 m² 40 boards

PhoneStar PROFESSIONAL-Line for increased improvement

	Product illustration	Weight [kg/m²]	Thickness [mm]	Item number	Length x Width [mm]	Quantity [per pallet]
PhoneStar Tri		18	15	1010	1200 x 800	53.76 m² 56 boards
				1008	1250 x 625	54.69 m² 70 boards
PhoneStar Twin		12	10	1009	1200 x 800	81.60 m² 85 boards
				1012	1250 x 625	82.03 m² 105 boards

PhoneStar STANDARD-Line for minimum improvement

	Product illustration	Weight [kg/m²]	Thickness [mm]	Item number	Length x Width [mm]	Quantity [per pallet]
PhoneStar ST Tri		17.5	12.5	1017	1200 x 800	54.72 m² 57 boards
				1019	1250 x 625	54.68 m² 70 boards
PhoneStar ST Twin		11.5	9	1018	1200 x 800	83.52 m² 87 boards

Floor weight improvement board

	Product illustration	Weight [kg/m²]	Thickness [mm]	Item number	Length x Width [mm]	Quantity [per pallet]
PhoneStar 25		39	25	1011	800 x 600	26.88 m² 56 boards



CERTIFICATION

The complete PhoneStar product range is listed in the **ETA-20/0371** with all superstructures/constructions for application in the areas of floors, walls, ceilings and sloping roofs.

Floor weight improvement made easy



PhoneStar 25

PhoneStar 25 - The 25 mm thick weight improvement board in a handy 800 x 600 mm format. Designed and developed for the replacement of fillings on mass timber and wooden beam floors. Addressing complaints, such as fillings, is greatly simplified. Since PhoneStar 25 is a board, the laborious transport of bagged goods or bulk goods is no longer necessary, dust generation is minimized and the leveling of bulk goods is eliminated.

The risk of moisture penetration into bound fillings through the formwork of the ceiling is eliminated when using PhoneStar 25.

PhoneStar 25 is preprepared for the installation on mass timber floors and open and closed wooden beam floors for new build and retrofit.

PhoneStar 25 improves the impact sound on mass timber floors by approx. 6 dB. On a wooden beam floors by approx. 9 dB. Improvements of up to 29 dB can be achieved on an open wooden beam floors.



CE
20
ETA N° 20/0371



PhoneStar 25 - The Floor weight improvement board

- + For all kinds of Concrete floors and Timber floors
- + Ecological raw materials wood and sand
- + Replaces fillings (grit, etc.)
- + Easy to apply ceiling filling finish
- + Easy to install - a particularly handy format
- + Flat board material - no leveling of fillings required
- + Can be laid floating or glued
- + No waiting times - immediately walkable and resilient
- + Supply lines can be laid on PhoneStar 25 in order to prevent direct sound entry into the ceiling



Further information:
www.wolf-bavaria.com



Simple and fast

Floor weight improvement board as a replacement for bulk fillings.



PhoneStar 25 - as a Floor weight improvement board

PhoneStar 25 - as line level / height compensation

Technical data PhoneStar 25

Length	800 mm	
Width	600 mm	
Thickness	25 mm	
Weight	39 kg/m ²	
Fire-resistant material category	E	DIN EN 13501
Item number	1011	

✓user-friendly
✓dry ✓effective



PhoneStar 25 can be laid in multiple layers to achieve even higher sound insulation values.

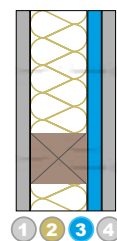
Lightweight walls with sound and fire protection

TIMBER STUD WALL

ONE SIDE PANELLING WITH PHONESTAR

Airborne sound insulation of up to 53 dB

Fire resistance F 30-B

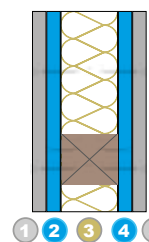


- 1 4 Fire Resistant Plasterboard 12.5 mm acc. to DIN 18180
- 2 Insulation Layer of 40 mm Thickness minimum (30 kg/m³)
- 3 PhoneStar ST Tri - 12.5 mm

BOTH SIDES PANELLING WITH PHONESTAR

Airborne sound insulation up to 64 dB

Fire resistance F 30-B



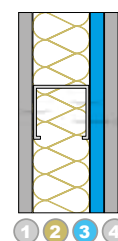
- 1 5 Fire Resistant Plasterboard 12.5 mm acc. to DIN 18180
- 3 Insulation Layer of 40 mm Thickness minimum (30 kg/m³)
- 2 4 PhoneStar ST Tri - 12.5 mm

METAL STUD WALL

ONE SIDE PANELLING WITH PHONESTAR

Airborne sound insulation of up to 61 dB

Fire resistance F 30-AB

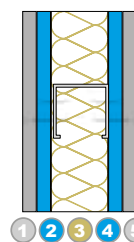


- 1 4 Fire Resistant Plasterboard 12.5 mm acc. to DIN 18180
- 2 Insulation Layer of 40 mm Thickness minimum (30 kg/m³)
- 3 PhoneStar ST Tri - 12.5 mm

BOTH SIDES PANELLING WITH PHONESTAR

Airborne sound insulation up to 65 dB

Fire resistance F 30-AB



- 1 5 Fire Resistant Plasterboard 12.5 mm acc. to DIN 18180
- 3 Insulation Layer of 40 mm Thickness minimum (30 kg/m³)
- 2 4 PhoneStar ST Tri - 12.5 mm

FURTHER FIRE PROTECTION CLASSES

Fire Resistant Plasterboard acc. to DIN 18180 including PhoneStar

Fire hazard class	Insulating material Minimum thickness / minimum bulk density mm / kg/m³	Plasterboard acc. to DIN 18180 on both sides
F 60-B	40/40	each 2 x 12.5 mm or 1 x 25 mm each
F 90-B	80/100	each 2 x 12.5 mm

Fire protection according to DIN 4102-4: 2016-05 table 10.3 and Expertise IBB No. 6A-2017/113-Mey

FURTHER FIRE PROTECTION CLASSES

Fire Resistant Plasterboard acc. to DIN 18180 including PhoneStar

Fire hazard class	Insulating material Minimum thickness / minimum bulk density mm / kg/m³	Plasterboard acc. to DIN 18180 on both sides
F 60-AB	40/40	each 2 x 12.5 mm or 1 x 25 mm each
F 90-AB	40/100	each 2 x 12.5 mm
	60/50	
	80/30	

Fire protection according to DIN 4102-4: 2016-05 table 10.2 and Expertise IBB No. 6A-2017/113-Mey

- ✓ Retrofit ✓ New build
- ✓ Timber frame houses
- ✓ Masonry houses

In an Expertise, IBB GmbH from Groß Ipper has confirmed that PhoneStar only results in a slight deviation when used in wall constructions according to DIN 4102:2016-5.



Current fire protection reports are available on request



Lightweight walls with sound insulation

Tested solutions for soundproof, non-load-bearing Metal Stud Wall

Depiction	Depiction	Total thickness [mm]	Airborne Sound Insulation measure $R_w(C;Ctr)$ according to ISO 10140-2
** 56 dB 	- Plaster board* 15 mm - EGGER Ergo Board - OSB 12 mm - Metal Stud w. MiWo* 40 kg/m³ 100mm - EGGER Ergo Board - OSB 12 mm - Plaster board* 15 mm	154	56 dB (-3/-8)
61 dB 	- Plaster board* 15 mm - EGGER Ergo Board - OSB 12 mm - Metal Stud w. MiWo* 40 kg/m³ 100mm - EGGER Ergo Board - OSB 12 mm - PhoneStar Tri 15 mm - Plaster board* 15 mm	169	61 dB (-2/-6)
65 dB 	- Plaster board* 15 mm - PhoneStar Tri 15 mm - EGGER Ergo Board - OSB 12 mm - Metal Stud w. MiWo* 40 kg/m³ 100mm - EGGER Ergo Board - OSB 12 mm - PhoneStar Tri 15 mm - Plaster board* 15 mm	184	65 dB (-2/-7)

*Plasterboard according to EN 520 - type DF. / Mineral wool (MiWo) according to EN 13162A1, melting temperature 1000 °C / Profiles metal frame: max. distance 625 mm. ** Fire protection according to REI 60 according to test certificate P-SAC-02/ III-804Ä



Test report available on request

Test report of MFPA Leipzig PB 4.2/16-393-(1-5)

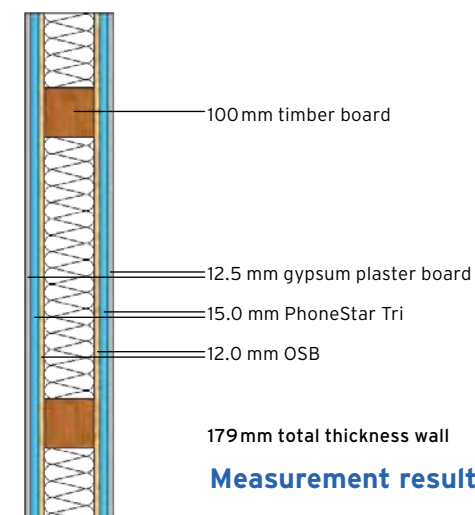
Single-leaf apartment partitions wall with sound insulation

Measurement of an apartment partition in a reference object. The building acoustic measurement of airborne sound shows the increased sound insulation $R_w \geq 56$ dB between the wall (living) and child 2 on the ground floor.



Apartment partition in prefabrication

Wall structure with PhoneStar



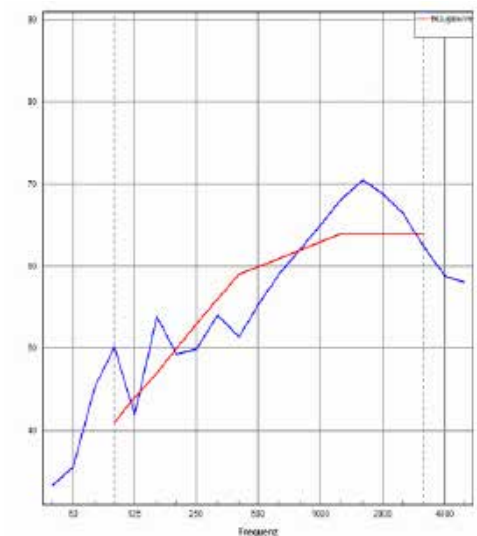
179 mm total thickness wall

Measurement result: R_w 60 dB

Test report airborne sound insulation ISO 16283-1

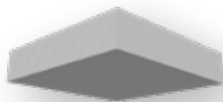
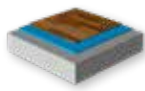
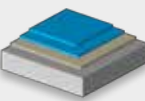
Frequenz [Hz]	R_w [dB]
50	33.3
63	35.6
80	45.3
100	50.2
125	41.9
160	53.9
200	49.3
250	50.0
315	54.0
400	51.5
500	55.4
630	59.1
800	62.2
1000	65.0
1250	68.1
1600	70.5
2000	68.8
2500	66.5
3150	62.4
4000	58.8
5000	58.0

Test report MB 1119


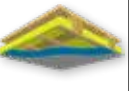
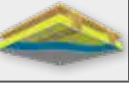

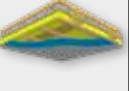





Sound reduction index ISO 717-1 $R_w(C;Ctr)$: 60 (-1;-4)dB

PhoneStar floor systems - Concrete floors

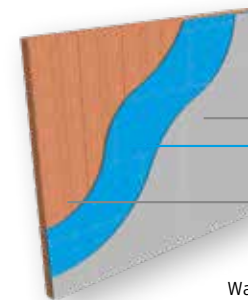
Initial Value Thickness of Floor: 180 mm	System Code	Depiction	Construction Details	PhoneStar (Board thickness)	Overall height total- Construction	Impact sound improvement ΔL_w
CONCRETE SLABS 	BM 1.2		Laminate 8 mm PhoneStar	Tri - 15 mm	23 mm	22 dB
	BM 1.5		No final flooring 2 x PhoneStar 20 mm Wood Fibre (WF) ($s' = 50 \text{ MN/m}^3$)	Twin - 10 mm	40 mm	26 dB

PhoneStar ceiling systems

TIMBER CEILING	System Code	Depiction	Construction Details	Board Thickness	Final Construction Height	Airborne sound improvement ΔR_w	Impact sound improvement ΔL_w
Ceiling Cover in Place  $R'_{w,R} = 46 \text{ dB}$ $L'_{n,w,R} = 75 \text{ dB}$	DHG L 1.3		Battens 48/24	ST Tri 12.5 mm Fire Resistant Plasterboard 12.5 mm	55 mm	12 dB	15 dB
	DHG H 1.3		Wolf TPS 25	ST Tri 12.5 mm Fire Resistant Plasterboard 12.5 mm	52 mm	18 dB	25 dB
Traditional Timber Floor  $R'_{w,R} = 46 \text{ dB}$ $L'_{n,w,R} = 66 \text{ dB}$	DHA L 1.3		Battens 48/24	ST Tri 12.5 mm Fire Resistant Plasterboard 12.5 mm	55 mm	12 dB	15 dB
	DHA H 1.3		Wolf TPS 25	ST Tri 12.5 mm Fire Resistant Plasterboard 12.5 mm	52 mm	18 dB	25 dB
Mass Timber  $R'_{w,R} = 42 \text{ dB}$ $L'_{n,w,R} = 76 \text{ dB}$	DHB H 1.3		Battens 60/40 Wolf TPS 25	ST Tri 12.5 mm Plasterboard 12.5 mm	52 mm	11 dB	14 dB

The values given are guide values and may vary depending on the type of overall structure and the individual construction site situation. They serve primarily to compare the individual systems.

PhoneStar Wall systems













- 1 Plasterboard 12,5 mm - according to DIN 18180
- 2 PhoneStar Tri 15 mm attached directly to the wall with Wolf wall plug fixings.
- 3 Solid wall 120 mm

Prime example
Wall structure solid wall



All the tested system structures are recorded and released in ETA-20/0371

	System Code	Construction Details	Construction Details	Board thickness	Depth of Structure (excluding the wall)	Airborne sound Insulation R_w	Airborne sound improvement ΔR_w
MASONRY  Initial Value: $R_w = 42 \text{ dB}$ Thickness: 120 mm	WMZ D 1.2		Directly plugged*	15 mm Tri 12.5 mm GKB	27.5 mm	48 dB	6 dB
	WMZ W 1.2		Wood Fibre Boards 12 mm	15 mm Tri 12.5 mm Plasterboard	39.5 mm	50 dB	8 dB
	WMZ W 1.2.2		Wood Fibre Boards 12 mm	2 x 15 mm Tri 12.5 mm Plasterboard	54.5 mm	54 dB	12 dB
	WMZ L 1.2		Battens decoupled 60/40	15 mm Tri 12.5 mm Plasterboard	70.5 mm	59 dB	17 dB
	WMZ L 1.2 OSB		Battens decoupled 60/40	18 mm OSB, 15 mm Tri, 12.5 mm Plasterboard	88.5 mm	59 dB	17 dB
	WMZ V 1.2		Curtain walling CW 50 insulated	15 mm Tri 12.5 mm Plasterboard	87.5 mm	66 dB	24 dB
Mass Timber  Initial Value: $R_w = 34 \text{ dB}$ Thickness: 100 mm	WMZ L 1.2		Battens 60/40	15 mm Tri	57.5 mm	50 dB	16 dB
	WMH H 1.2		CD 60/27 Direct vibration hangers	15 mm Tri 12.5 mm Plasterboard	54.5 mm	56 dB	22 dB

The values given are guide values and may vary depending on the type of overall structure and the individual construction site situation. They are primarily used to compare the individual systems. * Only for cladding with plasterboard.



Loft conversion
PhoneStar installation in one layer



Modular construction - PhoneStar
installation in multiple glued layers



Wall insulation
PhoneStar ST

Closed wooden Beam Floors



Bare ceiling: Closed wooden beam floors 100/240 KVH / 240mm MF / 22mm OSB 80 mm bound limestone grit filling finish		2 x 15mm PhoneStar Tri				2 x 10mm PhoneStar Twin		
			4mm Protect	20mm Gutex	40mm Gutex gf	4mm Protect	20mm Steico B	40mm Gutex gf
48/24 Battens	12.5 mm GKF	L _{n,w}	59 dB	56 dB	55 dB	59 dB	55 dB	57 dB
		R _W	63 dB	66 dB	67 dB	63 dB	65 dB	65 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	42 dB	41 dB	41 dB	42 dB	40 dB	42 dB
		R _W	≥ 70 dB	78 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB
Hanger Wolf TPS 25	12.5 mm GKFI	L _{n,w}	36 dB	37 dB	37 dB	37 dB	36 dB	38 dB
		R _W	≥ 75 dB	81 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	33 dB	31 dB	34 dB	33 dB	32 dB	36 dB
		R _W	≥ 75 dB	84 dB	≥ 75 dB	≥ 75 dB	84 dB	≥ 75 dB
Bare ceiling: Closed wooden beam floors 100/240 KVH / 240mm MF / 22mm OSB 80 mm bound limestone grit filling finish		18 mm Gypsum fiber pre-finished screed / 20 mm PowerFloor Light 2 x 15 mm PhoneStar Tri				18 mm Gypsum fiber pre-finished screed / 20 mm PowerFloor Light 2 x 10 mm PhoneStar Twin		
			4mm Protect	20mm Gutex	40mm Gutex gf	4mm Protect	20mm Steico B	40mm Gutex gf
48/24 Battens	12.5 mm GKF	L _{n,w}	59 dB	56 dB	55 dB	59 dB	55 dB	57 dB
		R _W	63 dB	66 dB	67 dB	63 dB	65 dB	65 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	41 dB	40 dB	40 dB	41 dB	40 dB	42 dB
		R _W	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB
Hanger Wolf TPS 25	12.5 mm GKFI	L _{n,w}	36 dB	37 dB	37 dB	37 dB	36 dB	38 dB
		R _W	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	32 dB	30 dB	33 dB	32 dB	31 dB	35 dB
		R _W	≥ 75 dB	84 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB
Bare ceiling: Closed wooden beam floors 100/240 KVH / 240mm MF / 22mm OSB 80 mm bound limestone grit filling finish		18 mm Gypsum fiber pre-finished screed / 24 mm PowerFloor Eco 2 x 15 mm PhoneStar TRI				18 mm Gypsum fiber pre-finished screed / 20 mm PowerFloor Eco 2 x 10 mm PhoneStar Twin		
			4mm Protect	20mm Gutex	40mm Gutex gf	4mm Protect	20mm Steico B	40mm Gutex gf
48/24 Battens	12.5 mm GKF	L _{n,w}	59 dB	56 dB	55 dB	59 dB	55 dB	57 dB
		R _W	63 dB	63 dB	67 dB	63 dB	65 dB	65 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	41 dB	40 dB	40 dB	41 dB	40 dB	42 dB
		R _W	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB	≥ 70 dB
Hanger Wolf TPS 25	12.5 mm GKFI	L _{n,w}	36 dB	37 dB	37 dB	37 dB	36 dB	38 dB
		R _W	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB
	12.5 mm PhoneStar 12.5 mm GKFI	L _{n,w}	32 dB	32 dB	33 dB	32 dB	31 dB	35 dB
		R _W	≥ 75 dB	83 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB	≥ 75 dB

The values given are guide values and may vary depending on the type of overall structure and the individual construction site situation. They serve primarily to compare the individual systems. The values in bold of the assessed sound insulation indices and standard impact sound level are measured values.

Mass Timber Floor



Bare ceiling: 140 mm solid Timber Floor 80 mm cement-bound grit filling finish		15 mm PhoneStar Tri				10 mm PhoneStar Twin		
Suspended ceiling			4mm Protect	Floor 220	Acoustics EP 3	4mm Protect	Floor 220	Acoustics EP 3
Visible ceiling		L _{n,w}	52 dB	47 dB	44 dB	54 dB	49 dB	46 dB
		R _w	57 dB	61 dB	61 dB	52 dB	56 dB	56 dB
60/40 Battens	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	56 dB	51 dB	48 dB	58 dB	53 dB	50 dB
		R _w	53 dB	57 dB	57 dB	48 dB	52 dB	52 dB
60/40 Battens / Hanger Wolf TPS 25	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	38 dB	33 dB	30 dB	40 dB	35 dB	32 dB
		R _w	68 dB	72 dB	72 dB	63 dB	67 dB	67 dB
Bare ceiling: 140 mm solid Timber Floor 80 mm cement-bound grit filling finish		2 x 15 mm PhoneStar Tri				2 x 10 mm PhoneStar Twin		
Suspended ceiling			4mm Protect	Floor 220	Acoustics EP 3	4mm Protect	Floor 220	Acoustics EP 3
Visible ceiling		L _{n,w}	49 dB	44 dB	41 dB	51 dB	46 dB	43 dB
		R _w	64 dB	68 dB	68 dB	59 dB	63 dB	63 dB
60/40 Battens	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	53 dB	48 dB	45 dB	55 dB	50 dB	47 dB
		R _w	60 dB	64 dB	64 dB	55 dB	59 dB	59 dB
60/40 Battens / Hanger Wolf TPS 25	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	35 dB	30 dB	27 dB	37 dB	32 dB	29 dB
		R _w	75 dB	≥ 75 dB	79 dB	70 dB	74 dB	74 dB
Bare ceiling: 140 mm solid Timber Floor 80 mm cement-bound grit filling finish		18 mm GF pre-finished screed 2 x 15 mm PhoneStar Tri				18 mm GF pre-finished screed 2 x 10 mm PhoneStar Twin		
Suspended ceiling			4mm Protect	Floor 220	Acoustics EP 3	4mm Protect	Floor 220	Acoustics EP 3
Visible ceiling		L _{n,w}	52 dB	47 dB	44 dB	54 dB	49 dB	46 dB
		R _w	62 dB	66 dB	66 dB	57 dB	61 dB	61 dB
60/40 Battens	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	56 dB	51 dB	48 dB	58 dB	53 dB	50 dB
		R _w	58 dB	62 dB	62 dB	53 dB	57 dB	57 dB
60/40 Battens / Hanger Wolf TPS 25	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	35 dB	30 dB	27 dB	37 dB	32 dB	29 dB
		R _w	75 dB	≥ 75 dB	79 dB	70 dB	74 dB	74 dB
Bare ceiling: 140 mm solid Timber Floor 80 mm cement-bound grit filling finish		50 mm cement screed 2 x 15 mm PhoneStar Tri				50 mm cement screed 2 x 10 mm PhoneStar Twin		
Suspended ceiling			4mm Protect	Floor 220	Acoustics EP 3	4mm Protect	Floor 220	Acoustics EP 3
Visible ceiling		L _{n,w}	53 dB	48 dB	45 dB	55 dB	50 dB	47 dB
		R _w	66 dB	70 dB	70 dB	61 dB	65 dB	65 dB
60/40 Battens	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	57 dB	52 dB	49 dB	59 dB	54 dB	51 dB
		R _w	62 dB	66 dB	66 dB	57 dB	61 dB	61 dB
60/40 Battens / Hanger Wolf TPS 25	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	39 dB	34 dB	31 dB	41 dB	36 dB	33 dB
		R _w	≥ 75 dB	≥ 75 dB	≥ 75 dB	72 dB	≥ 75 dB	≥ 75 dB
Bare ceiling: 140 mm solid Timber Floor 80 mm cement-bound grit filling finish		18 mm GF pre-finished screed / PowerFloor Light 2 x 15 mm PhoneStar Tri				18 mm GF pre-finished screed / PowerFloor Light / 2 x 10 mm PhoneStar Twin		
Suspended ceiling			4mm Protect	Floor 220	Acoustics EP 3	4mm Protect	Floor 220	Acoustics EP 3
Visible ceiling		L _{n,w}	51 dB	46 dB	43 dB	53 dB	48 dB	45 dB
		R _w	62 dB	66 dB	66 dB	57 dB	61 dB	61 dB
60/40 Battens	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	55 dB	50 dB	47 dB	57 dB	52 dB	49 dB
		R _w	58 dB	62 dB	62 dB	53 dB	57 dB	≥ 57 dB
60/40 Battens / Hanger Wolf TPS 25	12.5 mm PhoneStar Tri 12.5 mm GKB	L _{n,w}	36 dB	31 dB	28 dB	38 dB	33 dB	30 dB
		R _w	73 dB	≥ 75 dB	≥ 75 dB	68 dB	72 dB	72 dB

PhoneStrip

The principle of operation

PhoneStrip reduces both airborne and impact flanking sound transmission due to internal friction within the product itself. PhoneStrip behaves differently to most common decoupling products. When building elements begin to vibrate as a result of sound transmission, the quartz sand filling inside PhoneStrip converts the vibrations into kinetic energy through microscopic movements of the sand.

The sound transmission is therefore significantly reduced.



Cross section
of PhoneStrip

✓Certified ✓pressure-resistant ✓innovative

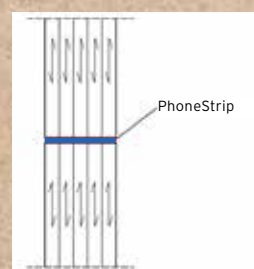


20
ETA N° 20/0371

Certified for Europe

PhoneStrip is CE-certified as a decoupling strip for absorbing vertical loads. All properties and applications as decoupling bearings for use in Europe are regulated and approved on the basis of ETA-20/0371.

Common loads in wood construction



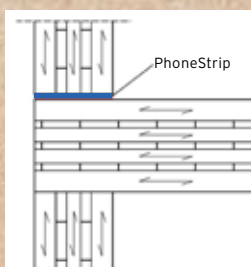
Wall-wall joint. BSH

The maximum load in wood construction occurs with a wall-to-wall joint (end grain on end grain). Using the example of a laminated timber wall of strength class GL 24h under a short exposure period ($k_{mod} = 0.9$), the maximum transferable surface load is:

$$\text{Characteristic } f_{c,0,k} = 24.00 \frac{\text{N}}{\text{mm}^2} \quad \text{Design } f_{c,0,d} = \frac{0.9}{1.3} * 24.00 \frac{\text{N}}{\text{mm}^2} = 16.61 \frac{\text{N}}{\text{mm}^2}$$

The characteristic value only slightly exceeds the area load achieved in the test.

For a wall-ceiling joint, the maximum surface load corresponds to the compressive strength of the ceiling component across the fiber. For wood-based materials, this is 2.5 N/mm².



Wall to floor joint joint. BSP

PhoneStrip

Design values

Pressure resistance

PhoneStrip has the value Characteristic $f_{c,k} = 23.00 \frac{\text{N}}{\text{mm}^2}$

and the value Design $f_{c,d} = \frac{1}{1.3} * 23.00 \frac{\text{N}}{\text{mm}^2} = 17.69 \frac{\text{N}}{\text{mm}^2}$

as strength values for the absorption of vertical loads.



The k_{mod} value is not applicable to PhoneStrip. To determine design $f_{c,d}$, the value of 1.3 used in wood construction according to DIN 1995-1-1/NA table NA.2 and 3 is used.

The basis for the values given in ETA-20/0371 were tests at the MPA Bau at TU Munich. The results were adopted 1:1 in the ETA 20/0371.

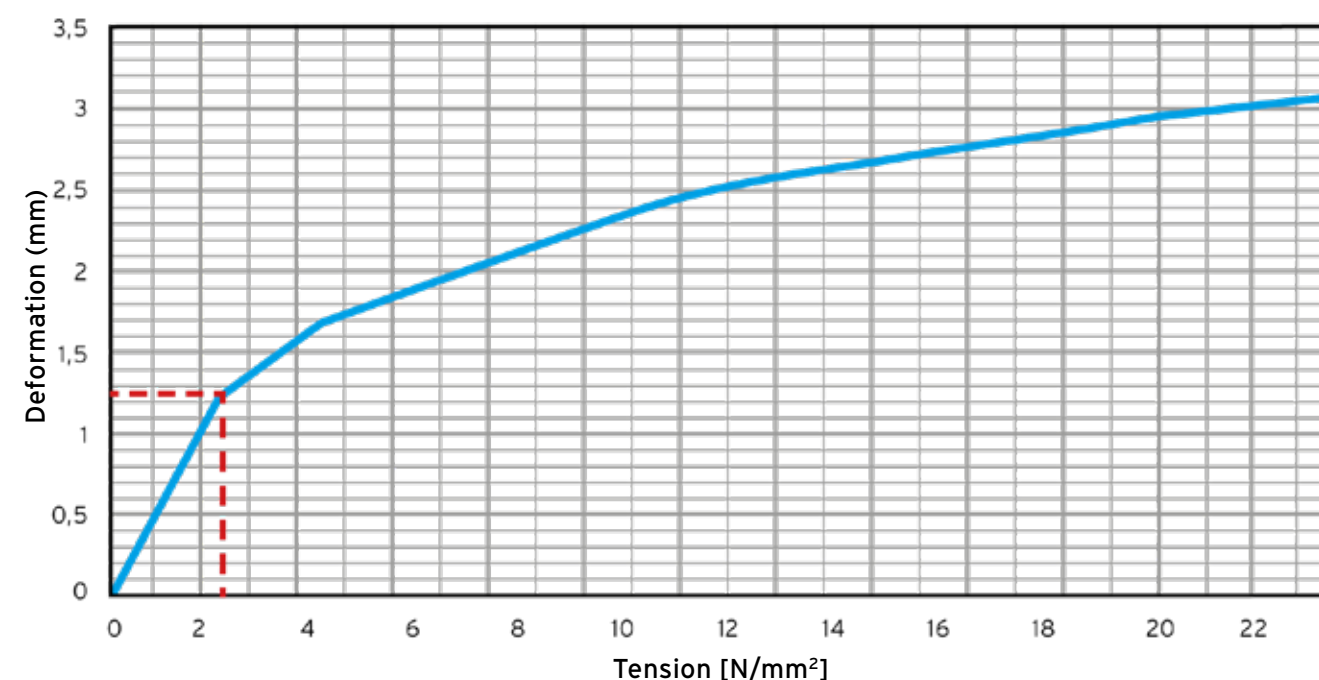
Due to the high strength values, PhoneStrip can usually be used independently of the static loads without additional calculation.

Deformation behaviour

According to ETA 20/0371, PhoneStrip has a maximum deformation at $f_{c,k} = 23.00 \text{ N/mm}^2$ of 3.5 +/- 0.5 mm (according to EN 26891 Tab 2).

The deformation under loads common in wood construction with a wall-ceiling joint of 2.5 N/mm² is specified in the ETA as 1.2 +/- 0.5 mm.

Stress-strain curve



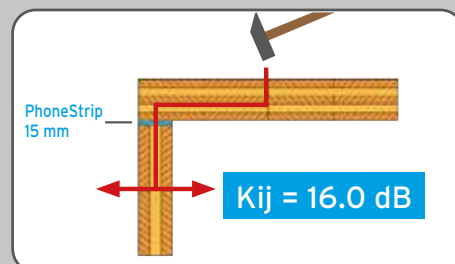
The deformation values were tested according to the test scheme of DIN EN 2689 at the MPA Bau in Munich and the evaluation is included in ETA 20/0371.



PhoneStrip test results

L-joint

Transmission route floor / lower wall



Tested build-up:

- + Floor: 140 mm, 5-layer CLT
- + Lower wall: 100 mm, 3-layer CLT

Joint execution & connecting material:

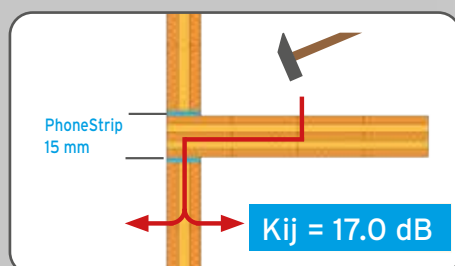
- + Floor / lower wall: PhoneStrip 15 mm; countersunk head screws with full thread 8.0 x 240/230 mm at 30 cm centres.

Wall to floor joint with PhoneStrip



T-joint

Transmission route floor / lower wall



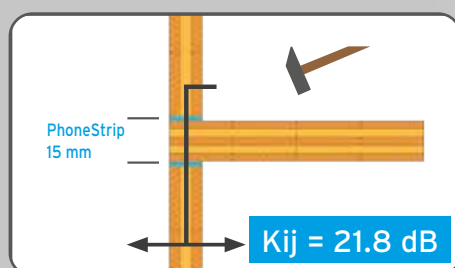
Tested build-up:

- + Upper Wall: 100 mm, 3-layer CLT
- + Floor: 140 mm, 5-layer CLT
- + Lower wall: 100 mm, 3-layer CLT

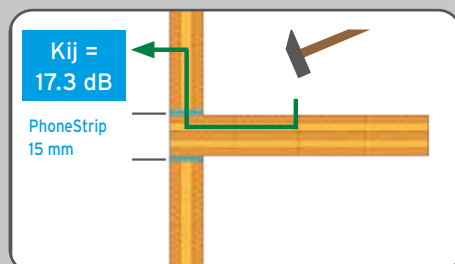
Joint execution & connecting material:

- + Floor / upper wall: PhoneStrip 15 mm; angle joint 105 x 105 x 90 mm screwed at 106 cm centres
- + Floor / lower wall: PhoneStrip 15 mm; countersunk head screws with full thread 8.0 x 240/230 mm at 30 cm centres

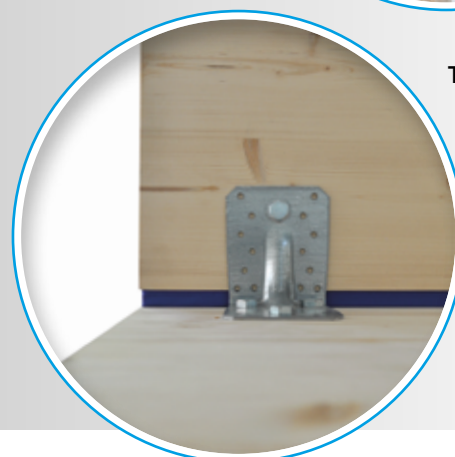
Transmission route upper wall / lower wall



Transmission route floor / upper wall



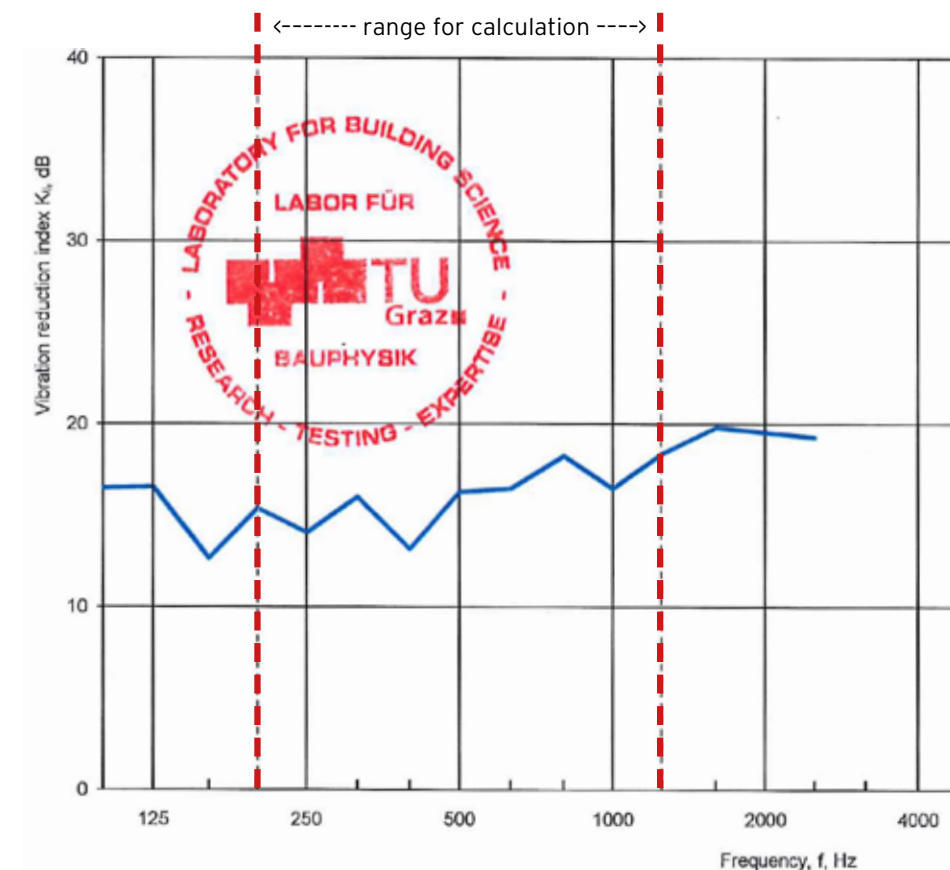
Tested build-up with angle joints and screws



Test results L-joint

Frequency f [Hz]	K _i 1/3 octave [dB]
100	16,5
125	16,6
160	12,7
200	15,4
250	14,1
315	16,0
400	13,2
500	16,3
630	16,4
800	18,2
1000	16,5
1250	18,4
1600	19,8
2000	19,5
2500	19,3
3150	*
4000	*
5000	*

* SNR < 10 dB



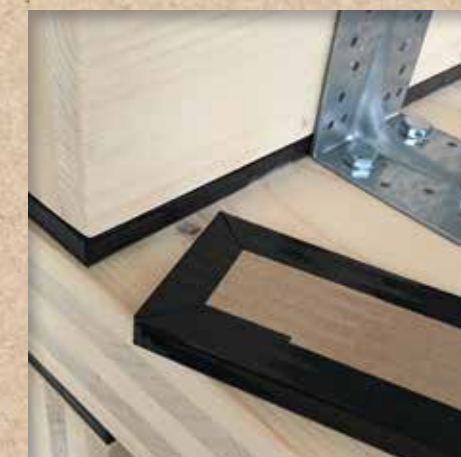
Rating according to EN ISO 10848-1:2006
K_i = 16,0 dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

Test according to EN ISO 10848-1:2006 TU Graz / test report PhoneStrip L-joint B17-278-A11004-319a_bu

The flanking sound transmission value was determined in Graz University of Technology in accordance with EN ISO 10848-1:2006. The calculation took place within the frequency range (see dotted line).



PhoneStrip can also be used as a shadow gap



Complete test certificates are available on request

PhoneStrip

Technical Data

PhoneStrip decoupling strips have been specifically designed for use on building sites.

All the edges are sealed with a special adhesive tape.

When installed, the seal creates water resistance, increases the impact resistance of the edge and makes the butt joint airtight.

PhoneStrip Technical Data

Length	1200 mm ± 3 mm	
Width	from 50 mm to 240 mm	
Thickness	15 mm ± 1 mm	
Density	1300 kg/m ³	
Weight	19 kg/m ²	
Fire-resistance class	B2/E	DIN 4102/EN 13501
Pressure resistance: Characteristic $f_{c,kw}$	23.00 N/mm ²	ETA-20/0371
Pressure resistance: Design $f_{c,d}$	17.69 N/mm ²	
Security factor	1.3	according to DIN 1995-1-1/NA, table NA.2 and 3
K_{mod} value	0	ETA-20/0371
Final deformation at 2.5 N/mm ²	1.2 mm +/- 0.5 mm	ETA-20/0371
Kij-value L-joint	16 dB	EN ISO 10848-1:2006
Kij-value T-joint	17 dB	Ceiling / lower wall
	17.3 dB	Ceiling / Upper wall
	21.8 dB	upper wall / lower wall
Thermal Conductivity	0.17 W/(mK)	DIN 4108-3:2001-07
Thickness swelling	2 %	after 24 h of keeping it in cold water
Natural weathering	maximum 4 weeks	in installed condition



Further information:
www.wolf-bavaria.com

PhoneStrip

Processing



CUT

The length is cut with a knife or jigsaw.

TAPING

The open cut edge can easily be closed again with PhoneStrip Tape.

LAYING

The decoupling strips can be nailed, glued or screwed to the construction to fix the position, whereby the laminated side must point towards the outside weather. Installation in the rain does not harm the decoupling strip according to ETA 20/0371.

SERVICE LIFE

The ETA 20/0371 certifies PhoneStrip for an unlimited lifespan when properly installed and in a dry environment.



✓environmentally friendly ✓effective ✓tested

Areas of application



Photo credit: Dormeier Carpentry

The Features and Benefits of PhoneStrip

- + Naturally made of sand and wood
- + Sound decoupling is not related to the on-site design load
- + No risk of mix-up of grade to be used - versatile product
- + Easy to specify
- + High performance in low frequency range

SAND ← → WOOD



* The color of the adhesive tape may vary.

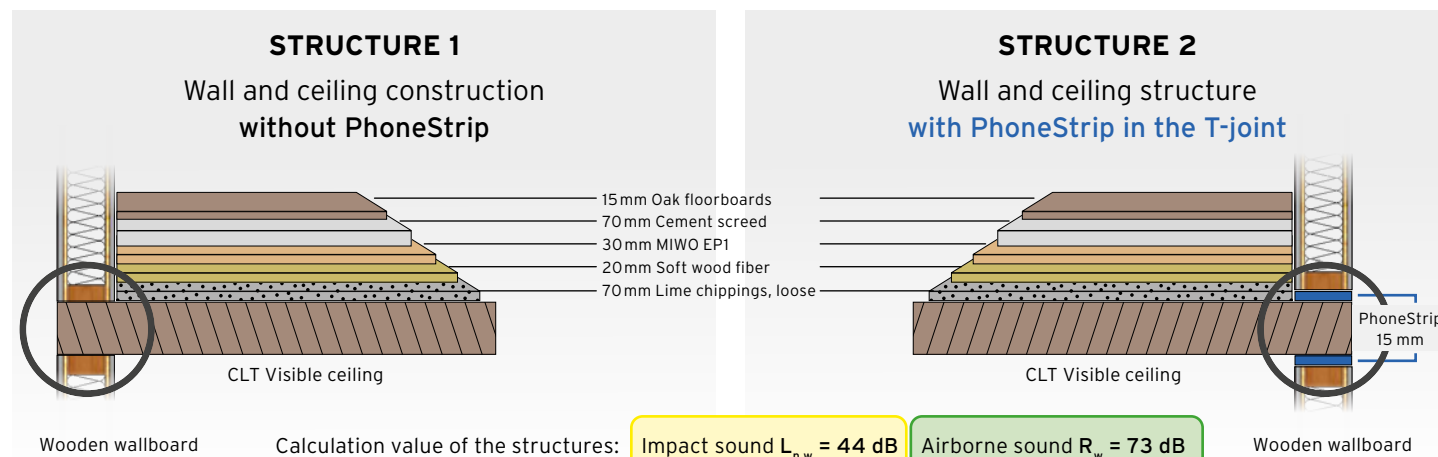


PhoneStrip in practice

QUESTION: How does the PhoneStrip decoupling strip affect the impact sound level?

STEP 01

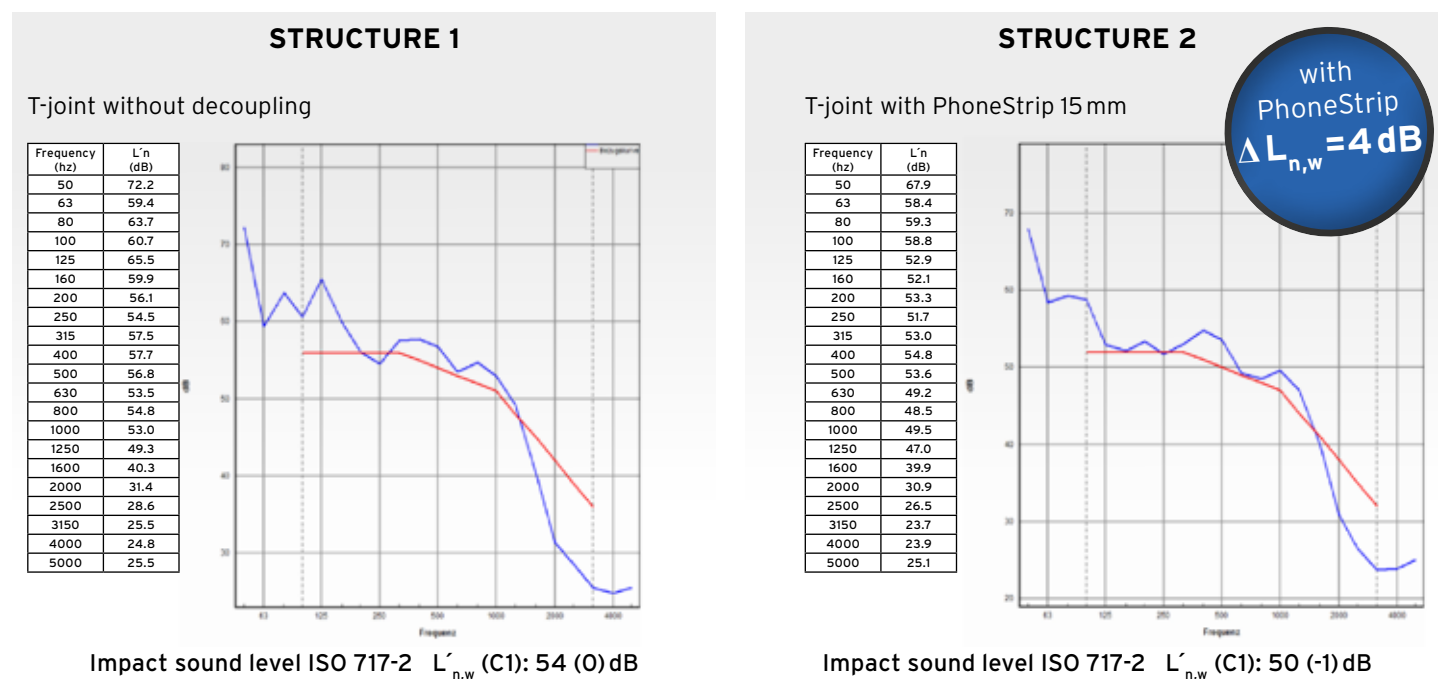
INITIAL SITUATION: Two identical apartment dividing ceilings, with and without a decoupled T-joint, were built in one property.



STEP 02

CEILING MEASUREMENT: The two installations were measured with and without decoupled T-joints.

IMPACT SOUND MEASUREMENT



CONCLUSION: The use of the PhoneStrip decoupling strip results in an impact sound improvement of 4 dB in this object.



PhoneStrip in practice

QUESTION: How high is the Kij (joint insulation dimension) without using PhoneStrip?

STEP 03

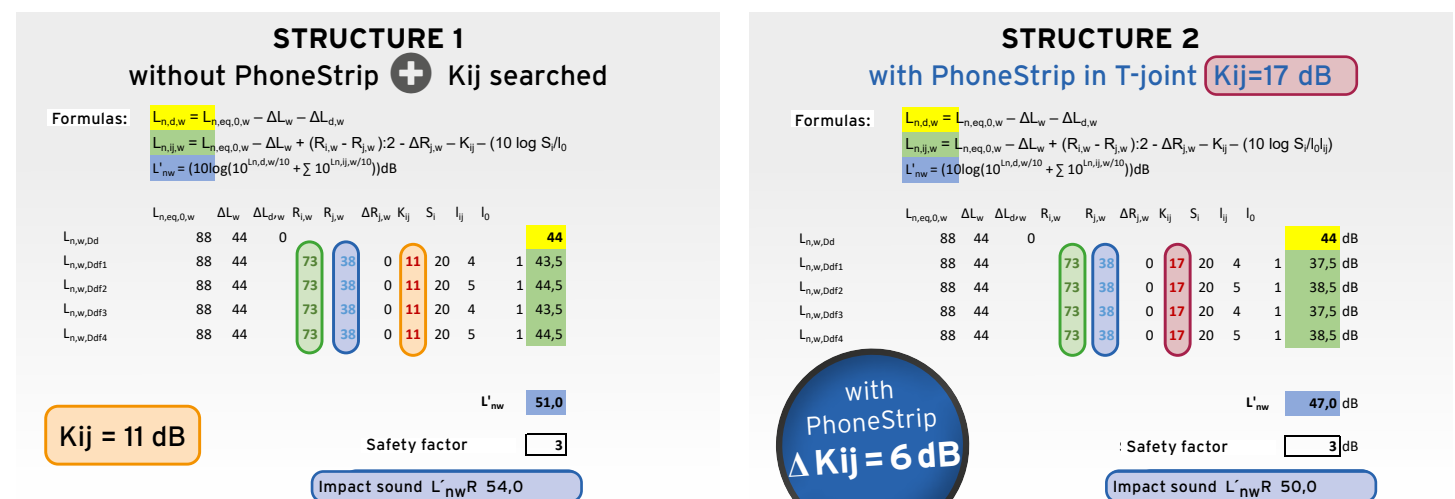
REQUIREMENT: The following values serve as the basis for the calculation: The airborne sound (R_w) of the wall, impact sound ($L_{n,w}$) of the ceiling and the joint insulation dimension (Kij) of the wall to be checked.



STEP 04

CHECK: On the basis of the agreement of the measurement results with the arithmetical sound-proofing certificate according to DIN EN ISO 12354-1: 2017, the joint insulation dimension (Kij) is determined using the interactive method of the Kij without PhoneStrip.

PROOF OF SOUND INSULATION ACCORDING TO DIN EN ISO 12354-1:2017



→ Retroactive calculation of the improvement in the Kij

As a result, the Kij value is reduced until the impact sound level of $L'_{n,w} = 54$ dB from the measurement of structure 1 (p. 22) is reached.

→ Certificate

Finding: Construction site measurements and calculations arrive at the same impact sound level.



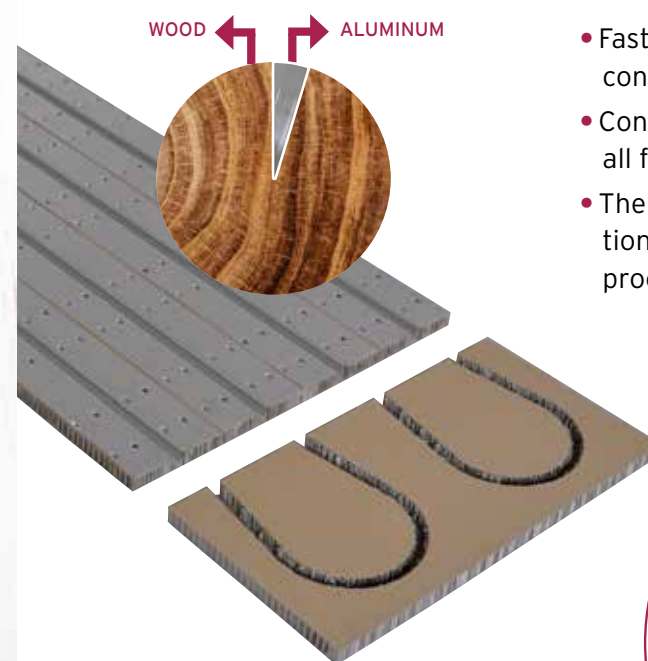
CONCLUSION & DERIVATION: An improvement in the T-impact of ~ 6 dB can be calculated from the measurements in this object. This leads to an impact sound improvement of ~ 4 dB. As a result, it can be deduced that the improvement of the joint by PhoneStrip can also be transferred to other constructions – independently of the outgoing Kij without decoupling–



PowerFloor - an inspiring product



✓super light ✓super slim
✓easy to install



- Fast reaction time and precise controllability
- Constructions are available to suit all finished floor coverings
- The individually created installation plan ensures simple and quick processing.

- Versatile in use due to low weight and thin construction height of 20 or 24 mm
- Available with and without high quality 16mm plastic and metal composite pipes.

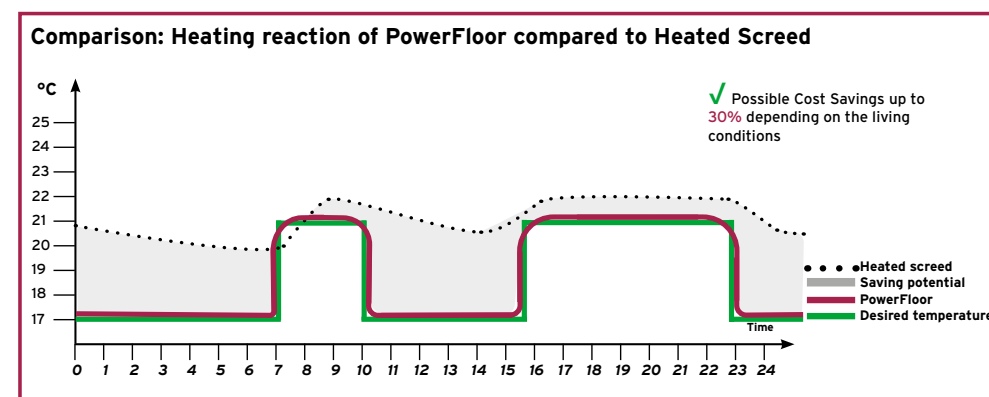
PowerFloor is ideal for low temperature heating systems. A water temperature control unit allows connection to existing heating systems



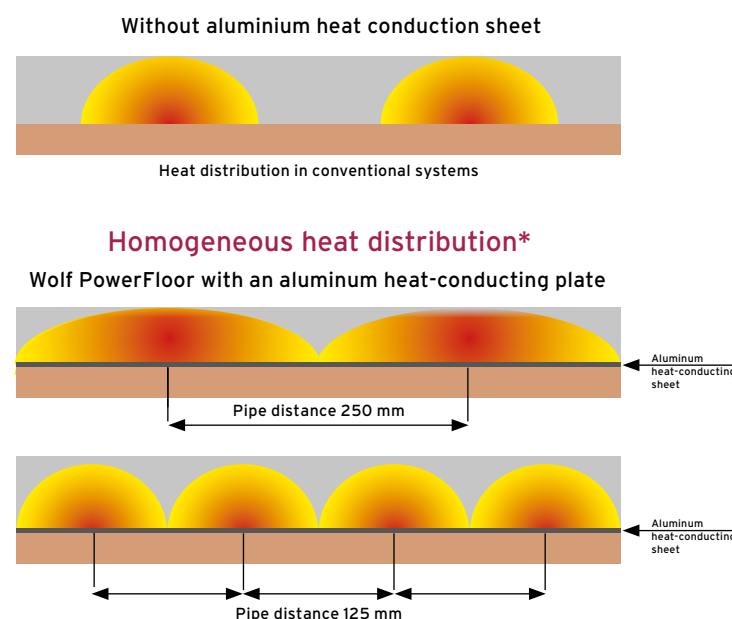
Advantages

5 Inspiring Advantages!

- + Free design planning
- + Full surface heat
- + Pleasant radiant heat
- + Low flow temperature
- + Suitable for solar and heat pumps



PowerFloor adapts to the desired temperature faster and can thus reduce operating costs. Source: Arge Stiba



The system for individual requirements

- + Fast Installation and immediately usable
- + Immediately ready for final floor covering
- + No drying time
- + No heating costs during floor construction
- + Construction height 2 - 2.4 cm
- + The underfloor heating reacts promptly to changes in temperature
- + High energy efficiency, saves heating costs
- + System only weighs 3 - 6 kg/m² approx.

* The task of underfloor heating is to heat the room. In the case of drying systems, inhomogeneous heat distribution in the floor area can occur due to differently arranged floor areas (aluminum distribution) and low pipe coverings. However, this does not limit the room heating function.



Product range

Our PowerFloor product line is suitable for a wide range of applications. The correct selection depends on the heating medium and the subsequent end covering.

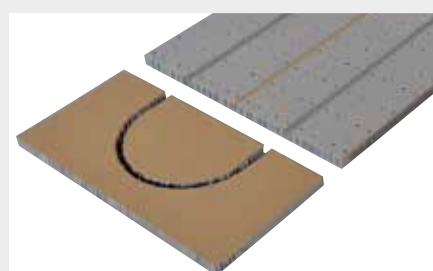
Light

PowerFloor Light

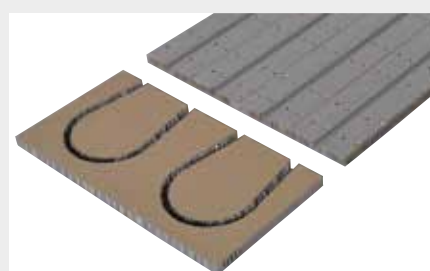
LxWxH: Straight Element:
1000 x 500 x 20 mm
Deflection:
250 x 500 x 20 mm

Material: Honeycomb cardboard interior with aluminium strips between pipes on the straight elements. Aluminium not included on curved elements.

Sheet thickness: 0.4 mm
Compressive strength: 500 kPa
Weight: approx. 2.1 kg/m²



Pipe distance: 250 mm



Pipe distance: 125 mm

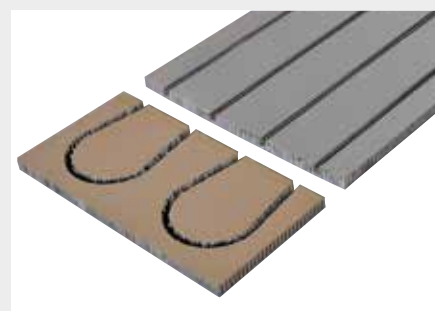
Slim

PowerFloor Slim

LxWxH: Straight element:
1000 x 500 x 24 mm
Deflection:
250 x 500 x 24 mm

Material: Honeycomb board with thick aluminum film (deflection excluded)

Foil thickness: 0.4 mm
Compressive strength: 500 kPa
Weight: approx. 2.2 Kg/m²



Pipe distance: 125 mm

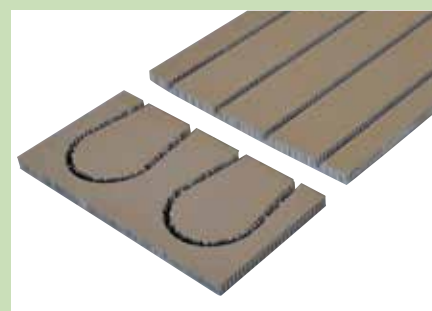
Nature

PowerFloor Nature

LxWxH: Straight element:
1000 x 500 x 24 mm
Deflection:
250 x 500 x 24 mm

Material: Honeycomb board without an aluminium heat-conducting plate

Compressive strength: 500 kPa
Weight: approx. 2.1 Kg/m²



Pipe distance: 125 mm

Eco plus

PowerFloor Eco plus

LxWxH: Straight element:
1000 x 500 x 24 mm
Deflection:
250 x 500 x 24 mm

Material: Light wood fibre with aluminum heat-conducting board (deflection excluded)

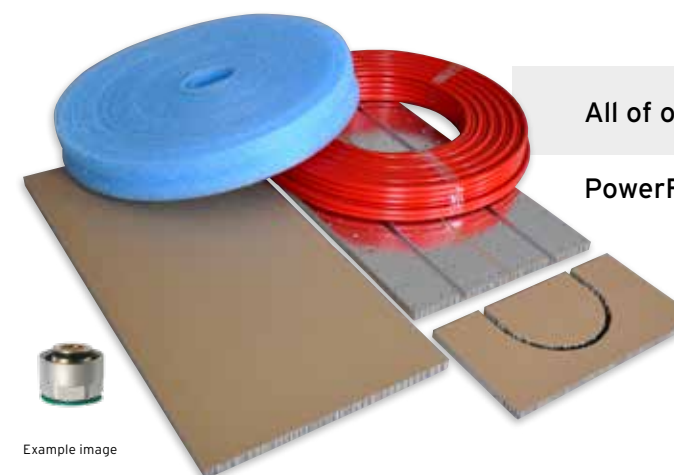
Sheet thickness: 0.4 mm
Compressive strength: 200 kPa
Weight: approx. 7.1 Kg/m²



Pipe distance: 125 mm



Packages



Example image

All of our systems are available as package solutions

PowerFloor packages include:

- Floor heating elements
- Perimeter filling elements
- Perimeter flanking strips
- Plastic and metal composite pipes ø16 mm
- Compression fitting
- Planning

Planning and installation

The PowerFloor elements will be installed according to a plan generated by Wolf Bavaria. For each heating circuit, the metal composite pipe is pressed into the grooves of the elements and connected to the distributor. PowerFloor can be connected to both low-temperature and high-temperature heating systems (with fixed value control set).



Easy to lay.

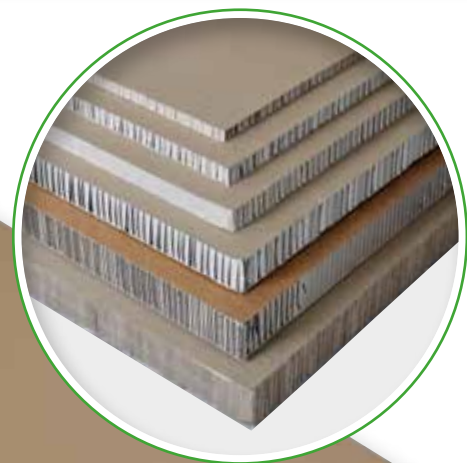


Mounting on the wall

Preliminary plan

Layout plan





Wolf Cell - Pressure-resistant height compensation

Wolf Cell is ecological and pressure-resistant height compensation for floor constructions.

Petroleum-based materials are mostly used to compensate for the height of pipes and ventilation ducts. It is often not possible to use balancing and filling materials such as grit or other fillings.

Ecological materials in the form of mineral or rock wool are available, as well as wood fiber insulation materials, but processing is complex and less pressure-resistant.

Compressive strength Problem

Common materials for height compensation usually have a compressive strength of less than 100 kPa at 10% compression, as these are usually insulation materials.

Wolf Cell has a compressive strength of over 5 kN/m² * aus.

That is why, when using Wolf Cell, there are fewer movements in the floor due to point and surface loads.

Among other things, This enables the simple laying of large-format tiles without complex measures during execution. A big advantage with dry screeds.

If different insulation materials are combined in the structure, they can have a negative impact on the impact sound insulation. Wolf Cell is largely neutral here.

* In conjunction with Wolf HUGO N+F.

Wolf Cell Technical Data

Board dimensions	1200 x 800 mm				
Available thicknesses in mm	30	40	60	70	80
Weight VE in kg/m ²	1.40	1.72	2.23	3.69	3.77
Item number	6002	6003	6004	6005	6006
Suitable for point loads	up to 4 kN*				
Compressive strength	5 kN/m ² *				
Fire-resistant material category	B2 according to DIN 4102/E according to EN 13501				

Easy processing

CUTTING

Wolf Cell can be processed easily and quickly with a cutter knife.

DISPOSAL

Remains of the Wolf Cell can be safely disposed of as waste paper.



✓easy to process
✓pressure-resistant ✓recyclable



INSTALLATION

Wolf Cell is suitable for structures with wet and dry screed. The board must be protected against rising moisture.



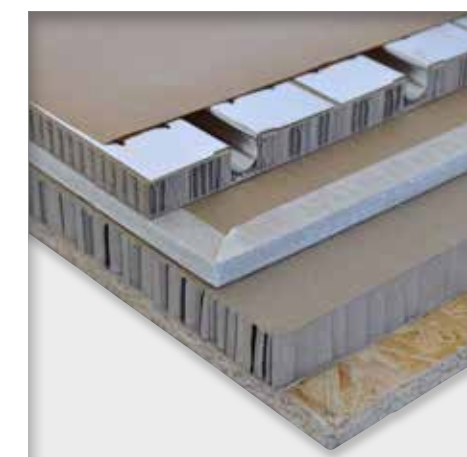
More information:
www.wolf-bavaria.com

Advantages of Wolf Cell

- + Very high resistance to compression
- + Easy to process
- + Ecological material
- + Easy disposal as waste paper
- + Suitable for large tile formats
- + Complements the Wolf Floor system



Wolf Cell can be laid in multiple layers.



Rapidly to the destination - with the right accessories

Wolf Hugo N & F - Gypsum fiber dry screed with tongue and groove connection. Simple laying with Wolf Hugo glue - without screw connections.
Item no. 3082

Wolf Cell - the pressure-resistant board for leveling the installation (pipe and ventilation ducts).
Item no. see page 28

Wolf Protect - Soft wood fiber decoupling board for use as a base for Wolf floor systems.
Item no. 3081

Wolf decoupling board - To create a decoupling level on PhoneStar for laying tiles and natural stone, as well as an alternative decoupling level for parquet.
Item no. 3091

✓dry
✓time-saving
✓effective

Time-saving and clean when processing



Item no. 1100

Item no. 1120



Item no. 1110



Wolf Roller adhesive - for glueing PhoneStar boards and PowerFloor underfloor heating.
Item no. 4085



Wolf parquet adhesive - for glueing PhoneStar onto solid substrates and parquets.
Item no. 4080

Wolf joint filler - Joint sealing in wall, floor and ceiling connections.
Item no. 4095



Wolf system glue - for glueing PhoneStar and PowerFloor panels onto board, chipboard or OSB substrates.
Item no. 4070



Wolf Hugo glue - for glueing HUGO boards to each other.
Item no. 4075



Attachment material

Wolf TPS 25 - System vibration hangers, consisting of: Profile, spring clip with screws and connector.
Item no. 4400/4402/4403

Wolf system dowel - for the direct mounting of PhoneStar on a solid wall
Item no. 4200/4201/4207/4205



Drywall screw for plasterboard on PhoneStar - with an existing substructure
Item no. 4202/4208



Drywall screw fine thread - for PhoneStar on metal structures
Item no. 4251



Drywall screw coarse thread - for PhoneStar on wooden structures
Item no. 4253

The modular building block system



The completely dry system solution of Wolf Bavaria:

- + dry screed (PhoneStar/Wolf Hugo)
- + Underfloor heating (PowerFloor)
- + Sound insulation (PhoneStar)
- + A comprehensive range of accessories

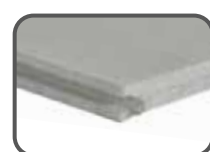
Advantages:

- + Fast, easy and clean to install
- + Ecological and economical
- + No additional moisture
- + Natural raw materials

- ≡ Everything from a single source
- ≡ According to your needs

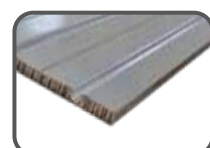
CE All structures/
constructions are
included in the CE.

A well-thought-out structure



Wolf Hugo N & F or Wolf decoupling board

- Load distribution
- Even heat distribution



Underfloor heating Wolf PowerFloor

- Underfloor heating in dry construction
- With or without an aluminum heat-conducting board



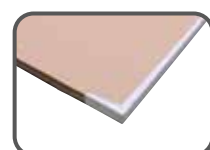
Sound proofing panels PhoneStar

- Sound insulation
- Dry screed
- Load distribution



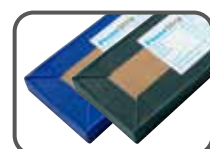
Wolf Protect / Wolf Cell (pressure-resistant compensation)

- Insulation and line level
- Installation level



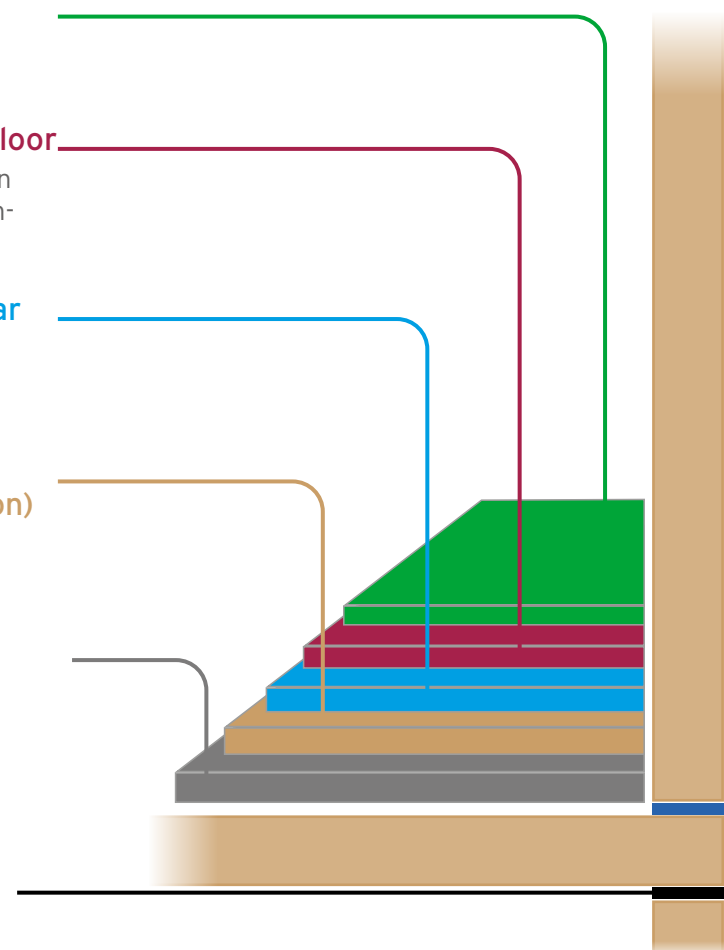
PhoneStar 25 Floor floor weight improvement board

- Leveling



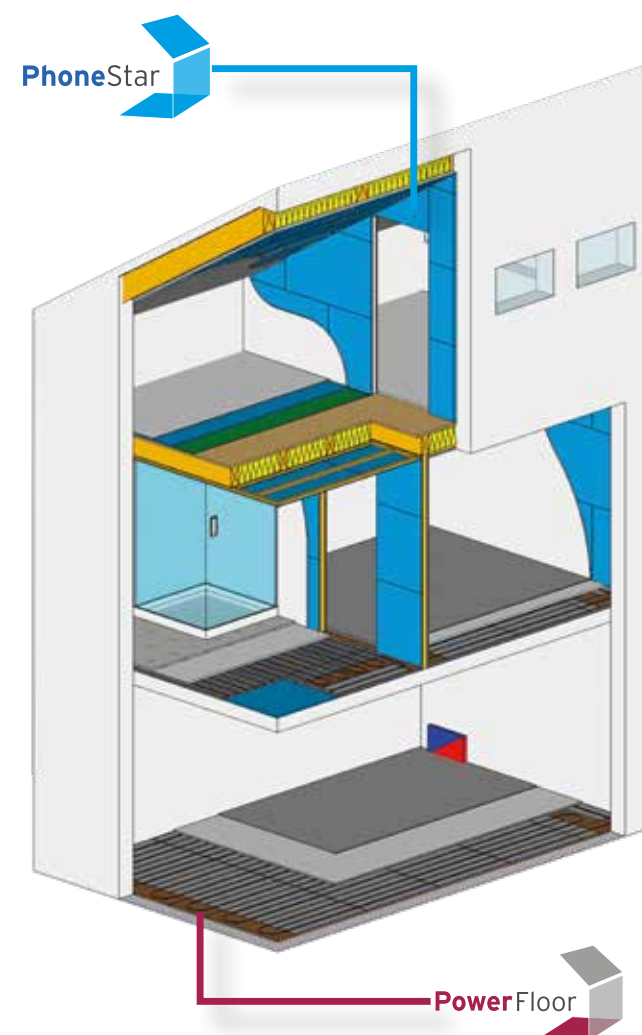
PhoneStrip Decoupling strip

- Flank decoupling
- Shadow gap



✓ Soundproofing panels ✓ Underfloor heating ✓ Accessories

Advantages that enthuse: Dry screed systems compared to wet screed



Can be used in Floors, walls & ceilings

- ✓ New buildings
- ✓ Retrofit
- ✓ Wood construction
- ✓ Solid construction

+ Wolf Bavaria Dry screed systems

HANDLING

- Easy and quick installation
- Modular system elements
- Everything from a single source

CONSTRUCTION PERIOD

- Shortened construction time since there is no drying time
- No moisture entry
- Fast covering maturity of the top covering

SOUND INSULATION

- Improvement of impact sound insulation with PhoneStar

STRUCTURE HEIGHT / WEIGHT

- Slim built height
- Weight reduction

COSTS

- Reduction of coordination costs by system supplier

+ Wet screed

HANDLING

- Contribution by specialist companies

CONSTRUCTION PERIOD

- Drying time necessary

SOUND INSULATION

- Increased risk of sound bridges

STRUCTURE HEIGHT / WEIGHT / WATER

- Loss of space due to structure
- Increased ceiling load and
- Introduction of water

COSTS

- Possible additional costs for CM measurements as well as for subsequent surface treatment



- ✓ precise
- ✓ progressive
- ✓ standardized

Our Service - Your Safety

- + Sound measurements in a real object
- + **Impact sound orientation according to ISO 140**
We measure the sound insulation of your floor and wall structures. With a standard hammer mechanism, impact sound is generated on a ceiling and the incoming impact sound level is measured in the room below.
- + **Airborne sound oriented according to ISO 140**
Analogously, the airborne sound insulation of floors and walls is determined with a dodecahedron loudspeaker.

- + Evaluation of the measurement based on the ISO 717 standard
- + Determination of the single values of the impact and airborne sound insulation
This basis is used for advice on floor and wall structures in new buildings and for upgrading existing buildings.
- + Review of the results after consultation and installation
The result is satisfied planners, house construction companies, processors and customers.



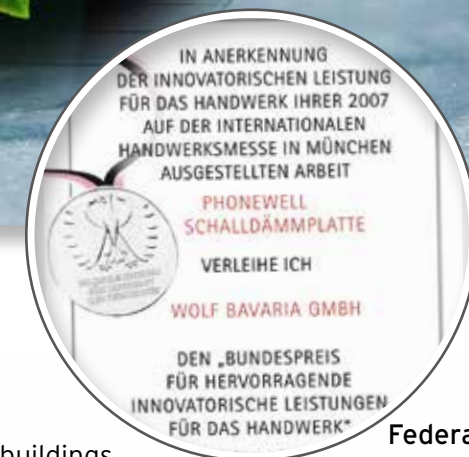
Three steps to the optimal result



We always keep thinking one step ahead

In order to come closer to our vision of dry, ecologically sensible buildings, we are continuously expanding in all areas. Since sustainable management and ecology play an important role in our company philosophy, we rely on short distances and regionality. To achieve this, we have invested in a large SELF center (training, development, logistics and research center) at our company headquarters in Heilsbronn.

There is plenty of space here for research & development and training, but also for optimizing warehouse management and for efficient order picking.



Federal award for excellent innovative services for the craft industry



Innovation prize Construma 2019

Test centers/institutes:

ift Rosenheim • MPA Leipzig
IBB • Kit Karlsruhe • Kiwa
Fraunhofer • Institut TU Munich



Further information:
www.wolf-bavaria.com

Everything from a single source



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