WOLF® Bavaria

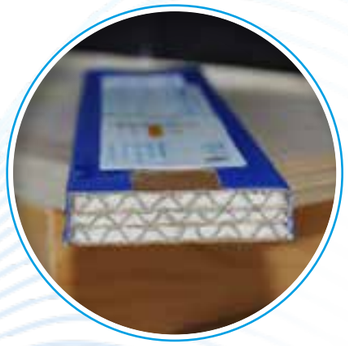
SOUND INSULATION UNDERFLOOR HEATING DRY SCREED

PHONESTRIP

Decoupling strips for timber frame and CLT constructions

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

Versatile product

Higher structual loads do not affect the principle of operation of PhoneStrip. Therefore the PhoneStrip decoupling strips can be used independently from the design load situation of the element in the building.

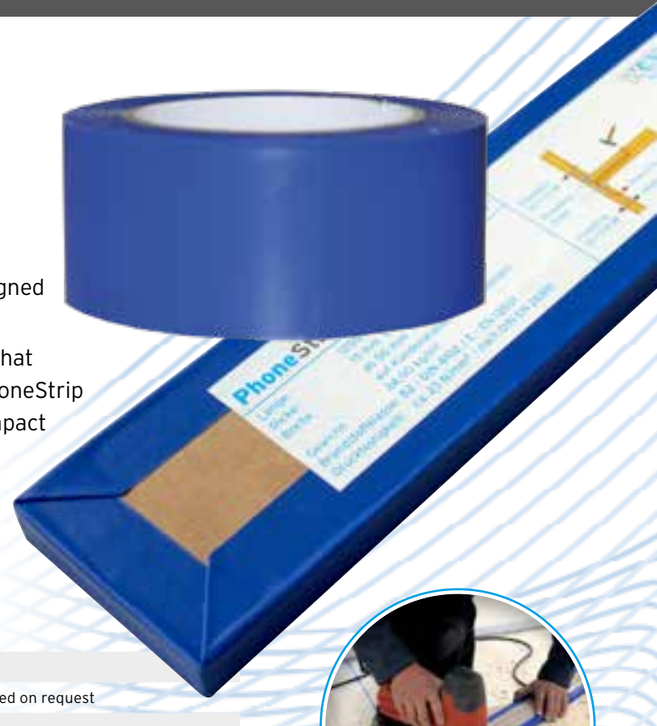
Bildquelle: Zimmerei Dormeier

✓ecological
✓effective ✓proven

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

The edges are sealed with a special tape which ensures that once installed in their final position, that the exposed PhoneStrip edges are water resistant and airtight. In addition, the impact strength will be improved at the edge of the strip.

The PhoneStrip lengths can be cut to size using a knife or jigsaw and the cut edges can be easily sealed again with the PhoneStrip tape.



Technical data of PhoneStrip

Length	1200 mm ± 3 mm	
Width	from 50 mm up to 240 mm	customized on request
Thickness	15 mm ± 1 mm	
Density	1600 kg/m³	
Weight	19,0 kg/m²	
Fire resistance class	B2/E	DIN 4102/EN 13501
Pressure resistance: Characteristic $_{fc,kw}$	23,00 N/mm²	according to DIN EN 26891
Pressure resistance: design $_{fc,d}$	17,69 N/mm²	with security factor
Security factor	1,3	following DIN 1995-1-1/NA, table NA.2 and 3
T-joint	0	GA bauart AZ: 18-G-027
Final deformation	3,5 mm +/- 0,5mm	GA bauart AZ: 18-G-027
Kij-value L-joint	16 dB	EN ISO 10848-1:2006
Kij-value T-joint	17 dB	Floor / lower wall
	17,3 dB	Floor / upper wall
	21,8 dB	upper wall / lower wall
Thermal conductivity	0,17 W/(mK)	DIN 4108-3:2001-07

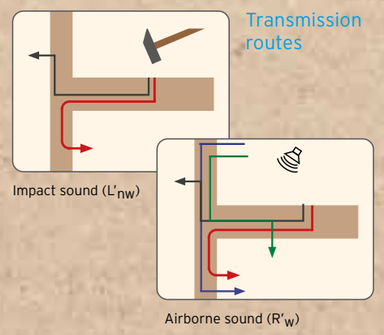
PhoneStrip is easy to use

More information:
www.wolf-bavaria.com

Decoupling in timber frame constructions – Why?

A solid timber or timber joist floor is typically not able to meet building acoustic requirements due to the low mass of the floor and the numerous sound bridges present.

Sound arising in the source room creates vibrations through the partition wall, and this is also transmitted through all adjacent elements. To reduce the airborne and impact sound transmission through walls and floors, it is necessary to install decoupling strips.



Transmission routes

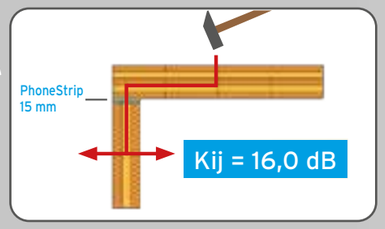
The Features and Benefits of PhoneStrip

+ 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
+ Very good price to performance ratio

PhoneStrip test results

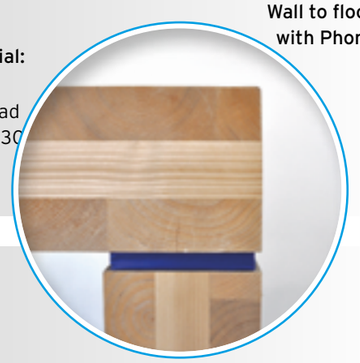
L-joint

Transmission route floor / lower wall



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

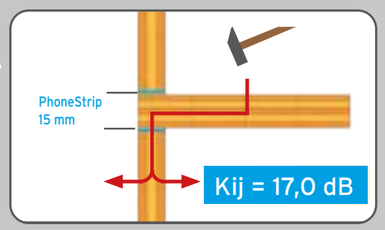
Joint execution & connecting material:
+ Floor / lower wall: PhoneStrip 15 mm; countersunk head screws with full thread 8.0 x 240/230 mm at 30 cm centres.



Wall to floor joint with PhoneStrip

T-joint

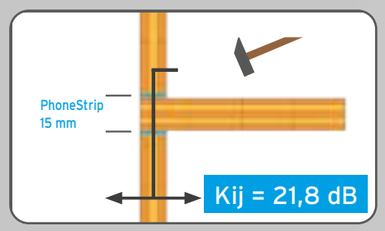
Transmission route floor / lower wall



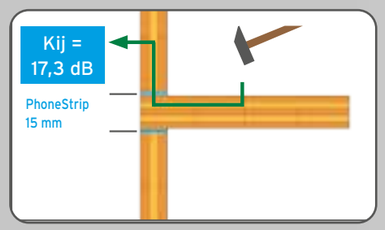
Tested build-up:
+ Upper Wall: 100 mm, 3-layer CLT
+ Floor: 140 mm, 5-layer CLT
+ Lower wall: 100 mm, 3-layer CLT

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

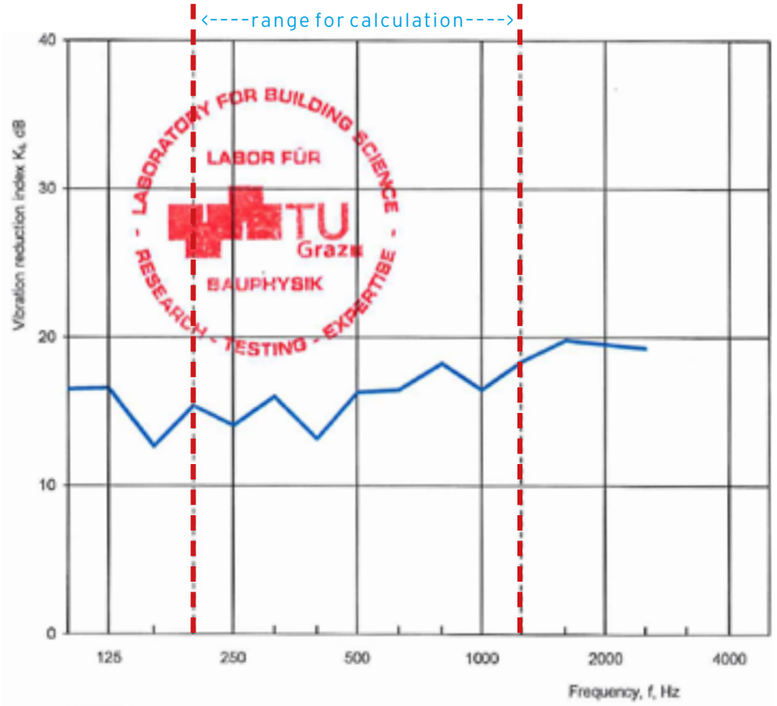


Tested build-up with angle joints and screws

Sound paths in timber constructions

Frequency f [Hz]	K_{ij} 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_{ij} = 16,0 dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

The flanking sound transmission value was determined in Graz University of Technology in accordance with EN ISO 10848-1:2006.

The red dashed lines show the frequency range which is required to calculate the flanking sound transmission value.

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

Complete test results available on request

Pressure resistance and design

In order to evaluate the necessary declarations for the Pressure Resistance and Deformation Behaviour of PhoneStrip, the MPA Bau of the Technical University of Munich was chosen to undertake the relevant test series.

The results have been evaluated as an expert's opinion through bauart Konstruktions GmbH & Co. KG.

Pressure resistance

When PhoneStrip is used as a damping support in timber constructions e.g. as a floor support or under external or dividing walls, the pressure resistance plays a critical part. The MPA Bau at TU Munich has tested PhoneStrip to evaluate the pressure resistance (Test report MPA Bau Nr. 7400001/18-82c).

The test procedure in accordance with DIN EN 2689, showed a maximum test load of 526 kN (maximum load capacity of the test machine).

Design of the pressure resistance

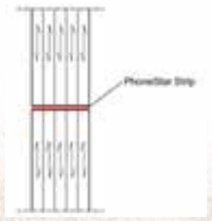
The bauart Konstruktions GmbH & Co. KG therefore concludes that in their expert's opinion in accordance with AZ: 18-G-027, that PhoneStrip is subject to a maximum allowable characteristic pressure resistance of 23 N/mm², because this is the maximum area load test that is available. When designing the structure, the characteristic value should be weighted with a safety factor.

The proposal is to use the value of 1.3 in accordance with DIN 1995-1-1/NA, Table NA.2 and 3, which is typical for timber constructions.

The stability of PhoneStrip is therefore:

characteristic $f_{c,k} = 23{,}00 \ \frac{N}{mm^2}$ | Design $f_{c,d} = \frac{1}{1{,}3} * 23{,}00 \ \frac{N}{mm^2} = 17{,}69 \ \frac{N}{mm^2}$

The k_{mod}-value is not suject for PhoneStrip



Wand-Wand-Stoß, BSH

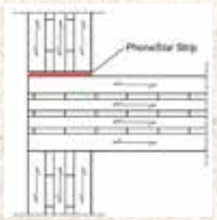
The maximum design load in timber constructions appears at wall to wall joints (end grain on end grain). For example a CLT wall with a GL 24h Stability Class in a short time load period (k mod = 0.9), the maximum transmittable area load is:

characteristic $f_{c,0,k} = 24{,}00 \ \frac{N}{mm^2}$ | design $f_{c,0,d} = \frac{0{,}9}{1{,}3} * 24{,}00 \ \frac{N}{mm^2} = 16{,}61 \ \frac{N}{mm^2}$

The characteristic value exceeds the area load values reached in the test, only slightly.

For a wall to floor joint, the maximum possible area load is that of the pressure resistance of the floor element when constructed in a cross fibre direction.

This value is 2.5 N/mm2 for timber based panels.



Wand-Decken-Stoß, BSP

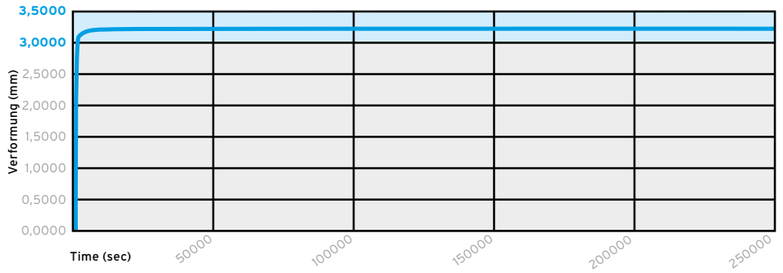
Deformation behaviour

Deformation must be estimated as accurately as possible in order to design building elements.
The MPA Bau of the TU in Munich tested PhoneStrip to assess the long term deformation and the test results are in Report No. 7400001/18-82c. The load test situation followed DIN EN 26891 Table 2.

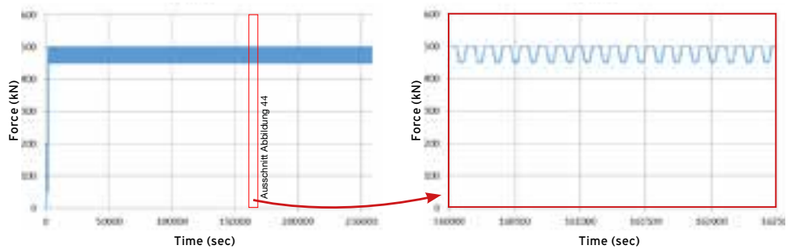
The expert's opinion about the load-bearing capacity and the durability of Wolf PhoneStrip decoupling strips generated through bauart Konstruktions GmbH & Co. KG within AZ: 18-G-027 concluded that the estimated final deformation would be:

3.5 mm ± 0,5 mm

Test report PhoneStrip L – Deformation-time-diagram Test report MPA Bau Nr. 7400001/18-82c



Test report PhoneStrip L - Load bearing-time-diagram



✓innovative
✓environmentally friendly
✓proven

The expert's opinion is available on request

Conclusion

The two people responsible for this testing - Uni. Prof. Dr. Ing. Stefan Winter and M. Sc. Maximilian Egenhofer - concluded that the actual deformation with a very high expected presumption will be in the range indicated.

A tolerance range of 0.5 mm is considered acceptable for civil engineering.

The load-bearing capacity of the decoupling strip is always undertaken on a wall to floor joint, when it is used on a CLT or solid timber wall.

The load-bearing capacity of PhoneStrip is considered as non critical when used on wall to wall joints on elements with the stability classes of GL28C and C30.

PhoneStrip decoupling strips contribute to lower costs due to structural design time being made quick and easy.

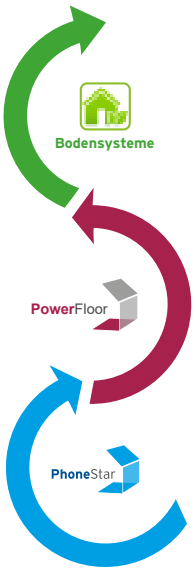
The risk of assembling the wrong decoupling support is significantly reduced.

One stop shopping

Wolf Bavaria GmbH - has been a successful, innovative and expanding company providing system solutions for timber buildings and dry constructions 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.
Our products are optimized for retrofit and new build.

DRY SYSTEM SOLUTIONS

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



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