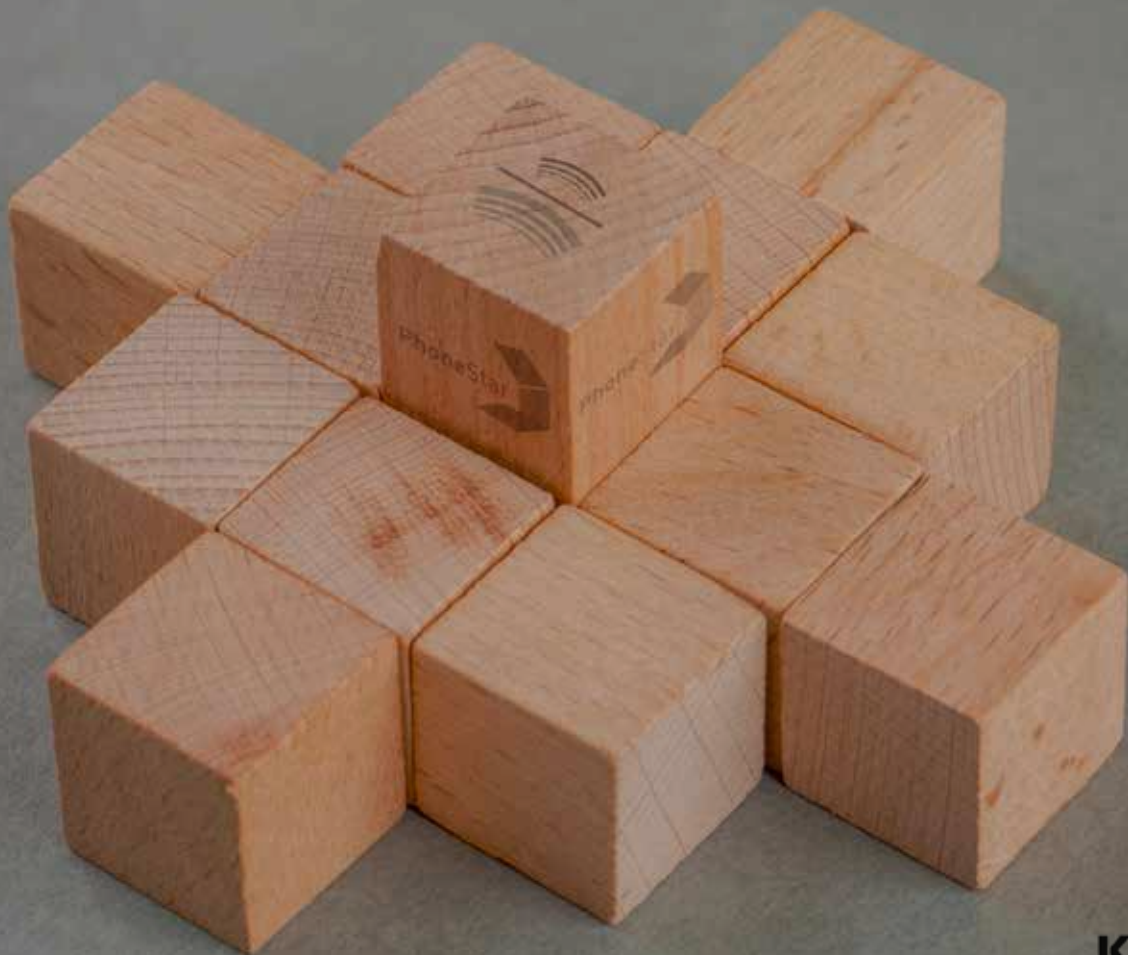




SOUND INSULATION

PANEL HEATING

DRY SCREED



Test series in cooperation with



# OneFrame-Wall

Evolution in timber panel construction

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Sound insulation for innovative wall systems

# Sound insulation solutions for walls

Resource-saving systems with effective sound insulation



Due to the growing market for apartment blocks and Multi-story buildings in timber, our aim is to develop economical, space-saving constructions for this market.

A series of tests has opened up very interesting perspectives on how a flat partition wall in timber frame construction can be designed as a single shell.

This construction method with only one stud wall is called OneFrame-Wall. It sets new standards in production, reduces assembly times and has the advantages of more space and excellent sound insulation.

✓resource-saving ✓effective

## OneFrame-Wall

Increase efficiency & reduce costs

up to **30%** Material savings

up to **15%** Space gain

up to **40%** Reduction of manufacturing time  
Completely prefabricated in series

up to **50%** Reduction of assembly times  
Only one wall needs to be installed

**Σ 30 - 40%** Savings potential



✓ With the OneFrame-Wall creates a tested system with products that are readily available on the market. There is no need to coordinate the products with the manufacturers.



## Sound insulation panels



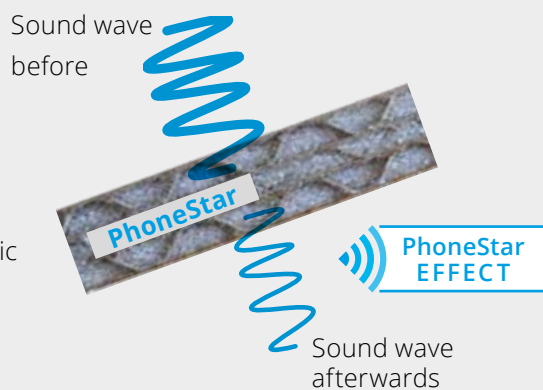
## Our solution against noise

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

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

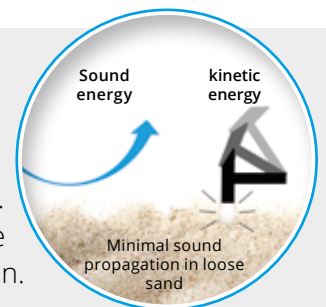
- + Effectively insulates airborne and impact sound
- + Ecological base materials wood and sand
- + Recyclable

- ✓ environmentally friendly
- ✓ effective
- ✓ certified



### HOW IT WORKS

PhoneStar has high internal damping due to the sand filling. This minimises structure-borne sound and flanking transmission.



### PhoneStar 3 in 1

Very high sound insulation is achieved thanks to the multilayer structure, flexibility and mass.



## ST Tri - Technical data

Length x width	1250 x 625 mm	1200 x 800 mm	
Surface / panel	0,78 m <sup>2</sup>	0,96 m <sup>2</sup>	
Thickness	12,5 mm		
Weight	17,5 kg/m <sup>2</sup>		
Impact sound insulation up to	L <sub>w</sub> = 20 dB		
Airborne sound insulation up to	R <sub>w</sub> = 36 dB		
Fire behaviour	E		EN 13501-1
Compressive strength (kPa)	≥ 1000		
Application	Interior fittings		

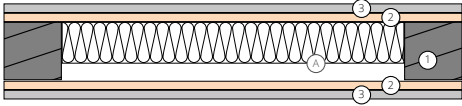


### CERTIFICATION

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.

## Standard | Reference wall

Wall construction - continuous stud



- ③ 12,5 mm gypsum fibreboard
- ② 10 mm gypsum fibreboard
- ① 60 mm timber stud wall
- Ⓐ 40 mm insulation

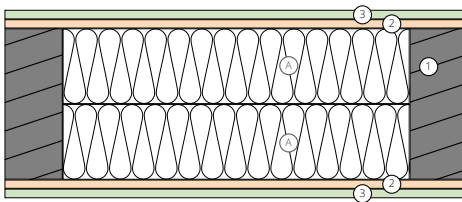
indicated with

$R_w$  47 dB  
DIN 4109-33 - table 3

### TEST SERIES

The systematic concept of the test series is intended to work out the differences between the design variants and make them assessable in the sound prediction: continuous stud / separate stud, stiffening layer (OSB board 12 mm / gypsum fibreboard 12.5 mm), PhoneStar sound insulation layer (single layer / double layer), outer planking (gypsum plasterboard 12.5 mm / fire-resistant gypsum board (FRGB) 12.5 mm each single layer).

## 1 | Reference wall



- ③ FRGB
- ② OSB board
- ① 200 mm timber stud wall
- Ⓐ 2 x 100 mm insulation

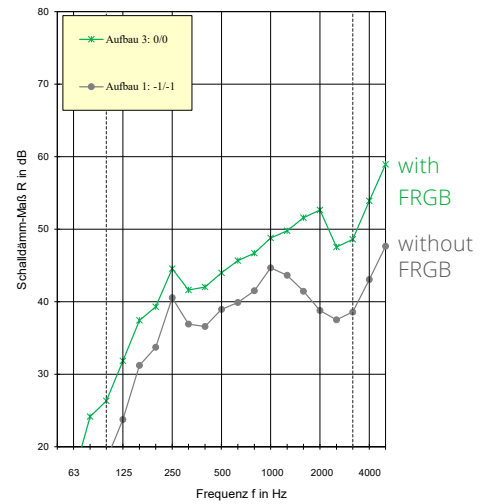
with FRGB

$R_w$  47,8 dB

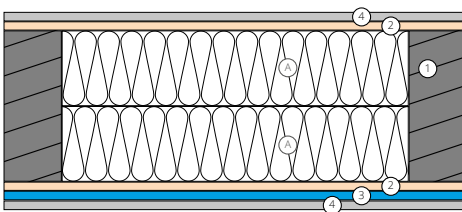
without FRGB

$R_w$  40,3 dB

+ 7,5 dB



## 2 | One-sided with PhoneStar ST Tri



- ④ FRGB
- ③ PhoneStar ST Tri
- ② OSB board
- ① 200 mm timber stud wall
- Ⓐ 2 x 100 mm insulation

with PhoneStar one-sided

$R_w$  53 dB

with FRGB

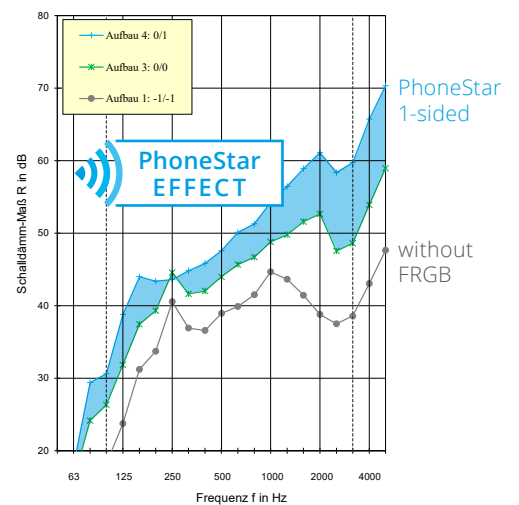
$R_w$  47,8 dB

without FRGB

$R_w$  40,3 dB

+ 5,2 dB

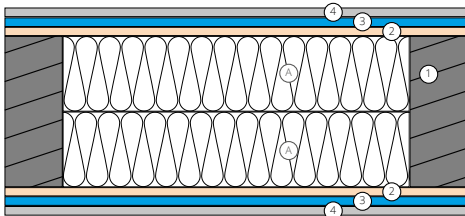
+ 7,5 dB



- 4 x PhoneStar
- 2 x PhoneStar
- PhoneStar
- FRGB (fire-resistant gypsum board)
- OSB board without plasterboard



### 3 | Both sides with PhoneStar ST Tri



- ④ FRGB
- ③ PhoneStar ST Tri
- ② OSB board
- ① 200 mm timber stud wall
- Ⓐ 2 x 100 mm insulation

with PhoneStar two-sided

$R_w$  55,7 dB

with FRGB

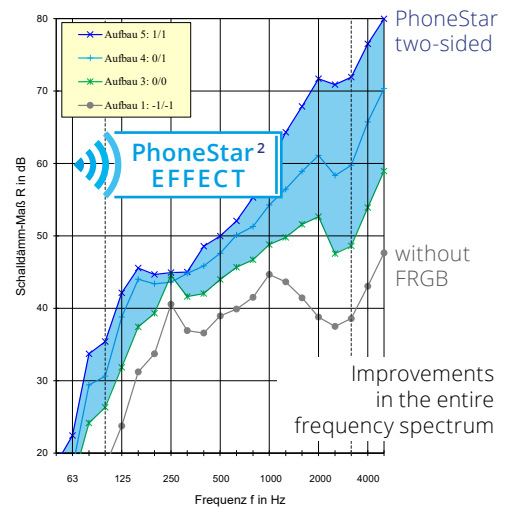
$R_w$  47,8 dB

without FRGB

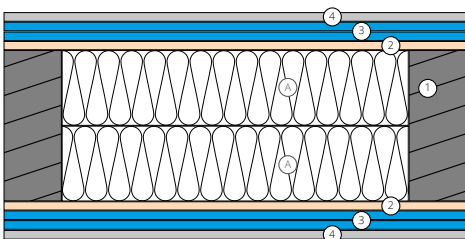
$R_w$  40,3 dB

+ 7,9 dB

+ 7,5 dB



### 4 | With two layers PhoneStar ST Tri on both sides



- ④ FRGB
- ③ 2 x PhoneStar ST Tri
- ② OSB board
- ① 200 mm timber stud wall
- Ⓐ 2 x 100 mm insulation

with PhoneStar two-sided / two-layered

$R_w$  57,7 dB

with FRGB

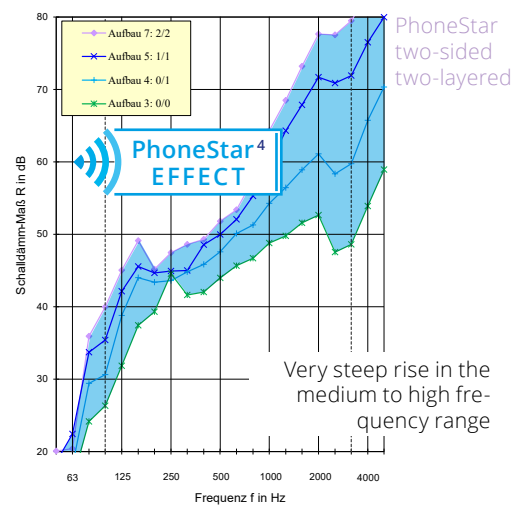
$R_w$  47,8 dB

without FRGB

$R_w$  40,3 dB

+ 7,9 dB

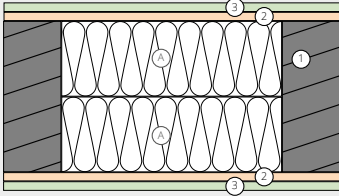
+ 7,5 dB



Further information can be found on our website:  
[www.wolf-bavaria.com](http://www.wolf-bavaria.com)

## Comparison | continuous stud > separated stud

Continuous stud

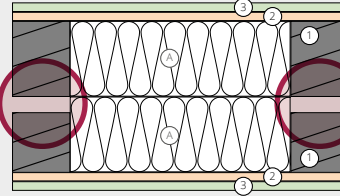


- ③ 12,5 mm FRGB
- ② 12 mm OSB board
- ① 200 mm timber stud wall
- ⓐ 2 x 100 mm insulation



$R_w$  47,8 dB

Separated stud - continuous sill and top beam



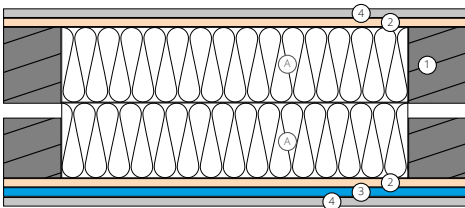
- ③ 12,5 mm FRGB
- ② 12 mm OSB board
- ① 100 mm + 80 mm timber studs
- ⓐ 2 x 100 mm insulation



$R_w$  52,4 dB

+ 4,6 dB

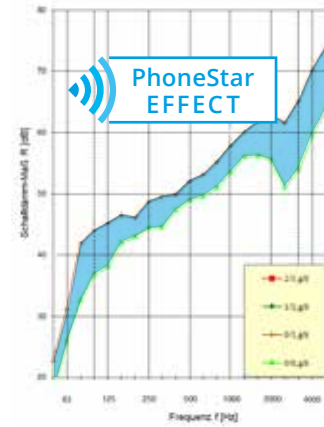
### 5 | One-sided with PhoneStar ST Tri



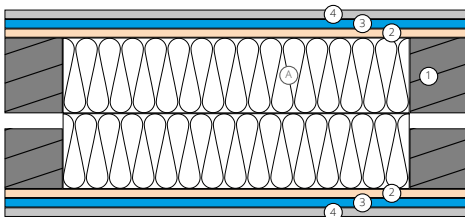
- ④ FRGB
- ③ PhoneStar ST Tri
- ② OSB board
- ① Separated timber stud wall
- ⓐ Insulation

Separate stud with PhoneStar one-sided

$R_w$  57,4 dB



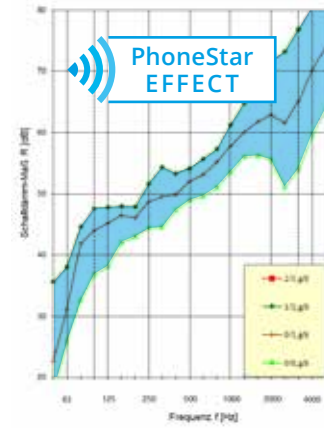
### 6 | Both sides with PhoneStar ST Tri



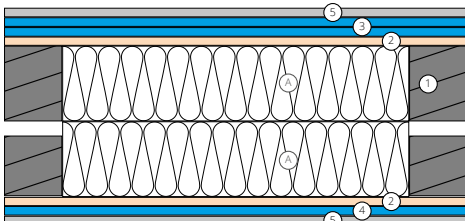
- ④ FRGB
- ③ PhoneStar ST Tri
- ② OSB board
- ① Separated timber stud wall
- ⓐ Insulation

Separate stud with PhoneStar two-sided

$R_w$  60,4 dB



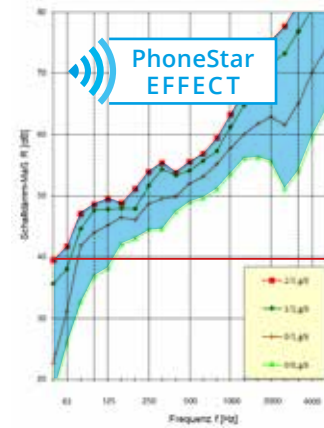
### 7 | Both sides with PhoneStar ST Tri



- ⑤ FRGB
- ④ PhoneStar ST Tri
- ③ 2 x PhoneStar ST Tri
- ② OSB board
- ① Separated timber stud wall
- ⓐ Insulation

Separate stud with PhoneStar two-layered / one-layered

$R_w$  62 dB

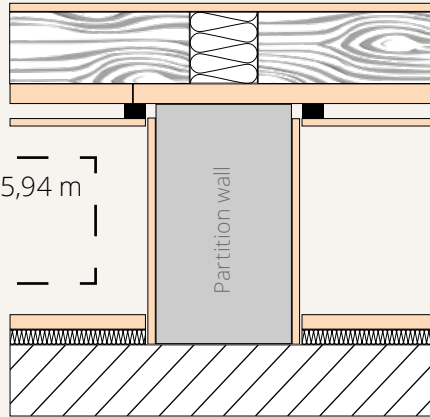


Very steep rise in the low-frequency range

# Sound insulation evidence | separate stud

The calculation was carried out with the following boundary conditions for flanking transmission

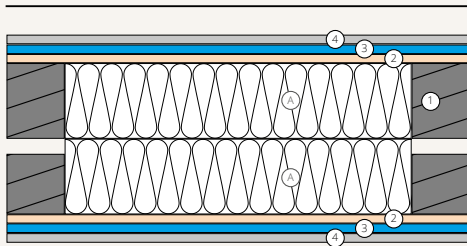
Partition wall length = 5,94 m  
 Room height = 2,65 m  
 Surface wall = 15,7 m<sup>2</sup>



Ceiling  
 $D_{n,f,w}$  67 dB

Floor  
 $D_{n,f,w}$  67 dB

## Partition wall | assembly 6.1



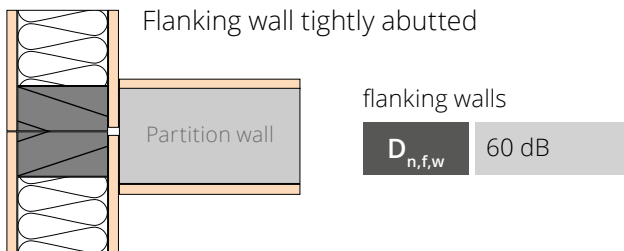
Separate stud  
**FRGB stapled and filled**

$R_w$  61,4 dB

- ④ FRGB
- ③ PhoneStar ST Tri
- ② OSB board
- ① Separated timber stud wall
- ⑤ 2 x 100 mm insulation



## Evidence | minimum requirement



Floor and ceiling  $R_{ff,w} = 67 \text{ dB} + 10 \lg \frac{4,5}{5,93} + 10 \lg \frac{15,7}{10} = 67,7 \text{ dB}$

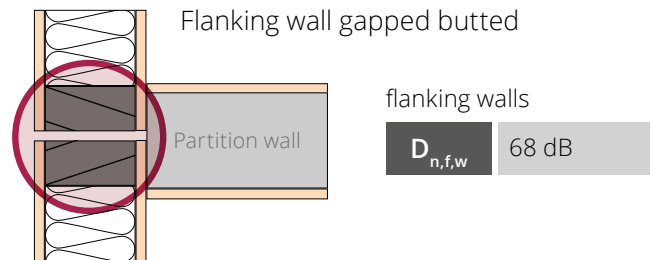
Walls  $R_{ff,w} = 60 \text{ dB} + 10 \lg \frac{2,8}{2,65} + 10 \lg \frac{15,7}{10} = 62,2 \text{ dB}$

$R'_w = 10 \lg [10^{-6,14} + 2 * 10^{-6,77} + 2 * 10^{-6,22}] = 56,5 \text{ dB}$

Calculation result according to DIN 4109-1:2018 taking into account forecast uncertainty:  $u_{prog}$  2 dB  $R'_w$  54,5 dB

The wall **fulfils the minimum requirements** according to DIN 4109-1:2018 standards  
 $vorh. R'_w - u_{prog} = 54,5 \text{ dB} \geq erf. R'_w = 53 \text{ dB}$

## Evidence | increased requirement



Floor and ceiling  $R_{ff,w} = 67 \text{ dB} + 10 \lg \frac{4,5}{5,93} + 10 \lg \frac{15,7}{10} = 67,7 \text{ dB}$

Walls  $R_{ff,w} = 68 \text{ dB} + 10 \lg \frac{2,8}{2,65} + 10 \lg \frac{15,7}{10} = 70,2 \text{ dB}$

$R'_w = 10 \lg [10^{-6,14} + 2 * 10^{-6,77} + 2 * 10^{-7,02}] = 58,5 \text{ dB}$

Calculation result according to DIN 4109-5:2020 taking into account forecast uncertainty:  $u_{prog}$  2 dB  $R'_w$  56,5 dB

The wall **fulfils the increased requirement** according to DIN 4109-5:2020 standards  
 $vorh. R'_w - u_{prog} = 56,5 \text{ dB} \geq erf. R'_w = 56 \text{ dB}$

Everything from a single source



PhoneStar SOUND INSULATION



PowerFloor PANEL HEATING



PhoneStrip SOUND DECOUPLING

**System solutions** for solid construction, timber construction and renovation of old buildings  
Consultancy & project support



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