

# TERRART<sup>®</sup> - ACOUSTIC

<sup>TM</sup> **NBK** | ARCHITECTURAL  
TERRACOTTA

## SOUNDPROOFING TAKES A NEW VISUAL DIRECTION

We live in a noisy world. Noise is ever-present, silence is rare. Be it road noise from outside, music from the children's bedroom or the racket next door: soundproofing is essential.

Surveys performed on behalf of the Federal Environment Agency have revealed that over 70% of our population feel disturbed by increasing noise produced by road, rail and air traffic. Living in peace at home or working in a calm environment without excessive noise – this aspiration is becoming increasingly important for the majority of people.

Increasing exposure to noise from outside and the higher impact of noise from within the home are drawing builders' attention more and more towards soundproofing.

Reasons for the growing importance of soundproofing are as follows:

- Higher volume of road traffic
- Increasing air traffic
- Smaller building plots
- Higher construction density (utilisation of site occupancy index)
- Different working hours of family members
- Different shift patterns and therefore different sleep and rest patterns
- People are more exposed to noise produced by machines and equipment in the workplace, meaning a greater need for quiet
- More powerful audio equipment
- Different habits in terms of the volume of televisions and listening to music
- More, and more powerful, household devices

Anyone with greater requirements in terms of soundproofing can now create an oasis of calm with TERRART®-ACOUSTIC. For the ears. And for the creative mind. And all this without having to compromise in terms of high visual expectations. Because TERRART®-ACOUSTIC is virtually limitless in its visual design options in terms of colour, form and surfaces.

Precise key values for cross-sections that are suitable for use with this soundproofing have now been calculated in detail and compiled in a comprehensive assessment report. We will be happy to provide this report upon request. This document will also provide you with initial information on key values.



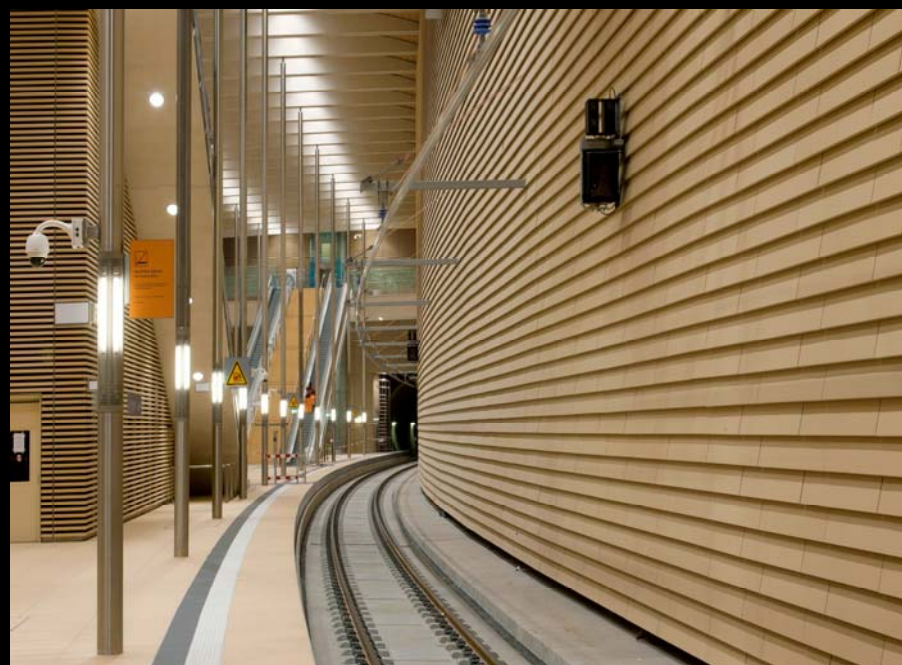


**4** DEFINITION OF SOUND

**5** TERRART® - ACOUSTIC  
EXAMPLE BAGUETTE

**8** EXAMPLE  
PROFILED FAÇADE

**10** EXAMPLE  
SCALED FAÇADE



# SOUND AND SOUND ABSORPTION

Sound refers to the mechanical vibrations of an elastic body within the frequency range of human hearing.

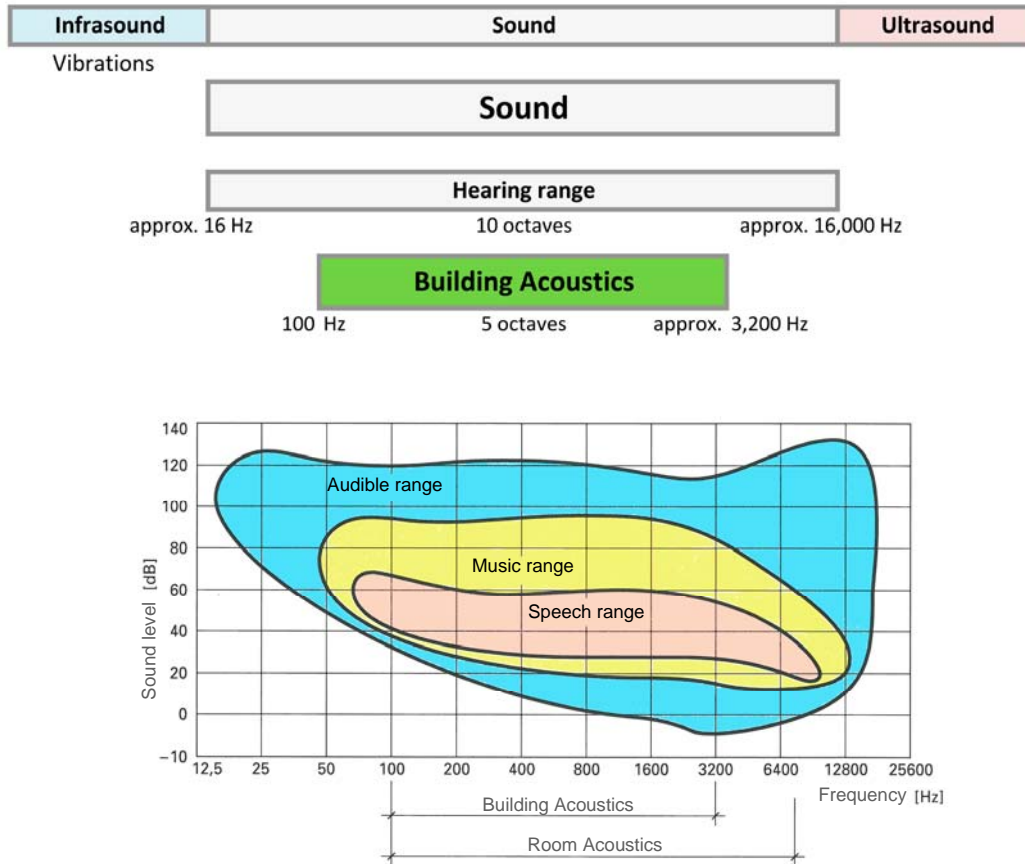


Figure 1: Speech range - music range - audible range 1

## SOUND ABSORPTION

Sound absorption or sound insulation is one aspect that helps to create pleasant room acoustics. The way in which component surfaces are designed plays a key role here, because these are non-mobile components of the room. Furniture, curtains, carpets and people also constitute absorbers within a room, but they are not to be taken into account here because they are not always present. The greater the sound absorption, the greater the noise reduction within the room where the sound source is located.

Sound absorption is frequency-dependent and expressed in practice as the sound absorption coefficient  $\alpha_s$ .

$$\alpha_s = \frac{\text{non-reflective sound energy}}{\text{Incident sound energy}}$$

With full reflection:  $\alpha_s = 0$

With full absorption:  $\alpha_s = 1$

A sound absorption coefficient of  $\alpha_s = 0,6$  therefore means that 60% of the incident sound energy on the component is absorbed.

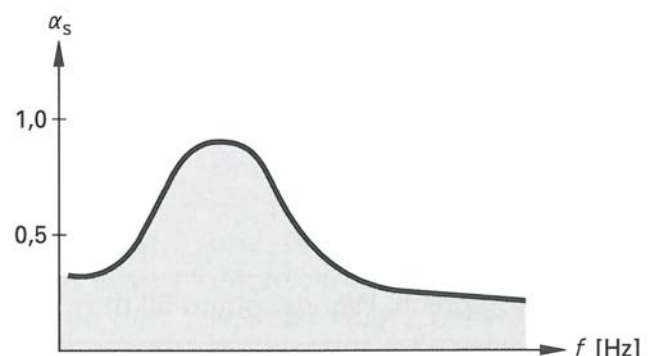


Figure 2: Sound absorption coefficient



**WALL MOUNTING  
TERRART - BAGUETTE**

1. BAGUETTE
2. ABSORPTION MATERIAL
3. SUPPORTING STRUCTURE



## CALCULATING THE SOUND ABSORPTION COEFFICIENT IN THE REVERBERATION ROOM

in accordance with DIN EN ISO 354 and DIN EN ISO 11654

Product designation:

**TERRART-BAGUETTE, 5 cm joint, 160mm cavity soundproofing**

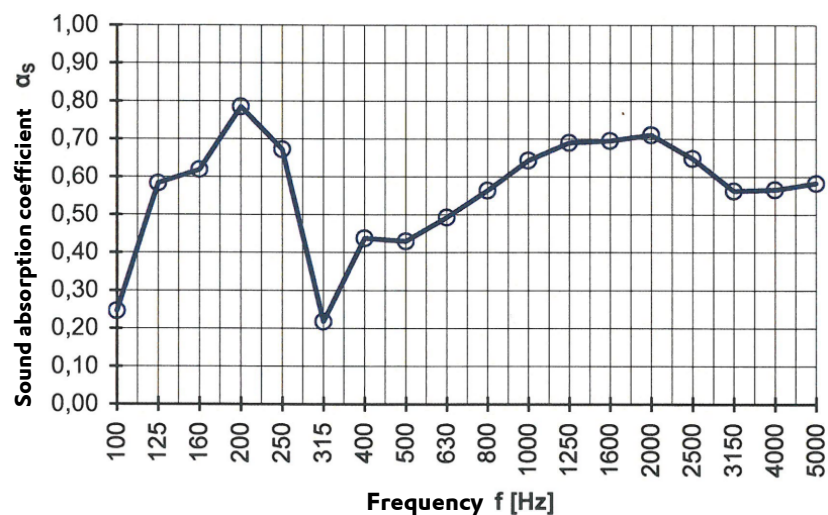
Test set-up (from top to bottom):

- 50 mm Ceramic baguette, laid flat
- 160 mm Cavity containing mineral wool
- Sub-construction with frame
- Reverberation room floor



Supporting structure made of wooden beams (160 x 100 mm), product placed loosely on top  
Enclosure frame covering made of 12.5 mm thick plasterboard, single-ply

| f [Hz] | $\alpha_s$ | $\alpha_p$ |
|--------|------------|------------|
| 100    | 0,25       | 0,50       |
| 125    | 0,58       |            |
| 160    | 0,62       |            |
| 200    | 0,79       | 0,55       |
| 250    | 0,67       |            |
| 315    | 0,22       |            |
| 400    | 0,44       |            |
| 500    | 0,43       | 0,45       |
| 630    | 0,49       |            |
| 800    | 0,56       |            |
| 1000   | 0,64       | 0,65       |
| 1250   | 0,69       |            |
| 1600   | 0,70       |            |
| 2000   | 0,71       | 0,70       |
| 2500   | 0,65       |            |
| 3150   | 0,56       |            |
| 4000   | 0,57       | 0,60       |
| 5000   | 0,58       |            |



Abbreviations:  $\alpha_p$  Practical absorption coefficient in accordance with DIN EN ISO 11654  
 $\alpha_s$  Absorption coefficient in accordance with DIN EN ISO 354

Rated in accordance with ISO 11654:

**Rated sound absorption coefficient  $\alpha_w = 0,55$  (L)**

**Sound absorber class D**

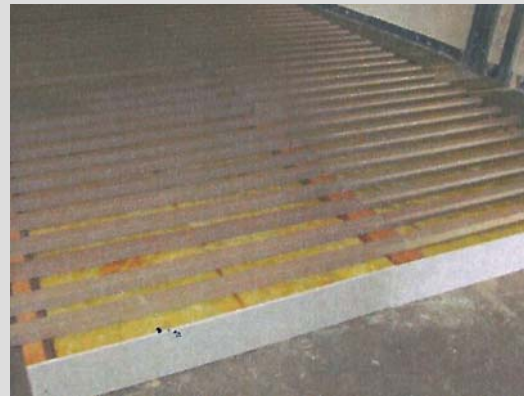
## CALCULATING THE SOUND ABSORPTION COEFFICIENT IN THE REVERBERATION ROOM in accordance with DIN EN ISO 354 and DIN EN ISO 11654

Product designation:

**TERRART-BAGUETTE, 10 cm joint, 160mm cavity soundproofing**

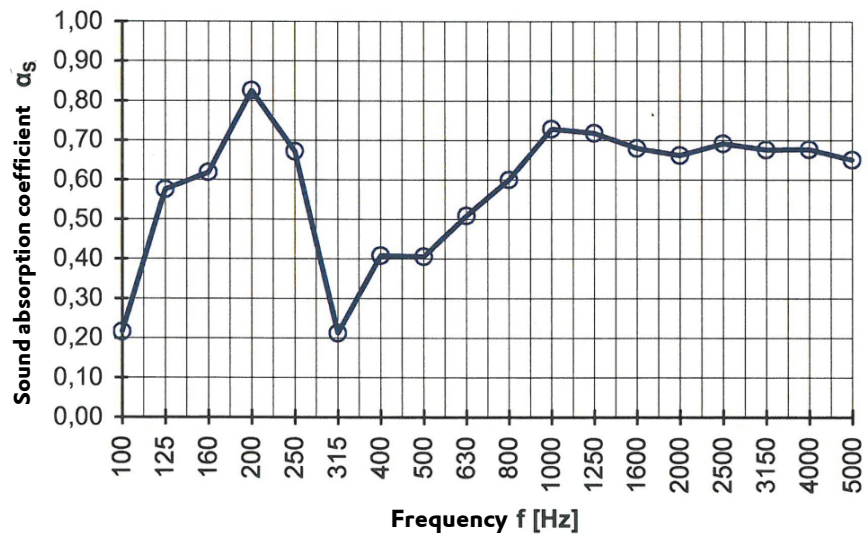
Test set-up (from top to bottom):

- 50 mm Ceramic baguette, laid flat
- 160 mm Cavity containing mineral wool
- Sub-construction with frame
- Reverberation room floor



Supporting structure made of wooden beams (160 x 100 mm), product placed loosely on top  
Enclosure frame covering made of 12.5 mm thick plasterboard, single-ply

| f [Hz] | $\alpha_s$ | $\alpha_p$ |
|--------|------------|------------|
| 100    | 0,22       | 0,45       |
| 125    | 0,58       |            |
| 160    | 0,62       | 0,60       |
| 200    | 0,83       |            |
| 250    | 0,67       |            |
| 315    | 0,21       | 0,45       |
| 400    | 0,41       |            |
| 500    | 0,41       | 0,70       |
| 630    | 0,51       |            |
| 800    | 0,60       |            |
| 1000   | 0,73       |            |
| 1250   | 0,72       | 0,70       |
| 1600   | 0,68       |            |
| 2000   | 0,66       | 0,65       |
| 2500   | 0,69       |            |
| 3150   | 0,68       |            |
| 4000   | 0,68       |            |
| 5000   | 0,65       |            |



Abbreviations:  $\alpha_p$  Practical absorption coefficient in accordance with DIN EN ISO 11654  
 $\alpha_s$  Absorption coefficient in accordance with DIN EN ISO 354

Rated in accordance with ISO 11654:

**Rated sound absorption coefficient  $\alpha_w = 0,55$  (L)**

**Sound absorber class D**



### WALL MOUNTING PROFILED PANEL

1. ACOUSTIC PANEL
2. SUB-CONSTRUCTION
3. SUPPORTING STRUCTURE



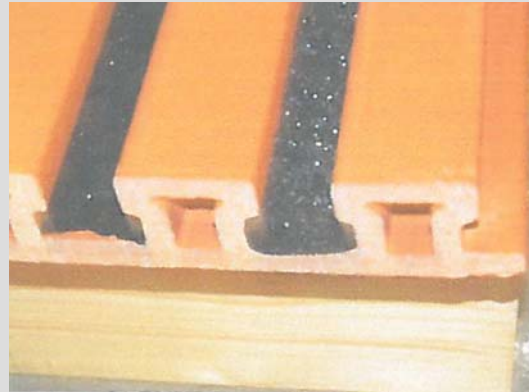
## CALCULATING THE SOUND ABSORPTION COEFFICIENT IN THE REVERBERATION ROOM in accordance with DIN EN ISO 354 and DIN EN ISO 11654

Product designation:

**TERRART-ACOUSTIC, panel with recesses, laid down flat, 160 mm cavity soundproofing**

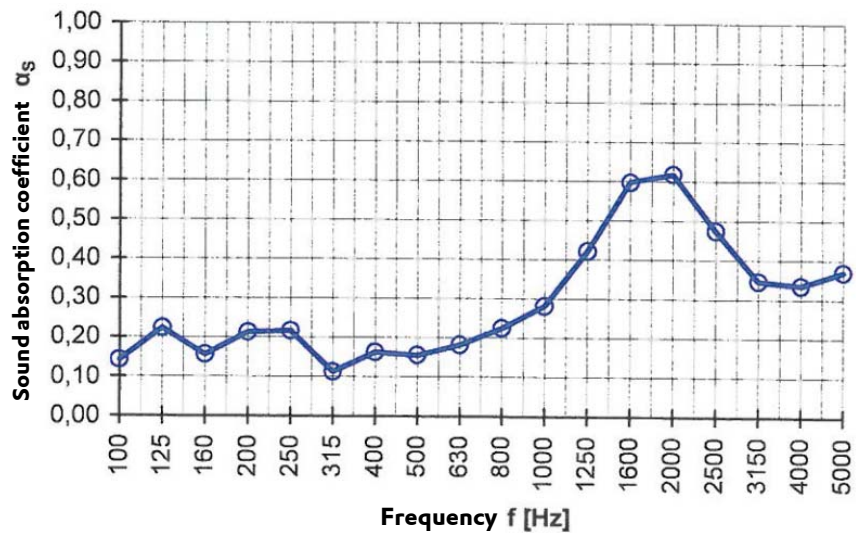
Test set-up (from top to bottom):

- 40 mm Ceramic panel, laid flat with 20 mm foam padding
- 160 mm Cavity containing mineral wool
- Sub-construction with frame
- Reverberation room floor



Supporting structure made of wooden beams (160 x 100 mm), product placed loosely on top  
Enclosure frame covering made of 12.5 mm thick plasterboard, single-ply

| f [Hz] | $\alpha_s$ | $\alpha_p$ |
|--------|------------|------------|
| 100    | 0,14       | 0,15       |
| 125    | 0,22       |            |
| 160    | 0,16       | 0,20       |
| 200    | 0,21       |            |
| 250    | 0,22       |            |
| 315    | 0,11       | 0,15       |
| 400    | 0,16       |            |
| 500    | 0,16       |            |
| 630    | 0,18       |            |
| 800    | 0,22       | 0,30       |
| 1000   | 0,28       |            |
| 1250   | 0,42       |            |
| 1600   | 0,60       | 0,55       |
| 2000   | 0,62       |            |
| 2500   | 0,47       |            |
| 3150   | 0,35       |            |
| 4000   | 0,34       | 0,30       |
| 5000   | 0,37       |            |

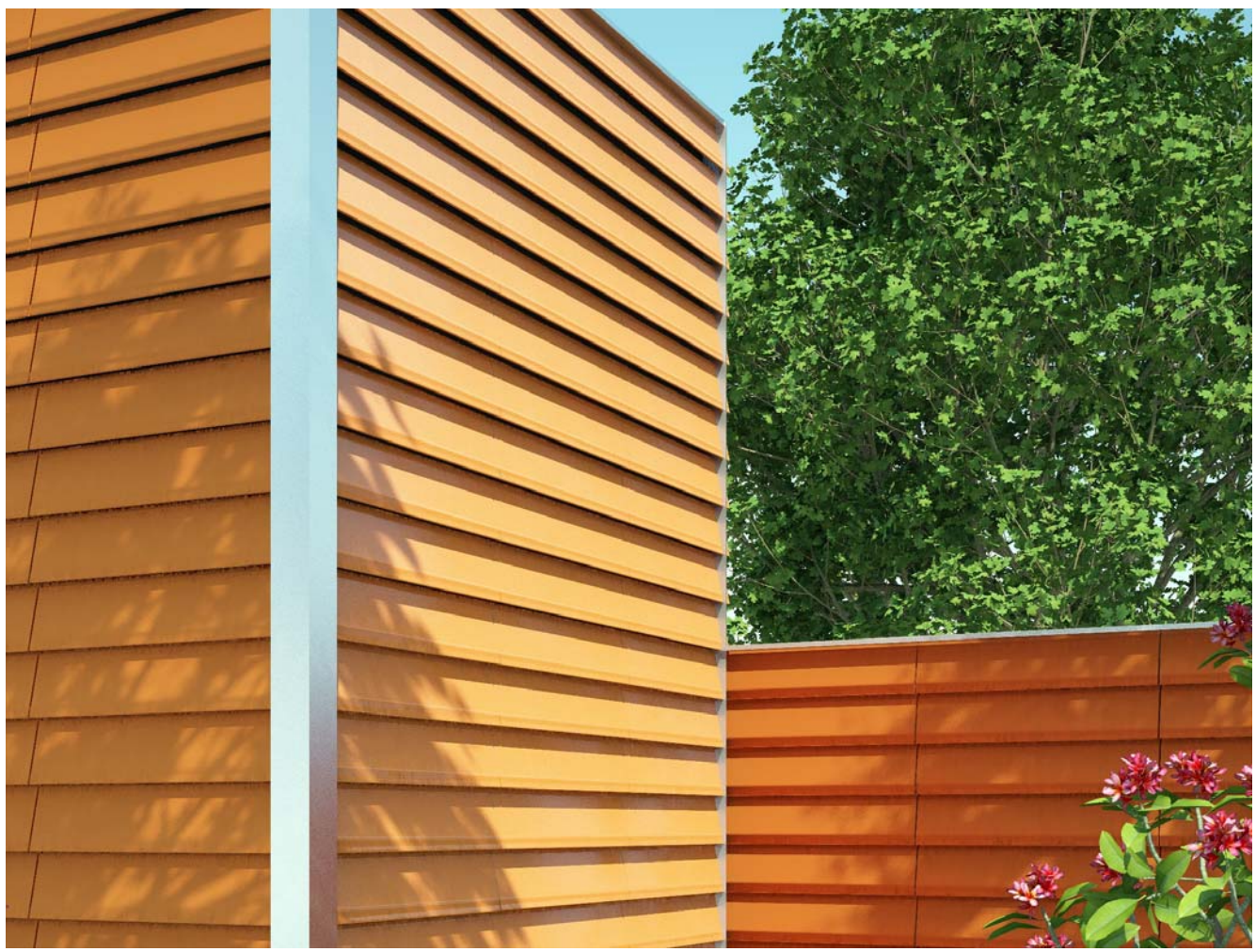


Abbreviations:  $\alpha_p$  Practical absorption coefficient in accordance with DIN EN ISO 11654  
 $\alpha_s$  Absorption coefficient in accordance with DIN EN ISO 354

Rated in accordance with ISO 11654:

**Rated sound absorption coefficient  $\alpha_w = 0,25$  (L)**

**Sound absorber class E**



**WALL MOUNTING  
SCALED FAÇADE**

- 1.** CERAMIC ELEMENT
- 2.** ABSORPTION MATERIAL
- 3.** SUPPORTING STRUCTURE

## CALCULATING THE SOUND ABSORPTION COEFFICIENT IN THE REVERBERATION ROOM in accordance with DIN EN ISO 354 and DIN EN ISO 11654

Product designation:

**TERRART-LARGE 40, smooth ceramic panel, scaled construction, 160 mm cavity soundproofing**

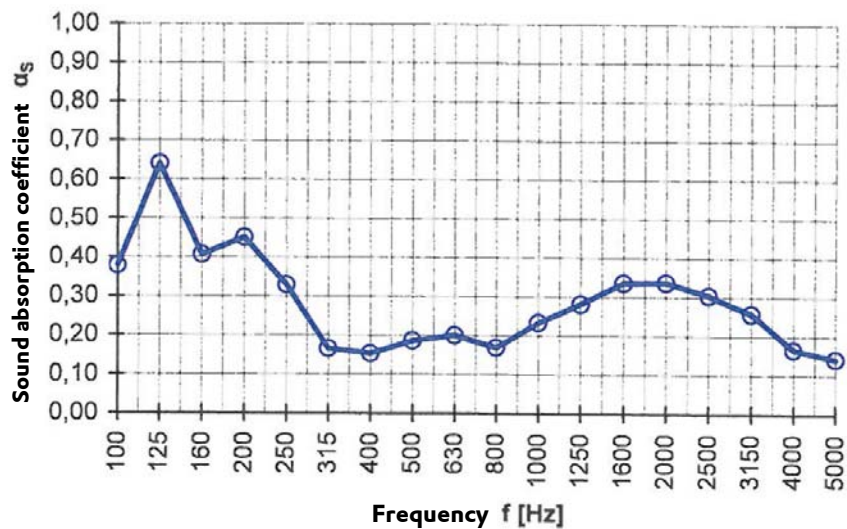
Test set-up (from top to bottom):

- 40 mm Ceramic panel, laid in a scaled form
- 160 mm Cavity containing mineral wool
- Sub-construction with frame
- Reverberation room floor



Supporting structure made of wooden beams (160 x 100 mm), product placed loosely on top  
Enclosure frame covering made of 12.5 mm thick plasterboard, single-ply

| f [Hz] | $\alpha_s$ | $\alpha_p$ |
|--------|------------|------------|
| 100    | 0,38       | 0,50       |
| 125    | 0,64       |            |
| 160    | 0,41       | 0,30       |
| 200    | 0,45       |            |
| 250    | 0,33       |            |
| 315    | 0,17       | 0,20       |
| 400    | 0,15       |            |
| 500    | 0,19       |            |
| 630    | 0,20       |            |
| 800    | 0,17       | 0,25       |
| 1000   | 0,23       |            |
| 1250   | 0,28       | 0,35       |
| 1600   | 0,34       |            |
| 2000   | 0,34       |            |
| 2500   | 0,30       | 0,20       |
| 3150   | 0,26       |            |
| 4000   | 0,17       |            |
| 5000   | 0,14       |            |



Abbreviations:  $\alpha_p$  Practical absorption coefficient in accordance with DIN EN ISO 11654  
 $\alpha_s$  Absorption coefficient in accordance with DIN EN ISO 354

Rated in accordance with ISO 11654:

**Rated sound absorption coefficient  $\alpha_w = 0,25$  (L)**

**Sound absorber class E**

™ **NBK** | ARCHITECTURAL  
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