



Planning documents for **BASWA Phon acoustic systems**

Base

Fine

Classic Base

Classic Fine

Classic Top

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System description

General information

The BASWA acoustic systems reduce and control the reverberation time in a space to create an ideal acoustic environment, positively affecting health and wellbeing. The BASWA acoustic systems consist of two elements; the BASWA Phon acoustic panels and the microporous coating compounds. The panels are adhered to a solid, closed substrate and then coated with the microporous coating compounds. This results in a jointless, smooth surface with high absorption values and gives the visual appearance of a smooth, painted plaster ceiling.

The BASWA Phon technology provides architects and acousticians with unique design options

System features and benefits

- Excellent sound absorption up to α_w 1.0 / NRC 1.05, class A
- Fire classification: A2-s1, d0 (DIN EN 13501-1)
- Indoor climate: French VOC regulation A+
- Suitable for damp rooms and weather-protected outdoor areas up to 90% rh
- Fibre and solvent-free
- System thickness 30 / 40 / 50 / 70 mm
- 1 or 2 layer system
- Colour BASWA Base, Fine and Top: ~ NCS S 0500-N
- Colour BASWA Casual: ~ NCS S 0300-N
- Unlimited colour selection (RAL, NCS, etc.) for BASWA Base, Fine and Top
- Unlimited design options from smooth to individually textured
- Can be combined seamlessly with BASWA Cool, Core, Basic, Natural etc.
- Can be used in Minergie Eco projects
- Leeds Contribution Certificate
- CE certified / ETA-No : 16 / 0144
- EPD certified



Suitable for application in

- Horizontal, inclined or vertical surfaces
- Seamless surfaces
(up to the maximum size of the respective substructure)
- Vaults
- Cupolas
- Convex and concave shapes
- Organically shaped surfaces

NOTICE! Curved, as well sidelight exposed surfaces are to be executed in the system variant "Classic" (two-layer).

Visit www.baswa.com to view our project portfolio and list of references.

Overview of the different acoustic systems

Each system is available in the following four system thicknesses: 30 / 40 / 50 / 70 mm. All systems can be applied directly to concrete or conventional drywall systems (mineral substrates).

The glued and grouted BASWA Phon acoustic panels can be coated with either one or two layers of microporous acoustic plaster. The following surface structures are available:

- **BASWA Base** Coarser surface structure (Grain 0.7 mm)
- **BASWA Fine** Fine surface structure (Grain 0.5 mm)
- **BASWA Top** Ultra smooth surface structure (Grain 0.3 mm)

BASWA Phon acoustic systems can be designed as single-layer or two-layer systems ("Classic"). BASWA Top can only be used as a two-layer system "Classic Top".

Single-layer:

Single-layer systems are quick and simple to install. These systems are suitable for straight surfaces that are exposed to little or no grazing light (sidelight).



BASWA Phon Base
Grain size 0.7 mm



BASWA Phon Fine
Grain size 0.5 mm

Two-layer systems:

Two-coat systems are ideal for curved surfaces and for surfaces that are exposed to grazing light. These consist of:

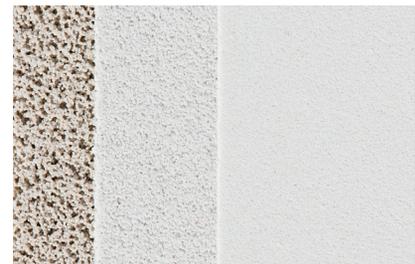
Base coat **BASWA Base**
Finish coat **BASWA Base, Fine or Top**



BASWA Phon Classic Base
Base coat **Base 0.7 mm**
Finish coat **Base 0.7 mm**



BASWA Phon Classic Fine
Base coat **Base 0.7 mm**
Finish coat **Fine 0.5 mm**



BASWA Phon Classic Top
Base coat **Base 0.7 mm**
Finish coat **Top 0.3 mm**

Acoustic measures

Room acoustic requirements are often disregarded in the planning of construction projects or downgraded for cost reasons. In many cases, this makes subsequent correction necessary through renovation. Additionally, renovation of historical buildings allows for acoustics to be improved where needed.

The BASWA Phon acoustic systems are the ideal solution for remedying acoustics in an existing space due to their low installation heights (the acoustic systems can be installed directly on existing surfaces / minimum height 30 mm) and their adaptability in terms of shape, color and texture.

If BASWA Phon acoustic systems are installed on existing substrates, the same quality and strength characteristics will apply to the new surface. The existing substrate must be checked for suitability by the installer.

BASWA Phon acoustic ceilings are appropriate for use in existing buildings. The "optimal" integration of the system in a historical renovation project highlights the systems complete acoustic effectiveness.

The BASWA Phon acoustic Systems

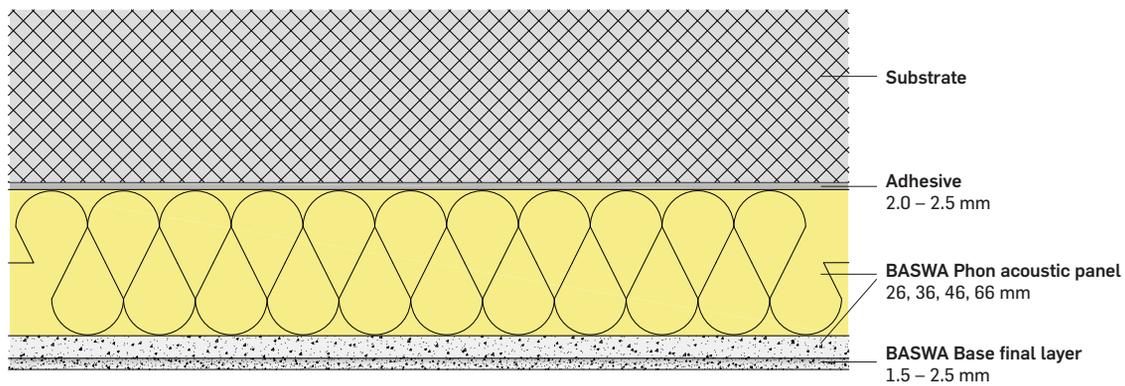
BASWA Phon Base

System profile

- 1-layer system
- Grain size of final layer: 0.7 mm
- Seamless surface
- Unlimited design options from smooth to individually textured
- Short installation time
- Very resistant surface
- Standard colour ~ NCS S 0500-N
- Unlimited choice of colours (RAL, NCS, etc.)
- High degree of whiteness: 90%
- Standard surface quality <Q2>



System structure

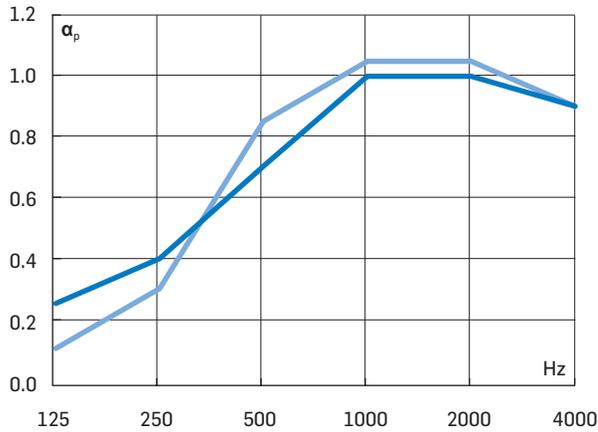


System thickness	System weights BASWA Phon Base
30 mm	~ 7.2 kg/m ²
40 mm	~ 7.8 kg/m ²
50 mm	~ 8.5 kg/m ²
70 mm	~ 10.0 kg/m ²

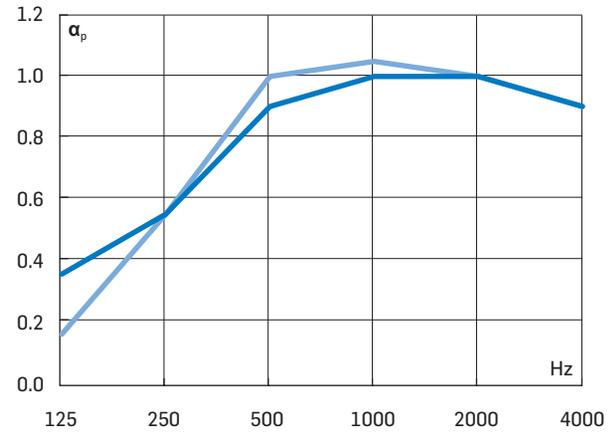
Sound absorption coefficients α_p (practical) according to ISO standard DIN EN ISO 11654

Typ A/Concrete —
E-200/Suspension —

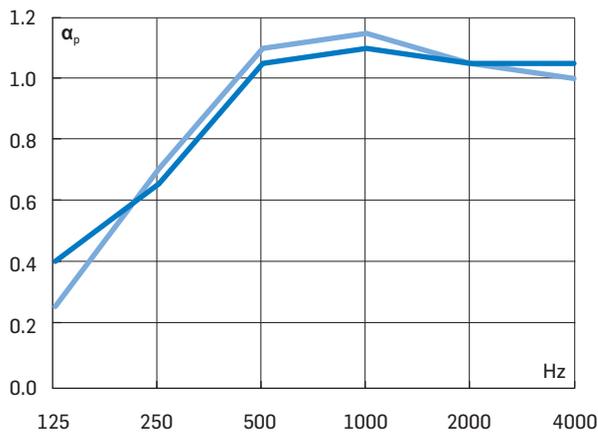
BASWA Phon Base 30mm



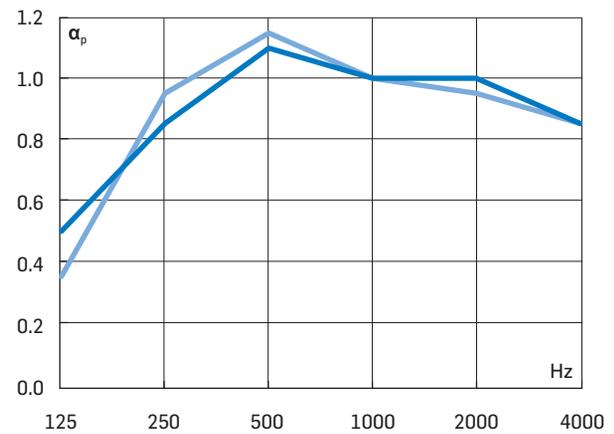
BASWA Phon Base 40mm



BASWA Phon Base 50mm



BASWA Phon Base 70mm



System	BASWA Phon Base 30 mm		BASWA Phon Base 40 mm		BASWA Phon Base 50 mm		BASWA Phon Base 70 mm	
	Typ A	Typ E-200						
α_w	0.60 (MH)	0.70 (MH)	0.85	0.85	1.00	0.95	1.00	1.00
NRC	0.80	0.80	0.90	0.90	1.00	1.00	1.00	1.05
Absorption Class	C	C	B	B	A	A	A	A
Hz	α_p	α_p	α_p	α_p	α_p	α_p	α_p	α_p
125	0.10	0.25	0.15	0.35	0.25	0.40	0.35	0.50
250	0.30	0.40	0.55	0.55	0.70	0.65	0.95	0.85
500	0.85	0.70	1.00	0.90	1.00	1.00	1.00	1.00
1000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2000	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
4000	0.90	0.90	0.90	0.90	1.00	1.00	0.85	0.85

The complete acoustic measurement data can be found in the current test reports.

Caution! When using coloured BASWA acoustic coatings and decorative finishes (e.g. BASWA Textures), the specified sound absorption values may change slightly in individual cases.

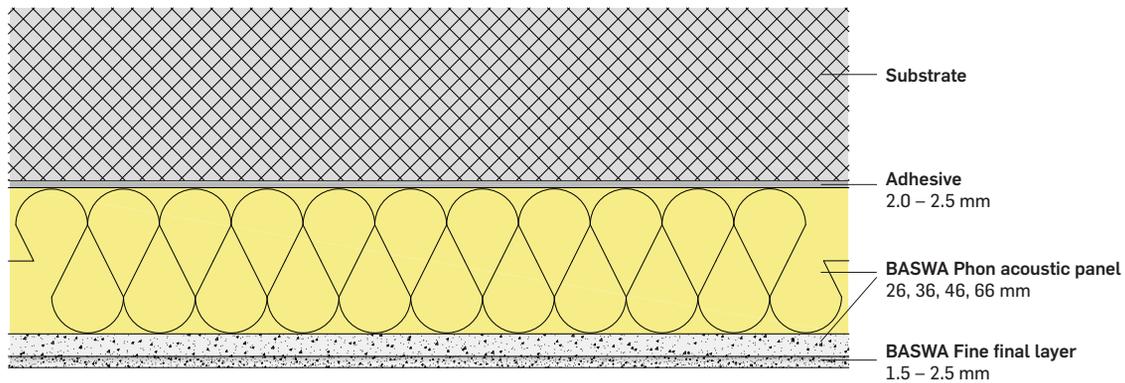
BASWA Phon Fine

System profile

- 1-layer system
- Grain size of final layer: 0.5 mm
- Seamless surface
- Unlimited design options from smooth to individually textured
- Short installation time
- Very resistant surface
- Standard colour ~ NCS S 0500-N
- Unlimited choice of colours (RAL, NCS, etc.)
- High degree of whiteness: 91 %
- Standard surface quality <Q2>



System structure

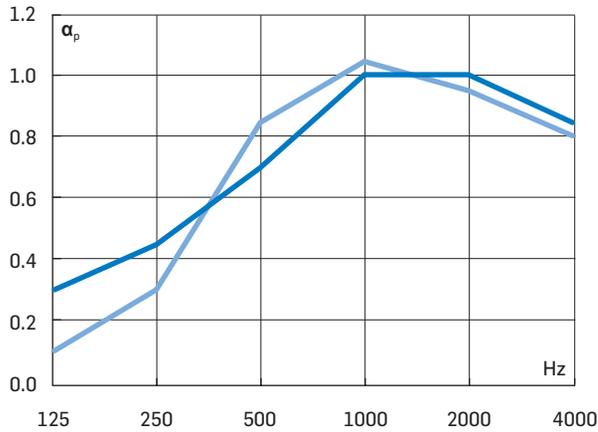


System thickness	System weights BASWA Phon Fine
30 mm	~ 6.5 kg/m ²
40 mm	~ 7.2 kg/m ²
50 mm	~ 7.9 kg/m ²
70 mm	~ 9.0 kg/m ²

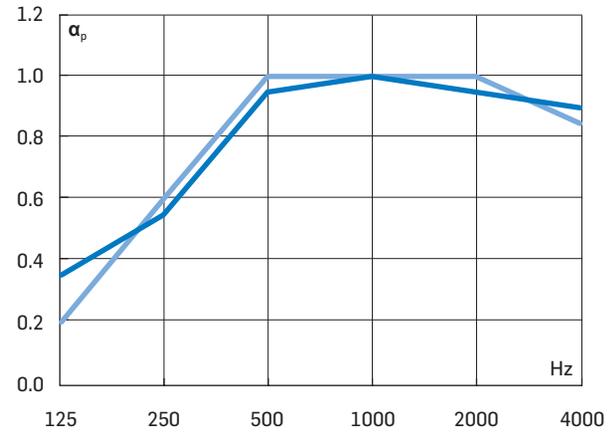
Sound absorption coefficients α_p (practical) according to ISO standard DIN EN ISO 11654

Typ A/Concrete —
E-200/Suspension —

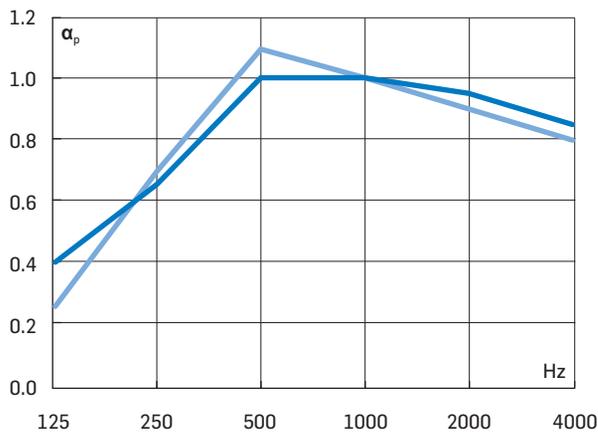
BASWA Phon Fine 30mm



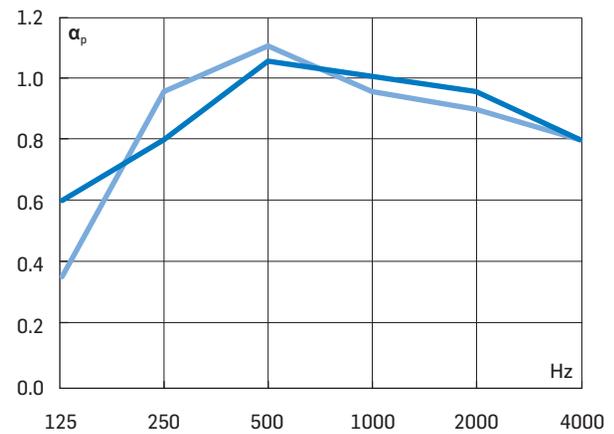
BASWA Phon Fine 40mm



BASWA Phon Fine 50mm



BASWA Phon Fine 70mm



System	BASWA Phon Fine 30 mm		BASWA Phon Fine 40 mm		BASWA Phon Fine 50 mm		BASWA Phon Fine 70 mm	
	Typ A	Typ E-200						
α_w	0.60 (MH)	0.70 (MH)	0.90	0.85	0.90	0.95	0.95	0.95
NRC	0.80	0.80	0.90	0.90	0.95	0.90	1.00	1.00
Absorption Class	C	C	A	B	A	A	A	A
Hz	α_p	α_p	α_p	α_p	α_p	α_p	α_p	α_p
125	0.10	0.30	0.20	0.35	0.25	0.40	0.35	0.60
250	0.30	0.45	0.60	0.55	0.70	0.65	0.95	0.80
500	0.85	0.70	1.00	0.95	1.00	1.00	1.00	1.00
1000	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
2000	0.95	1.00	1.00	0.95	0.90	0.95	0.90	0.95
4000	0.80	0.85	0.85	0.90	0.80	0.85	0.80	0.80

The complete acoustic measurement data can be found in the current test reports.

Caution! When using coloured BASWA acoustic coatings and decorative finishes (e.g. BASWA Textures), the specified sound absorption values may change slightly in individual cases.

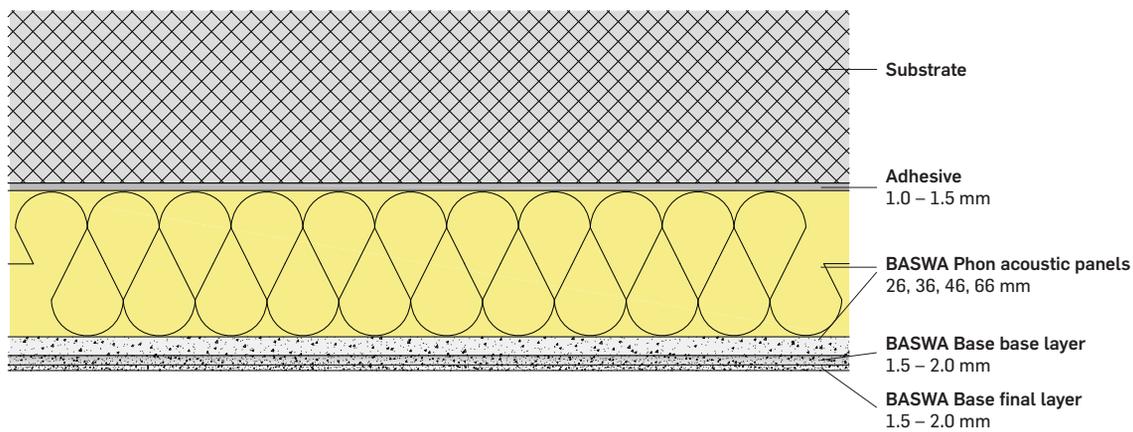
BASWA Phon Classic Base

System profile

- 2-layer system
- Grain size of final layer: 0.7 mm
- Seamless surface
- Unlimited design options from smooth to individually textured
- Very resistant surface
- Standard colour ~ NCS S 0500-N
- Unlimited choice of colours (RAL, NCS, etc.)
- High degree of whiteness: 90 %
- Surface quality standard <Q2> / maximum <Q3>



System structure

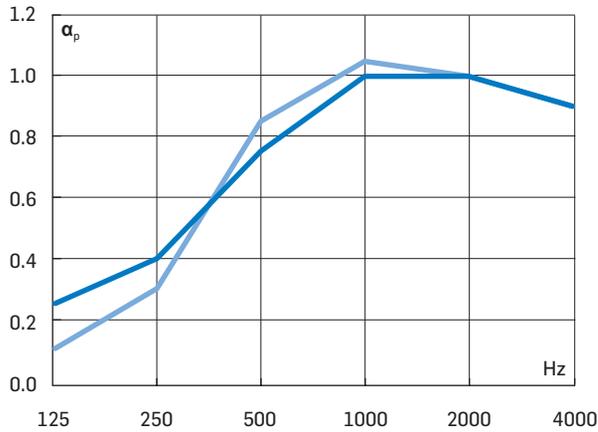


System thickness	System weights BASWA Phon Classic Base
30 mm	~ 8.6 kg/m ²
40 mm	~ 9.3 kg/m ²
50 mm	~ 10.0 kg/m ²
70 mm	~ 11.0 kg/m ²

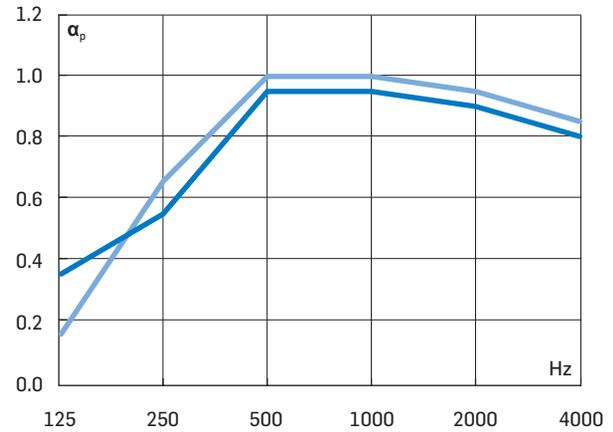
Sound absorption coefficients α_p (practical) according to ISO standard DIN EN ISO 11654

Typ A/Concrete —
E-200/Suspension —

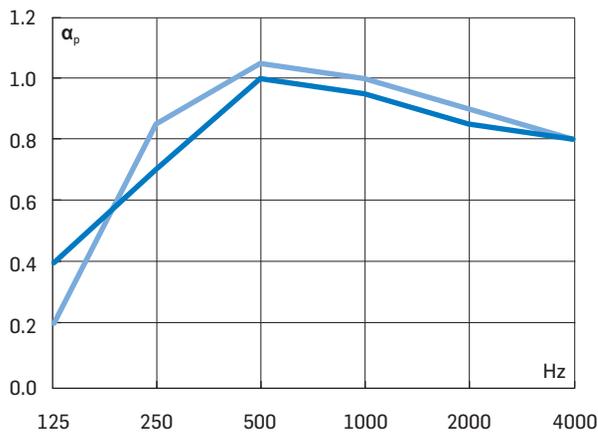
BASWA Phon Classic Base 30mm



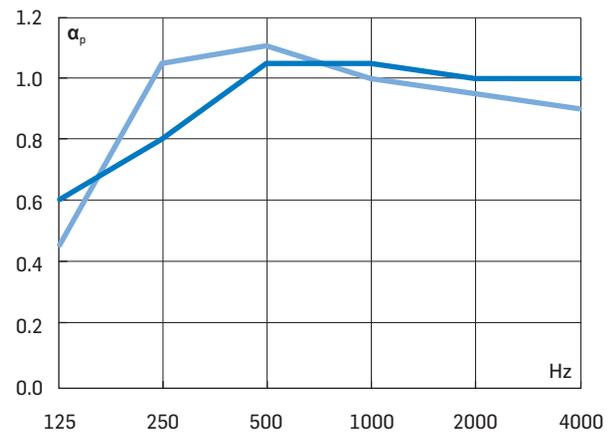
BASWA Phon Classic Base 40mm



BASWA Phon Classic Base 50mm



BASWA Phon Classic Base 70mm



System	BASWA Phon Classic Base 30 mm		BASWA Phon Classic Base 40 mm		BASWA Phon Classic Base 50 mm		BASWA Phon Classic Base 70 mm	
	Typ A	Typ E-200						
α_w	0.60 (MH)	0.70 (MH)	0.95	0.85	0.95	0.90	1.00	1.00
NRC	0.80	0.80	0.90	0.85	0.95	0.90	1.05	1.00
Absorption Class	C	C	A	B	A	A	A	A
Hz	α_p	α_p	α_p	α_p	α_p	α_p	α_p	α_p
125	0.10	0.25	0.15	0.35	0.20	0.40	0.45	0.60
250	0.30	0.40	0.65	0.55	0.85	0.70	1.00	0.80
500	0.85	0.75	1.00	0.95	1.00	1.00	1.00	1.00
1000	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00
2000	1.00	1.00	0.95	0.90	0.90	0.85	0.95	1.00
4000	0.90	0.90	0.85	0.80	0.80	0.80	0.90	1.00

The complete acoustic measurement data can be found in the current test reports.

Caution! When using coloured BASWA acoustic coatings and decorative finishes (e.g. BASWA Textures), the specified sound absorption values may change slightly in individual cases.

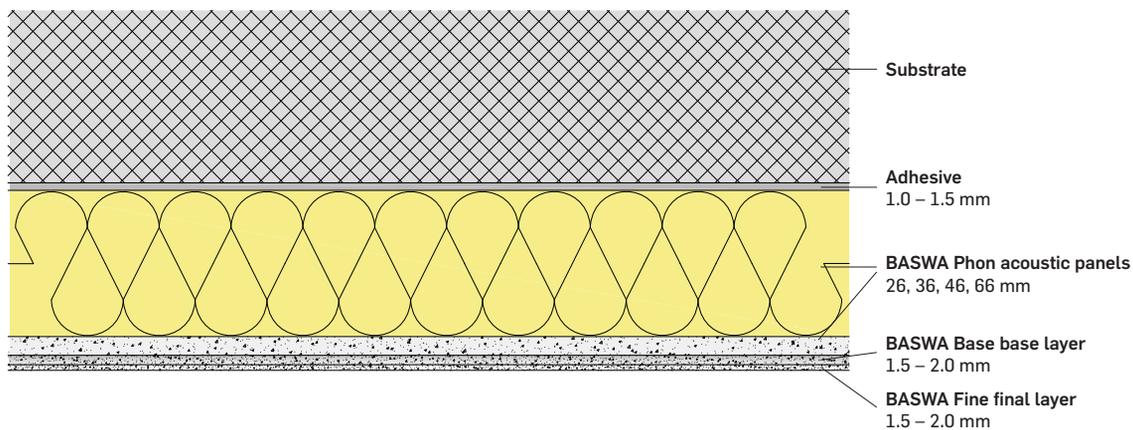
BASWA Phon Classic Fine

System profile

- 2-layer system
- Grain size of final layer: 0.5 mm
- Seamless surface
- Unlimited design options from smooth to individually textured
- Very resistant surface
- Standard colour ~ NCS S 0500-N
- Unlimited choice of colours (RAL, NCS, etc.)
- High degree of whiteness: 91 %
- Surface quality standard <Q2> / maximum <Q3>



System structure

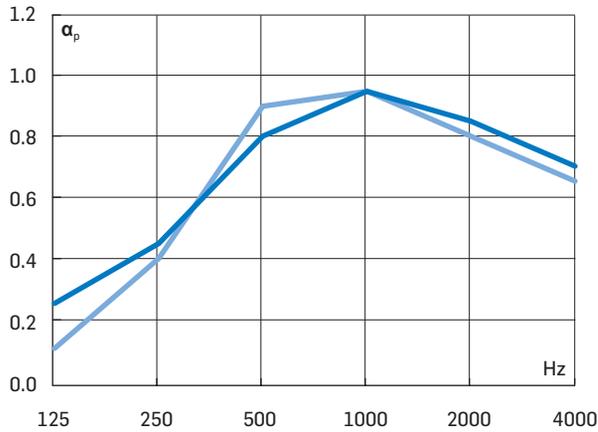


System thickness	System weights BASWA Phon Classic Fine
30 mm	~ 8.5 kg/m ²
40 mm	~ 9.2 kg/m ²
50 mm	~ 9.8 kg/m ²
70 mm	~ 10.8 kg/m ²

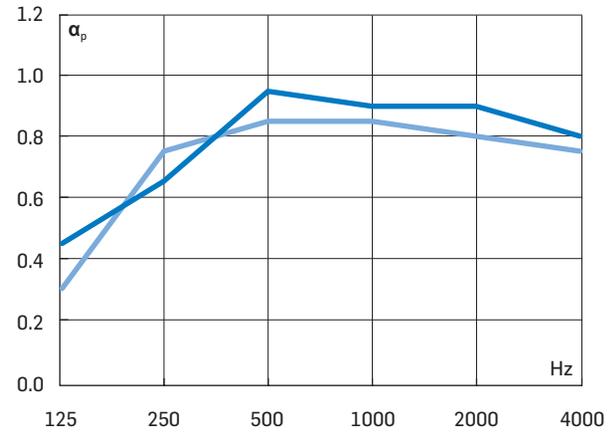
Sound absorption coefficients α_p (practical) according to ISO standard DIN EN ISO 11654

Typ A/Concrete —
E-200/Suspension —

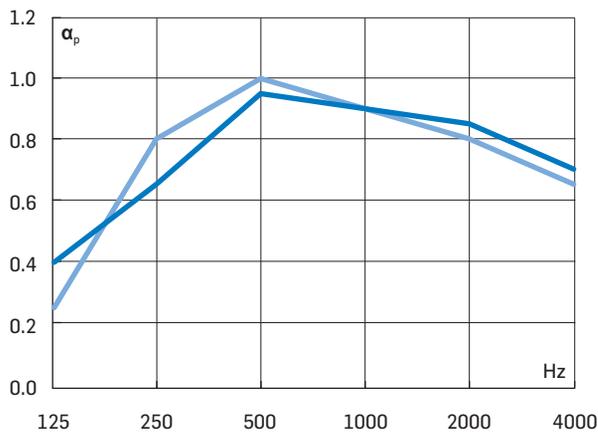
BASWA Phon Classic Fine 30mm



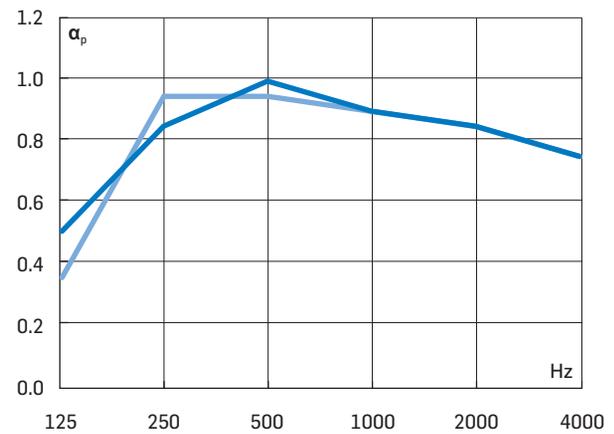
BASWA Phon Classic Fine 40mm



BASWA Phon Classic Fine 50mm



BASWA Phon Classic Fine 70mm



System	BASWA Phon Classic Fine 30 mm		BASWA Phon Classic Fine 40 mm		BASWA Phon Classic Fine 50 mm		BASWA Phon Classic Fine 70 mm	
	Typ A	Typ E-200						
α_w	0.70 (M)	0.75	0.85	0.90	0.80	0.85	0.90 (L)	0.90
NRC	0.75	0.80	0.85	0.80	0.90	0.85	0.95	0.90
Absorption Class	C	C	B	A	B	B	A	A
Hz	α_p	α_p	α_p	α_p	α_p	α_p	α_p	α_p
125	0.10	0.25	0.30	0.45	0.25	0.40	0.35	0.50
250	0.40	0.45	0.75	0.65	0.80	0.65	0.95	0.85
500	0.90	0.80	0.85	0.95	1.00	0.95	0.95	1.00
1000	0.95	0.95	0.85	0.90	0.90	0.90	0.90	0.90
2000	0.80	0.85	0.80	0.90	0.80	0.85	0.85	0.85
4000	0.65	0.70	0.75	0.80	0.65	0.70	0.75	0.75

The complete acoustic measurement data can be found in the current test reports.

Caution! When using coloured BASWA acoustic coatings and decorative finishes (e.g. BASWA Textures), the specified sound absorption values may change slightly in individual cases.

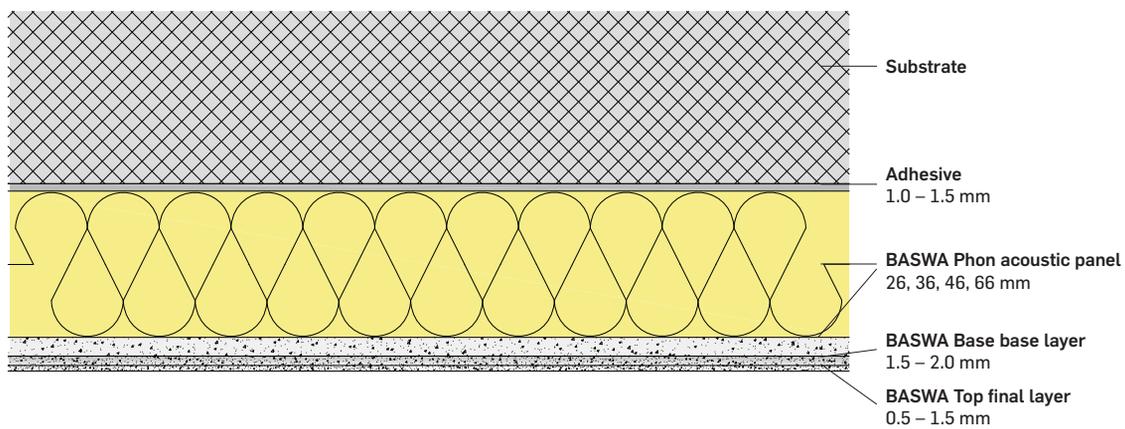
BASWA Phon Classic Top

System profile

- 2-layer system
- Grain size of final layer: 0.3 mm
- Seamless surface
- Unlimited design options from smooth to individually textured
- Very resistant surface
- Standard colour ~ NCS S 0500-N
- Unlimited choice of colours (RAL, NCS, etc.)
- High degree of whiteness: 92 %
- Surface quality standard <Q2> / maximum <Q3>



System structure

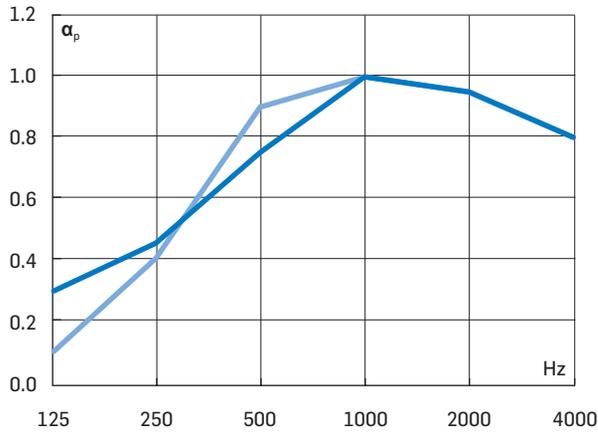


System thickness	System weights BASWA Phon Classic Top
30 mm	~ 8.4 kg/m ²
40 mm	~ 9.1 kg/m ²
50 mm	~ 9.7 kg/m ²
70 mm	~ 10.7 kg/m ²

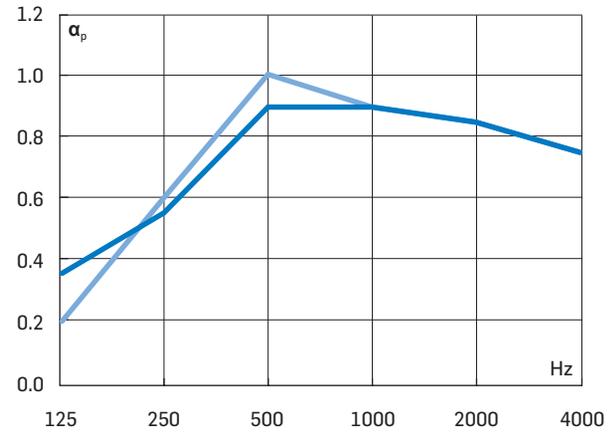
Sound absorption coefficients α_p (practical) according to ISO standard DIN EN ISO 11654

Typ A/Concrete —
E-200/Suspension —

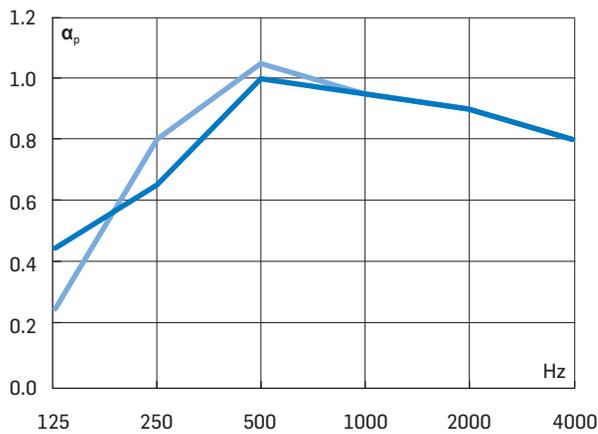
BASWA Phon Classic Top 30mm



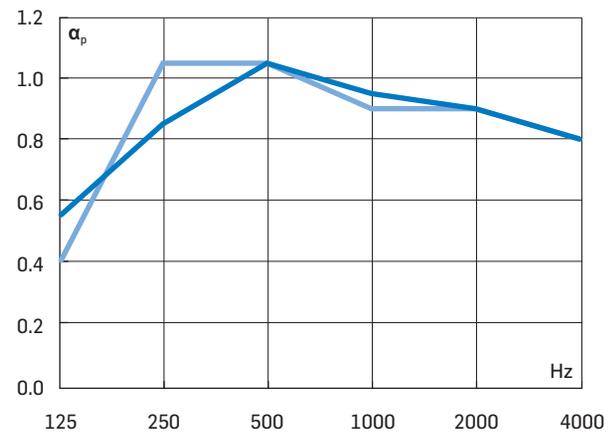
BASWA Phon Classic Top 40mm



BASWA Phon Classic Top 50mm



BASWA Phon Classic Top 70mm



System	BASWA Phon Classic Top 30 mm		BASWA Phon Classic Top 40 mm		BASWA Phon Classic Top 50 mm		BASWA Phon Classic Top 70 mm	
	Typ A	Typ E-200						
α_w	0.70 (MH)	0.75 (M)	0.85	0.85	0.95	0.90	0.90 (L)	0.95
NRC	0.80	0.80	0.85	0.80	0.95	0.90	1.00	0.95
Absorption Class	C	C	B	B	A	A	A	A
Hz	α_p	α_p	α_p	α_p	α_p	α_p	α_p	α_p
125	0.10	0.30	0.20	0.35	0.25	0.45	0.40	0.55
250	0.40	0.44	0.60	0.55	0.80	0.65	1.00	0.85
500	0.90	0.75	1.00	0.90	1.00	1.00	1.00	1.00
1000	1.00	1.00	0.90	0.90	0.95	0.95	0.90	0.95
2000	0.95	0.95	0.85	0.85	0.90	0.90	0.90	0.90
4000	0.80	0.80	0.75	0.75	0.80	0.80	0.85	0.80

The complete acoustic measurement data can be found in the current test reports.

Caution! When using coloured BASWA acoustic coatings and decorative finishes (e.g. BASWA Textures), the specified sound absorption values may change slightly in individual cases.

Installation times BASWA Phon systems

The specified installation time is based on a working group of three to four people and a ceiling size of 80–100 m². The drying times of BASWA joint and coating compounds depend on the room climate conditions. Ideal conditions being 20° C room temperature / 50 % relative humidity.

Allow each step to dry completely.

BASWA Phon Base

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BASWA Phon acoustic panels bonding	●	Drying			Drying									
BASWA Phon acoustic panels grouting	●	Drying			Drying									
BASWA Phon acoustic panels flat grinding		Drying		●	Drying									
Apply BASWA Base final layer		Drying		●	Drying									
Connection work		Drying			Drying		●							

BASWA Phon Fine

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BASWA Phon acoustic panels bonding	●	Drying			Drying									
BASWA Phon acoustic panels grouting	●	Drying			Drying									
BASWA Phon acoustic panels flat grinding		Drying		●	Drying									
Apply BASWA Fine final layer		Drying		●	Drying									
Connection work		Drying			Drying		●							

BASWA Phon Classic Base

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BASWA Phon acoustic panels bonding	●	Drying			Drying			Drying						
BASWA Phon acoustic panels grouting	●	Drying			Drying			Drying						
BASWA Phon acoustic panels flat grinding		Drying		●	Drying			Drying						
Apply BASWA Base base layer		Drying		●	Drying			Drying						
Check BASWA Base base layer		Drying			Drying		●	Drying						
Apply BASWA Base final layer		Drying			Drying		●	Drying						
Connection work		Drying			Drying			Drying		●				

BASWA Phon Classic Fine

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BASWA Phon acoustic panels bonding	●													
BASWA Phon acoustic panels grouting	●													
BASWA Phon acoustic panels flat grinding				●										
Apply BASWA Base base layer				●										
Check BASWA Base base layer							●							
Apply BASWA Fine final layer							●							
Connection work									●					

BASWA Phon Classic Top

Days	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BASWA Phon acoustic panels bonding	●													
BASWA Phon acoustic panels grouting	●													
BASWA Phon acoustic panels flat grinding				●										
Apply BASWA Base base layer				●										
Check BASWA Base base layer							●							
Apply BASWA Top final layer							●							
Connection work									●					

Preparation and planning

Requirements and prerequisites

General information

Correct planning, careful site preparation and execution of the work under optimum processing conditions are necessary to guarantee the surface quality and service life of a BASWA Phon acoustic system.

In order to ensure the acoustic and aesthetic quality as well as the longevity of the BASWA Phon surfaces, the BASWA Phon systems are exclusively processed by trained and certified companies. The experience of the executing team, a suitable scaffolding and adherence to the processing guidelines are essential prerequisites for the installation of the BASWA Phon System.

Standards and recommendations

The current guidelines of the company BASWA acoustic AG must be observed for both types of work. The agreed terms and conditions as outlined in the planning documents, processing guidelines, and the general terms and conditions of BASWA acoustic AG take effect on the date of the contract.

Certification of processing companies

In order to qualify for the processing of BASWA Phon acoustic systems, it is necessary to attend a certification course. BASWA acoustic AG products can only be purchased from certified companies.

Companies that are about to carry out a project with BASWA Phon acoustic systems should attend a processing course at the respective BASWA company location 4–6 weeks before the start of the project. Information about the courses on offer can be obtained from the regional contact person at BASWA acoustic AG. Upon completion of the training, the course participants and the company receive a certificate which identifies them as a certified BASWA processor. On request, BASWA provides architects and planners with a list of certified and experienced companies.

Planning of processing

The installation of BASWA acoustic systems, in particular the application of the final coating, should, if possible, be carried out in the final phase of interior finishing.

Building and room conditions

Processing and

- Temperatures of at least 15° C to max. 30° C must be maintained during processing until complete drying.
- Avoid draughts during processing.
- During the drying time no temperature gradient of more than 10° C may occur!
- The drying time is considerably longer with high humidity in the building

Building use

- Up to stress class B (SN EN 13964 for suspended ceilings) at 90 % relative humidity and 30° C ($\pm 2^{\circ}$ C)
- No visual change, such as discolouration, blistering, wavy surfaces, thickness changes, etc.

Dew point

- If there are strong fluctuations in temperature and relative humidity, care must be taken to ensure that the dew point is not located on the surface or within the BASWA acoustic system.
- The design of the building insulation and the commissioning of air conditioning systems must be planned and controlled accordingly.
- The moisture caused by condensation in the room air can cause damage to the BASWA Phon acoustic system.

The use of gas heaters is not recommended. These usually increase the relative air humidity, whereby the drying time is considerably extended!

Drying times, time planning and finish dates

BASWA Phon coating compounds are water-based. The minimum drying times between the individual processing steps must be observed. These minimum drying times refer to ideal indoor climatic conditions: 20° C room temperature and 50 % relative humidity. Cold and humidity extend the drying times considerably. Fans, with or without heating, favour drying times to ensure compliance with the construction program. Before each working step, a complete drying of the previous coating masses must be ensured.

Jointlessness

BASWA Phon acoustic systems do not require joints as a system, but the specific properties of the ceiling or wall surface, as well as the shape of the construction, material expansion, possible subsidence or deformation of the shell must be taken into account. Joints in the subfloor caused by the construction must be taken over in the BASWA Phon system structure.

The guidelines of the product suppliers of the selected underneath material must be observed according to their set regulations.

Special areas of application

The use of BASWA Phon acoustic systems for special applications is subject to special requirements. Information can be found in the respective application data sheets for special applications at www.baswa.com.

- Special application on balcony and terrace undersides in outdoor areas
- Special application in damp rooms such as swimming pools and SPA areas

Side light conditions

Surfaces that are exposed to strong side light should always be executed with a two-layer system (Classic Base / Fine / Top). For this lighting situation, the surface quality level Q3 must always be met.

It is not advisable to plan lateral illumination of the BASWA Phon surfaces with LED luminaires. Under the influence of the lateral LED light, the slightest traces of processing and irregularities become highly visible. It is therefore advisable to have a surface sampled in advance under original lighting.

Quality levels

Unless otherwise agreed, the standard surface quality is always Q2. If increased requirements are placed on the evenness of surfaces, this must be expressly stated in the bill of quantities and contractually agreed.

A two-layer system (BASWA Phon Classic Base / Fine / Top) must be put out to tender for quality level Q3.

The surface quality Q4 cannot be achieved with the smoothed BASWA Phon acoustic systems for reasons of application and material technology.

Flatness and dimensional tolerances

In the case of increased requirements for surface quality 3, additional flatness tolerances must be contractually agreed. These already apply to the preparatory work on the substrate to which the BASWA acoustic systems are applied.

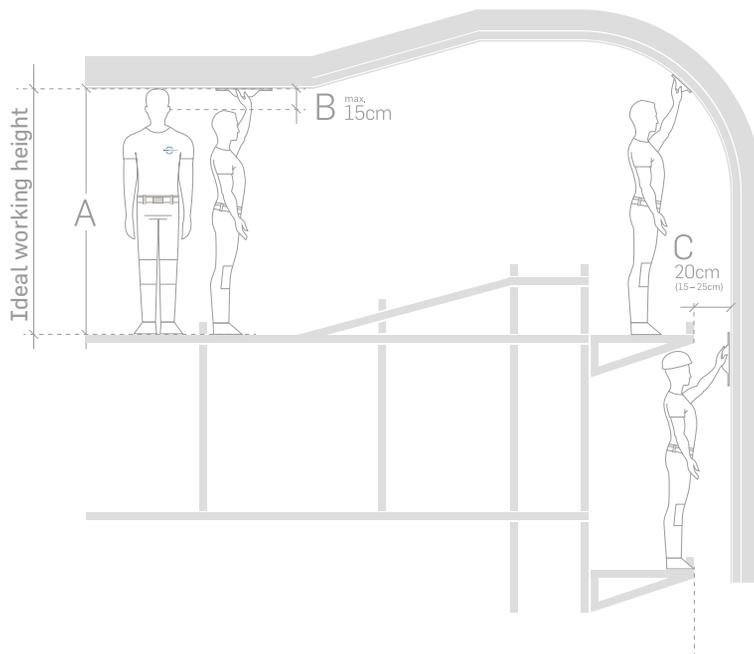
Detailed information can be obtained from your regional representative.

Scaffolds

In order to achieve the best possible surface quality, the coating processes are to be carried out with the aid of surface frameworks. This ensures an unhindered, continuous workflow, especially during the smoothing of the final layer.

The height difference between ceiling and surface scaffold must be adjusted to the body size of the processing team (optimum difference between scaffold and ceiling between 185 and 195 cm).

Watch your step! Wearing headgear during coating work can damage the freshly created surface!



Wall scaffolds

When applying coating compounds to vertical surfaces, it is advisable to work on facade scaffolding constructions using scaffolding brackets. A settling in the middle of the surface leads to visible traces of processing. The distance between the surface and the scaffold bracket should be at least 15 cm, optimally 20–25 cm. The national safety regulations regarding maximum distances must be observed.

Temporary safety anchors in the wall construction should be avoided wherever possible.

Subsequent work

Subsequent installation work by other trades on BASWA system surfaces (e.g. installation of luminaires) must be carried out carefully and with clean gloves. All planners and craftsmen involved in the construction must be made aware of the consequential costs arising from subsequent damage or planning changes.

Repairs

Like all surface coatings in building construction, the BASWA Phon surfaces are repairable (depending on the size and illumination of the repair areas). The repaired area usually has a slightly different structure and becomes visible under unfavorable incidence of light. In the case of major damage, it is recommended to recoat the entire surface of the surface segment. Furthermore, it is advantageous to divide the surfaces into smaller areas by means of separating joints.

Storage

The BASWA products are delivered on pallets in EU format and should be stored correctly on the construction site or in the material warehouse until installation.

- Protect from weather and frost (air-conditioned containers if necessary)
- Acoustic panels must also be protected against dew formation (wetness).
- Temperature in storage room min. 5° C max. 30° C.
- Products must be protected from direct sunlight.

The expiry date of coating compounds and joint fillers is 12 months from production. BASWA products are provided with a batch number:

4 Year	04 Month	12 Day	2 Batch
--------	----------	--------	---------

production date
= 12.04.2024

Substrate for BASWA Phon acoustic Systems

General information

In order to guarantee the service life and surface quality of a BASWA Phon acoustic system and to prevent long-term damage, the substrate to which the system is bonded must first be checked for five points.

In addition, the following requirements still have to be checked:

- If the substrate is mineral
- Flatness or evenness of the substrate according to the requirements
- for the evenness of building component surfaces in accordance with DIN 18202
- Free of sintered layers and mould release agents etc.
- Dust-free, free from impurities and harmful efflorescence
- Load-bearing, firm and sufficiently dimensionally stable
- Adhesive tensile strength > 25 kg / m²
- Airtight
- Crack-free
- Guarantee of dew point prevention
- Dry (residual moisture ≤ 3% by mass), not water-repellent

1. Adapt the substrate to the required final shape

Flat, parallel or exactly curved: With the adhesive and coating masses as well as the grinding of the acoustic panels, unevenness of max. 4 mm can be levelled out. Increased requirements for flatness (Q3), dimensional tolerances and dimensional accuracy must be met with the substrate.

Prior to use, treat strong formwork offsets and burrs on concrete surfaces (>3 mm) (peel off, partially level or apply full surface levelling layer). Please note: The levelling layer must dry completely before the acoustic panels are bonded (lead time of at least one to two weeks / or one day drying time per millimeter of levelling plaster).

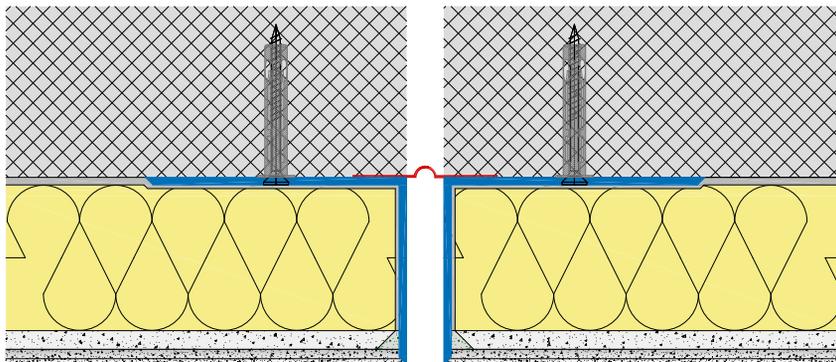
2. The substrate must be stable

No cracking or movement:

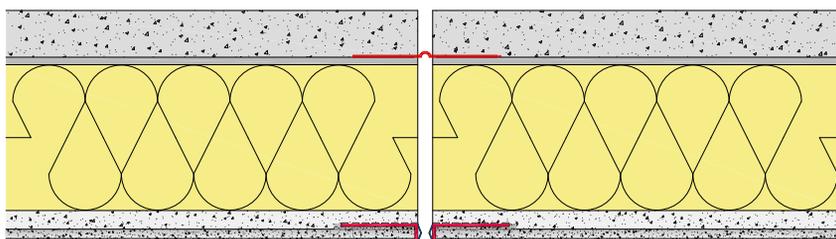
Taking into account the specific properties of the ceiling or wall surface such as the shape of the structure, material expansion, possible subsidence and/or deformation of the shell, surfaces can be designed up to the maximum size of the respective substructure.

The guidelines of the product suppliers of the selected substructure must be strictly observed. In order to prevent the formation of cracks, expansion joints caused by design must be incorporated into the BASWA acoustic systems. No warranty for non-mineral substrates such as OSB, MDF, metal plates, etc.

Formation of expansion or separation joints: For large areas, depending on the specific properties of the building structure or the construction process, the formation of separation joints is necessary. The following principle shows how air circulation to the cavity can be avoided, thus excluding partial contamination.



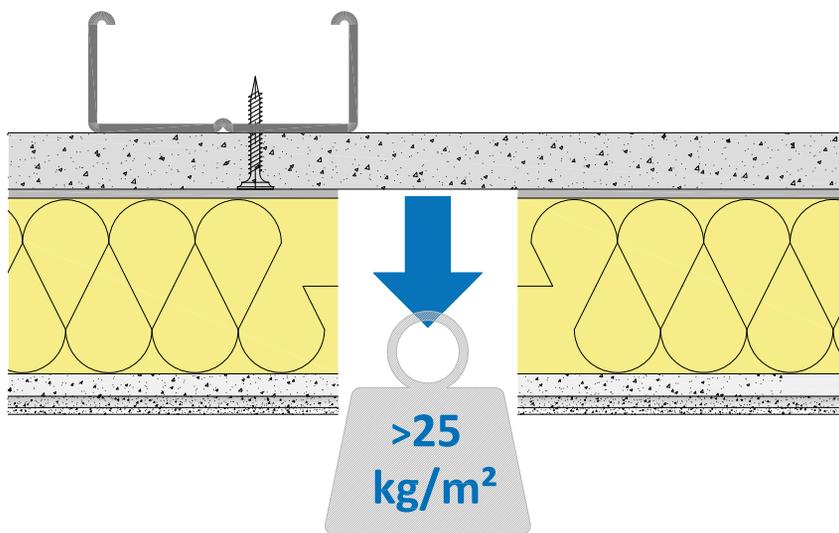
Detail drawing D_053



Detail drawing D_099

3. Adhesive tensile strength $>25 \text{ kg/m}^2$

The substrate to be coated must have an adhesive tensile strength of at least 25 kg/m^2 . If this is not guaranteed, measures must be taken to achieve this adhesive tensile strength. For suspended ceilings, the spacing of the suspended structure must be selected so that the entire ceiling structure can support the additional load of the BASWA acoustic system. Gypsum plasterboards should preferably be pre-treated with a deep primer due to their tensile strength.

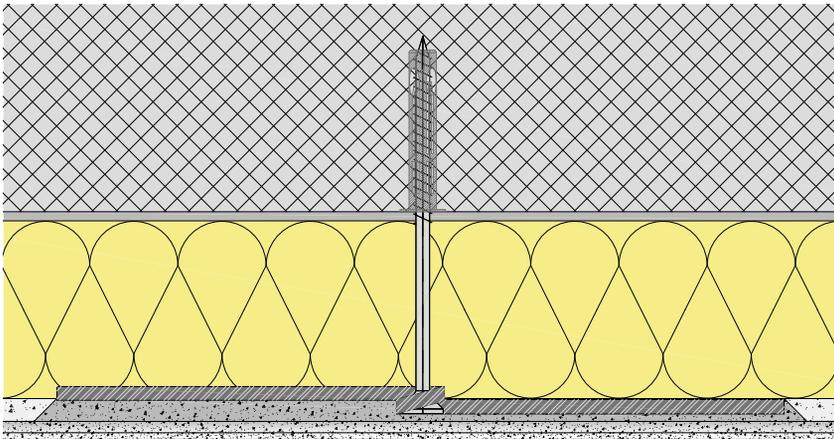


Detail drawing adhesive tensile strength

Additional mechanical fastening

For existing ceilings (plaster, paint), the adhesive tensile strength and moisture sensitivity must be checked beforehand. If the adhesive tensile strength is less than 25 kg/m^2 , the defective substrate must be removed accordingly or strengthened by means of a depth substrate matched to the existing coating.

Additional mechanical fastening of the bonded acoustic panels with the BASWA fastening rod can only have a supporting effect to prevent third-party damage.



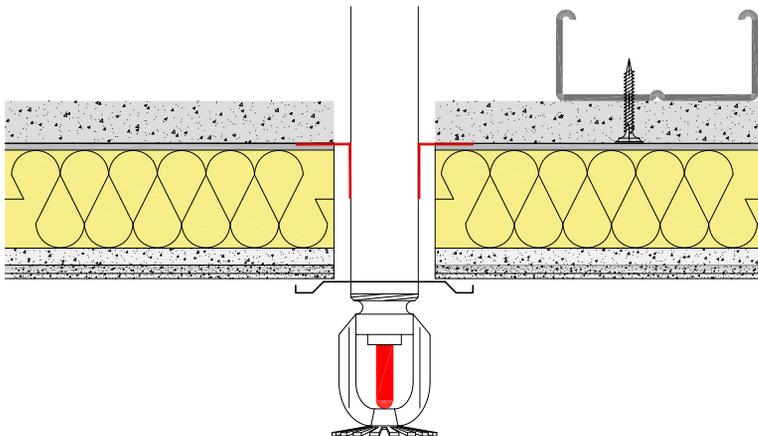
Detail drawing D_003 > 25 kg/m^2



BASWA mechanical fastening rod

4. The substrate must be airtight

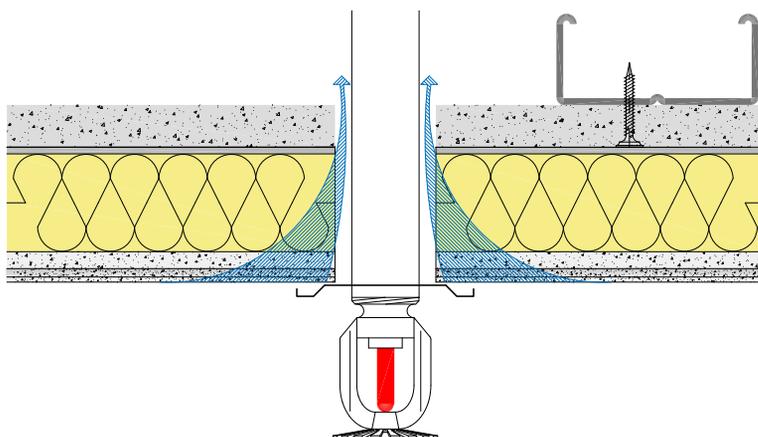
In the case of suspended ceilings, all panel joints must be filled and reinforced in such a way that a level, stable and closed substrate is created (airtightness!). All installation penetrations and gaps to connections to components must be sealed airtight with vapor barrier tape before the acoustic panels are bonded. These seals prevent air circulation through the open-pore acoustic system (prevention of partial dust deposits in the final coating). In order to ensure airtightness over the entire service life of the installation, an adhesive tape should be selected which ensures a corresponding long-term adhesion (e.g. vapor barrier adhesive tape).



Detail drawing D_074

Ageing process with air flows

In the event of leaking connections to suspended surfaces, the air circulates through the open-pored acoustic system. The dust carried along is filtered in the final coating and leads to strong partial discolorations over the course of the service life.

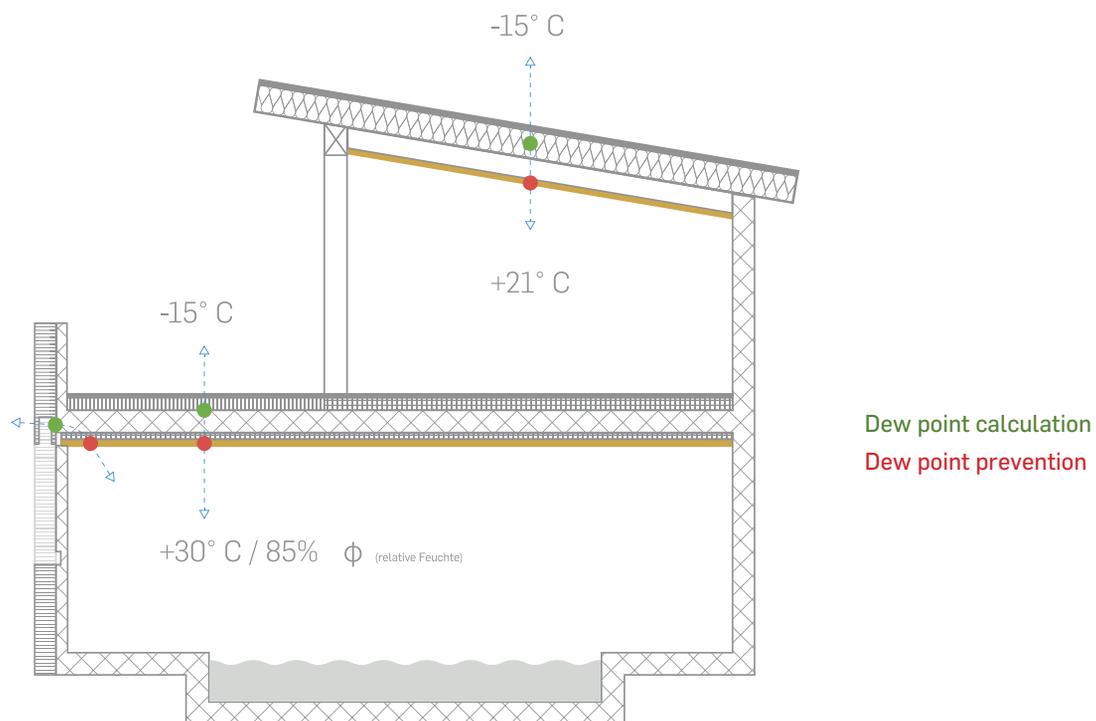


Air permeable without vapour barrier tape - red

5. Calculation and prevention of the dew point

When planning a BASWA Phon acoustic system adjacent to the outer shell of the building, the dew point must be calculated and checked in advance by a specialist planner (e.g. at the top floor / outside walls / balcony, terrace undersides / cold rooms, etc.).

If the dew point is within the BASWA acoustic system, the surface will change color irregularly within a very short time due to condensation (increased dust adhesion to the moist coating surface).



Building physics values

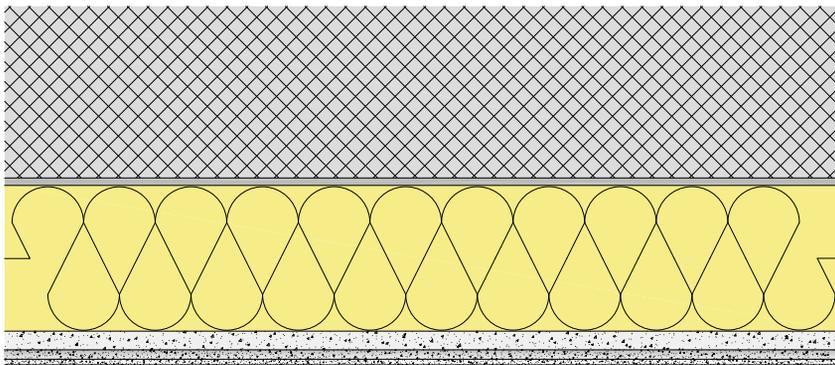
BASWA Phon Base, Fine, Cl.Base, Cl.Fine, Cl.Top	1/U	U-value (W/m ² K)	λ Lambda-value (W/m K)	R (m ² K/W)
30 mm	0.68	1.47	0.044	0.68
40 mm	0.96	1.04	0.041	0.96
50 mm	1.25	0.80	0.040	1.25
70 mm	1.82	0.55	0.038	1.82

Ceiling structure



Solid ceilings

Due to the minimal loss of room height, combined with excellent acoustic absorption, the BASWA Phon acoustic systems have proven themselves for use directly on concrete or existing substrates.



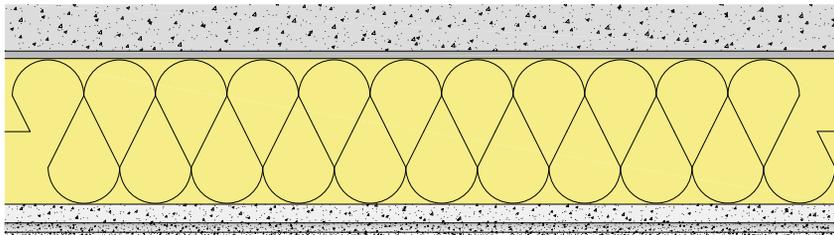
Detail drawing D_001

Suspended ceilings

In order to prevent partial contamination of the surface, the system requires a stable, absolutely airtight ceiling substructure. Commercially available suspension systems made of metal rails can be used for the substructure. Wooden constructions are not recommended for this purpose. These may form cracks due to long-term deformation.

A 12.5 mm thick plasterboard or gypsum fiberboard ceiling is suitable as a suspended base for the BASWA Phon system structure. Gypsum plasterboards should preferably be pre-treated with a deep primer due to their tensile strength.

In damp rooms, such as swimming pools, wellness areas and adjacent areas, the substructure must be selected on the basis of structural-physical investigations. All components of the suspension structure must be corrosion-resistant. Cement fiber boards or water-repellent dry construction boards, cementitious levelling plasters intended for this application must be used. The BASWA Phon acoustic panels must be bonded with BASWA fix C cement adhesive. See application data sheet for installation of BASWA acoustic systems in damp rooms.



Detail drawing D_002

Acoustic reflection areas/ seamless hybrid systems

For reasons of acoustic design, sound-reflecting surfaces (reflection areas) can be planned into the ceiling or wall surfaces. Direct coating of concrete or gypsum substrates with the BASWA Phon coating dimensions has practically no acoustic effect.

Due to the different flow resistances of the reflecting gypsum or concrete surfaces as well as the sound-absorbing acoustic panel surfaces, an irregularly occurring aging (contamination) cannot be excluded in the course of the service life. The color differences of the surfaces resulting from this construction-physical process can therefore not be objected to.

BASWA Hybrid panel

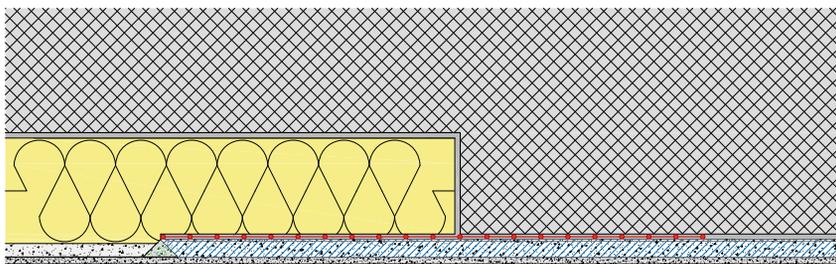
The BASWA Hybrid panel was developed to prevent different ageing of reflection areas and the adjacent absorption surfaces. The approx. 10 mm open-pore pre-coating – identical to the pre-coating of the BASWA Phon acoustic panel – creates an open-pore, breathable substrate which ensures even ageing over the entire coated surface.

These soundproof or mechanically stable substrates are prepared as follows:

Apply the BASWA Hybrid panel to the prepared, mineral substrate (level out uneven surfaces/if necessary, apply blocking adhesion Primer) over the entire surface (at least 10 cm). These are then grouted, sanded and seamlessly coated with BASWA coating compounds.

Sound reflection areas with BASWA Hybrid on solid ceilings

To prevent cracks, the BASWA Hybrid panel must overlap the BASWA Phon acoustic panel by at least 10 cm. To compensate for the height, the BASWA Phon panel is cut back to the required level at least 10 cm wide. Then embed the reinforcing fabric and glue the BASWA Hybrid panel to the same height as the BASWA Phon panel.

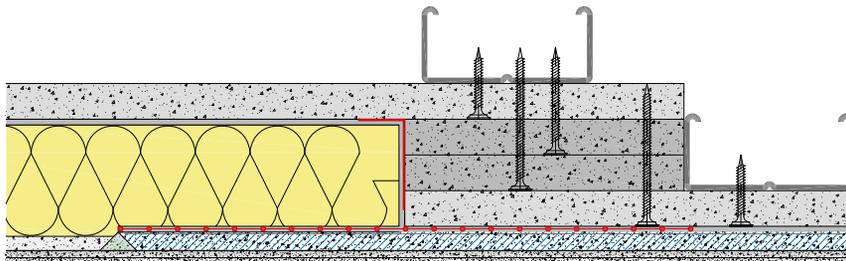


Detail drawing D_079

Suspended hybrid systems

Sound reflection areas (hybrid systems) can also be used in suspended systems for acoustic reasons. The above points also apply to this application.

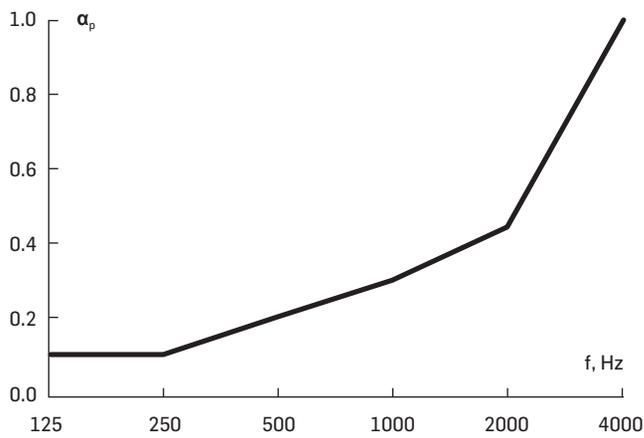
The construction of the ceiling offset must be airtight and stable in movement!



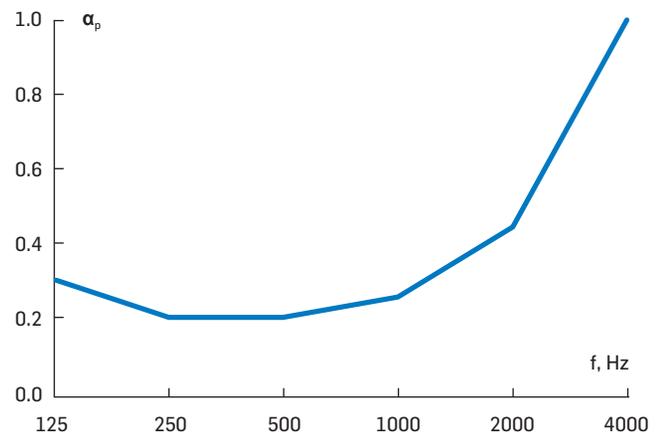
Detail drawing D_080

Sound absorption BASWA Hybrid Base

Solid ceilings (on concrete)



Suspension 200 mm



Curved surfaces

In order to produce curved surfaces, the substrate must already correspond to the final shape.

Acoustic panels are specially scored on the back surface and are adapted to the substrate on site, glued and grouted. After complete drying, the surface is sanded to the desired final shape. In the BASWA Phon Classic System (two-layer system), curved surfaces are always complete with a base and final layer.

For radii > 20 m, convex and concave surfaces can also be planned with a single-layer system, provided they are not exposed to stray light. Smoothed surfaces are possible from radii ≥ 0.5 meters.

Radii < 0.5 meters, e.g. for hollow grooves, are extremely difficult to smooth and require special tools. We will be happy to advise you on the planning of appropriate technical details.



BASWA Colours

The choice of colours for the BASWA coating compounds is almost unlimited. The coating compounds can be coloured in almost any desired shade. After delivery of a colour reference, a colour sample is created by BASWA. This must be confirmed by the architect or client.

In order to achieve coloured surfaces, the BASWA coating materials are dyed at the factory to order. The colour formulations are determined individually for each new colour in the BASWA acoustic AG laboratory; due to the special properties of the porous surfaces, each colour formulation is compared by eye with the original pattern.

The pigment preparations are mixed into the coating masses without further addition of additives. The coloured products are then applied on site. Furthermore, all desired colours can be mixed on order according to references of common colour cards or physical samples.

The products are made from natural marble sand. Untreated natural products are always subject to minimal colour variations and can easily influence the basic tone of the colour. The standard white of the BASWA coating dimensions corresponds approximately to NCS S 0500-N.

Due to the porosity of the surface, finished BASWA surfaces can have very different effects depending on the incidence of light. Similar to other mineral systems, a slight cloud formation cannot be excluded with coloured surfaces.



Light reflection of BASWA

Light reflection on surfaces in rooms should be as high as possible, because poor lighting conditions can lead to fatigue, headaches, poor eyesight and noticeably reduced productivity at the workplace.

The BASWA acoustic coatings with white surface have an optimal light reflection between 75 -79 %. This enables a high level of light diffusion and thus an even distribution of light, which can considerably increase well-being. Artificial and natural light is also used efficiently and can also contribute to energy savings.

The following values refer to measurements carried out according to DIN EN ISO 11664-4 according to CIELAB system.

Coating	light reflection	Degree of whiteness (CIE-Y value)
BASWA Base	0.75	89.61
BASWA Fine	0.77	90.28
BASWA Top	0.79	91.30
BASWA Fresh	0.76	89.66
BASWA Casual	0.76	89.85

Surface structures and effects

BASWA Textures

The smooth finish of the BASWA Phon acoustic systems with their fine, smooth surface texture supports the design of modern, timeless architecture. Using special processing techniques, various plaster structures can be imitated, which are often used in the acoustic renovation of historic buildings.

- Spray application
- Brush Texturing
- Modeling the trowel

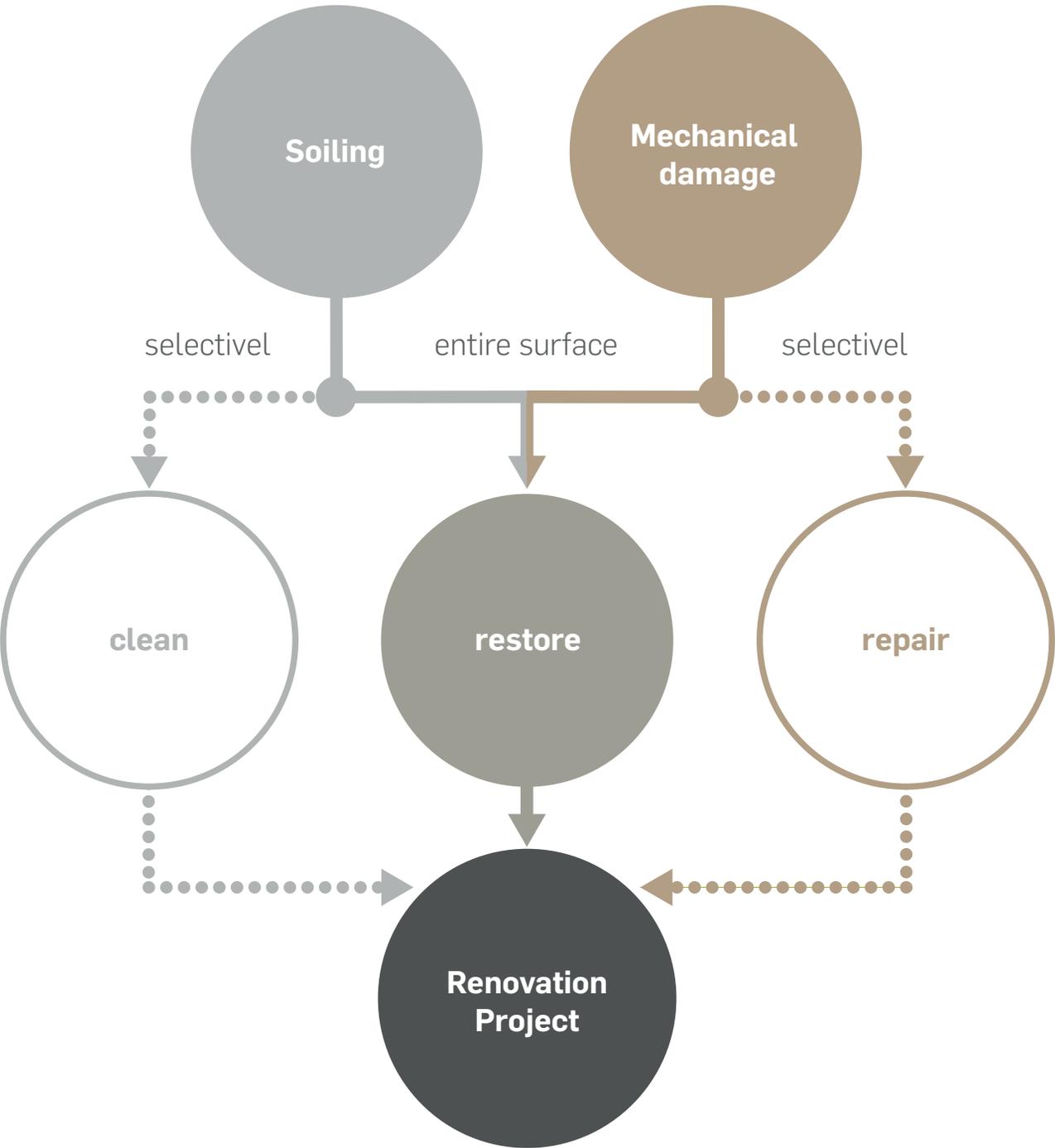
Sparkling effects with BASWA Shine

The BASWA Shine surface refinement gives the surface a glittering effect without significantly impairing its acoustic performance. The mica dispersion BASWA Shine is used for the subsequent finishing of BASWA acoustic surfaces. It must be directly illuminated with the help of the lighting concept in order to achieve the glitter effect.

On request, BASWA acoustic AG develops special surface effects in cooperation with customers.



**Protection, cleaning,
maintenance and refurbishment**



General information

BASWA Phon acoustic systems are fine-pored surfaces that absorb sound energy. The pore size and the number of pores significantly determine the absorption properties of the various acoustic systems. In order to maintain the porosity of the surface and thus the effectiveness of sound absorption, BASWA Phon surfaces must not be painted under any circumstances.

Aging of BASWA Phon acoustic systems

The open-pored BASWA Phon surfaces act like a filter due to their permeability to changes in air pressure. Over the years, fine dust can therefore settle in the pores, which can lead to a discreet greying of the surfaces. Under normal conditions this greying is very minimal and hardly visible. Ageing has no influence on the acoustic performance of the system.

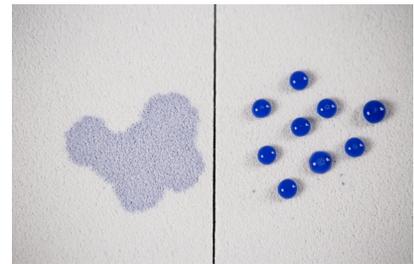
Since the BASWA Phon acoustic systems are installed exclusively on airtight, closed surfaces, an air flow through the system is excluded. As a result, aging and greying therefore take place evenly and slowly.

Furthermore, the following must be observed:

- Do not attempt to clean with water or non-BASWA cleaning agents!
- In general, only touch the surface with clean hands or wear clean gloves.
- Always protect BASWA surfaces with masking tape during connection work.
- Do not rub off superficial, partial soiling (dust, fingerprints, etc.).
- Do not rub, otherwise the dirt will penetrate deeper into the pores.
- Do not paint BASWA acoustic ceilings!

Surface protection

BASWA Protect is a specially developed premium impregnation system to achieve deep water repellency with optimum protection for BASWA acoustic surfaces. The acoustic performance of the treated surface is not impaired. The deep penetration of BASWA Protect into the acoustic system results in significantly lower dirt and water absorption. This prevents the immediate ingress of liquids and thus reduces the absorption capacity of liquid type dirt and dirt particles that have combined with liquids. Furthermore, the impregnation can have a positive influence on the cleaning of BASWA surfaces and the longevity of BASWA surfaces.



BASWA Protect (right)

Cleaning

Dry dirt or dust adhering to the surface can be removed with an adhesive tape or a fine brush (attached to a suction device).

Partial organic soiling (drink stains, grease, nicotine etc.) can be removed with BASWA Blonde (bleaching agent) or BASWA Clean (special enzyme cleaner). Prior treatment of the surfaces with BASWA Protect facilitates cleaning and maintenance work.



BASWA Clean

BASWA Fresh

The mineral dispersion technology of BASWA Fresh is used to renovate age- and use-related discolorations of BASWA surfaces. BASWA Fresh is a part of the BASWA maintenance and refurbishment product line and can therefore be combined with other applications, such as surface cleaning with BASWA Clean. Treating surfaces with BASWA Fresh, however, does not replace full renovation, but can considerably extend the service life of a BASWA surface. The professional application refreshes age-related discolorations as well as faded BASWA surfaces and gives them back their new appearance. The acoustic performance is virtually unaffected. BASWA Fresh is not suitable for re-coloring existing BASWA acoustic surfaces.



BASWA Fresh

Note! With colored BASWA acoustic surfaces treated with BASWA Fresh, color differences in relation to the original color cannot be ruled out. BASWA Fresh may only be used by specially trained companies (certified BASWA partners).

BASWA Fresh is supplied in as close to the original color of the existing surface as possible.



BASWA Fresh (left)

BASWA Casual

BASWA Casual is the acoustic spray plaster, which is used for the renovation of existing BASWA Phon acoustic surfaces.

In the event of renovation, BASWA Casual is applied to the existing acoustic system in one to two stages. The result is a slightly textured, homogeneous, jointless surface. Soiled or damaged areas or surfaces must be cleaned in advance with suitable agents (e.g. BASWA Clean) and partially repaired.

As part of a complete renewal, the BASWA coating compounds can be removed with the aid of grinding equipment and then the coating compounds can be reapplied. Depending on the BASWA Phon System, it is also possible to apply a new final coating. In this case, however, a slight impairment of the absorption capacity must be accepted.



BASWA Casual

BASWA maintenance and renovation concept

BASWA acoustic ceilings should only be refurbished by specially trained companies. The specialized company investigates the case and decides which measures and methods are most suitable for refurbishment. Depending on the soiling, the size of the ceiling and the available time window, various measures have to be combined for a successful renovation.

Each renovation is unique and individual in needs, this is highly considered when finding a solution for your project.

Common construction details

Common construction details

For the planning of various construction details such as surface connections, edge formation, separating and expansion joints as well as various installations, a large number of schematic detail drawings are available to you on our website under the menu item "Documentation".

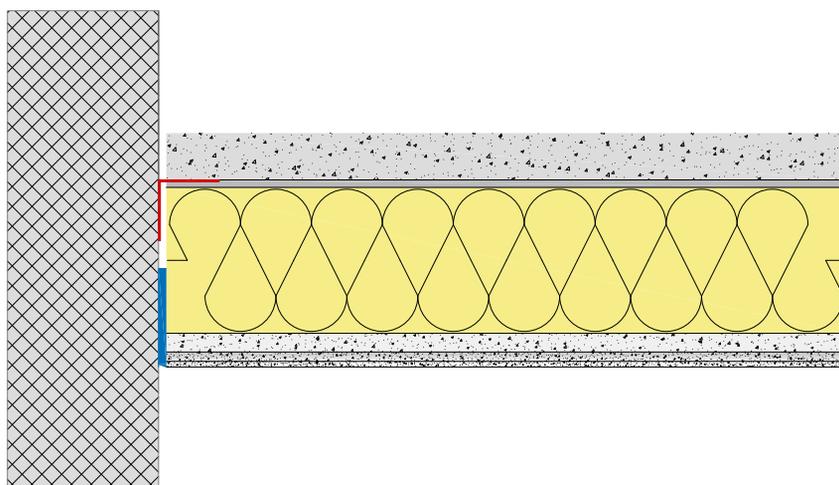
The following pages describe the most important points of the most common detailed solutions by topic.

Surface connections to vertical components

Wall connection with separating strips

In order to prevent uncontrolled cracking, the coating compounds of all BASWA acoustic systems must be separated from adjacent surfaces and/or structures (e.g. columns, wall connections, window or door frames made of metal or wood and others) with a ceiling separating strip.

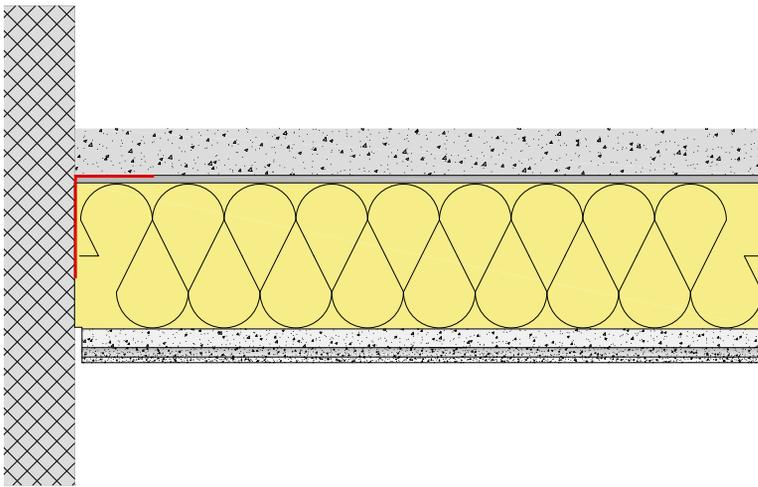
Depending on the optical or building physics requirements, this can be done with a ceiling separating paper or 3 mm thick PE foam separating strips.



Detail drawing D_014

Wall connection with separating cut

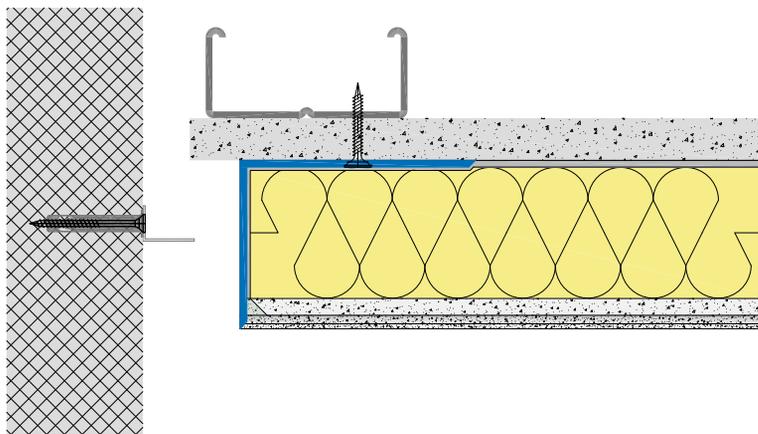
For connections to drywall or wooden walls, we recommend the use of a 2 to 3 mm wide partition cut. This is due to the higher mechanical vibrations and expansion coefficients in function of humidity and temperature.



Detail drawing D_006

Wall connection with shadow gap

Individual shadow gaps can also be formed according to the adjacent drawing. This application minimizes, for example, the color transformation of walls in museums or provides protection against mechanical damage.

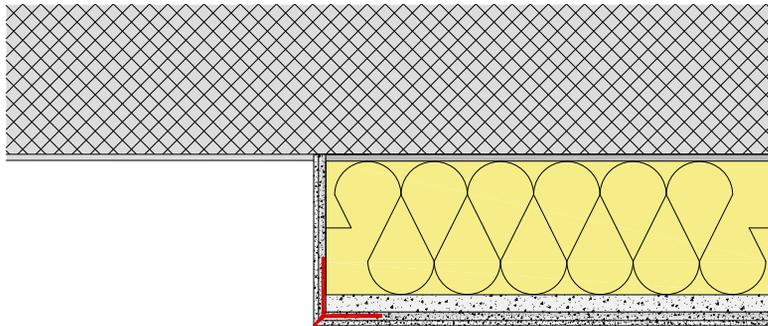


Detail drawing D_018

Edge formations Cassette ceilings

Edge protection profiles

Corner constructions with edge protection profiles should, if possible, be formed with PVC profiles. With untreated aluminum profiles there is a risk of grey streaks due to abrasive material wear in the edge area. With metal profiles, the profile legs can shimmer through thinly applied coating masses. We recommend the use of our plastic edge protection profiles (Art. No. a027 edge protection profile PVC).

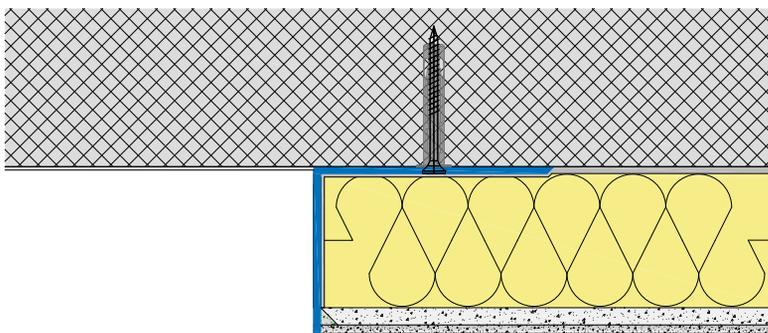


Detail drawing D_025

L Angle profiles

L-angle profiles made of chromium steel, burn-in painted sheet metal, plastic or powder-coated aluminum can also be used for edge formation. (BASWA recommendation art. no. a271 and a348)

The L-brackets must be aligned to the required system thicknesses (30, 40, 50, 70 mm). This application provides protection against mechanical damage. With angle profiles that are exposed to heat radiation, there is a risk of cracking between the profile and the acoustic plaster. (Note coefficient of expansion aluminum, PVC or steel!)

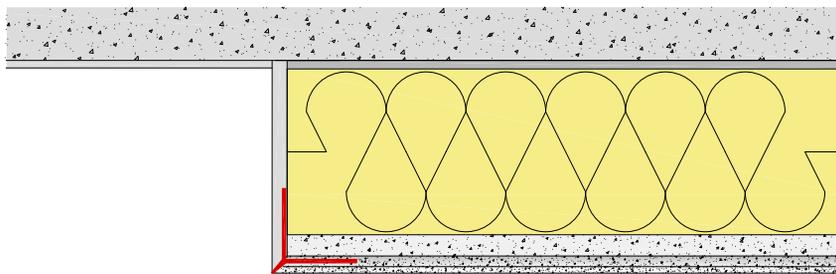


Detail drawing D_027

Side finish with plaster apron

With light shafts, the side is often covered with gypsum plasterboard. The illustration shows how this edge can be formed without a separation. This requires a precise and stable dry construction method.

In order to prevent cracking between the fiberboard and the vertical gypsum plasterboard structure, a separation cut must otherwise be made.



Detail drawing D_024

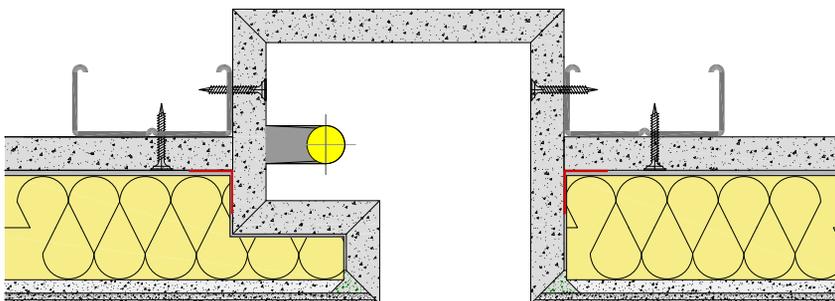
Spotlights, luminaires, tracks, pendants, etc.

Openings for installations such as recessed luminaires, surveillance cameras, motion and fire detectors, loudspeaker boxes, etc., can be carefully made after the final coating with a drill bit. All board faces of the penetrations (vertical mineral wool faces) must be sealed airtight by smoothing off an approx. 2 mm thick gypsum filler application and / or by masking with aluminum adhesive tape. This prevents partial contamination by air flow.

Installation of light covers

Depending on the type of luminaire selected, the luminaire can be mounted directly on the substructure or in the suspended ceiling using light covers. The variant shown shows light bands without visible lamp bezel.

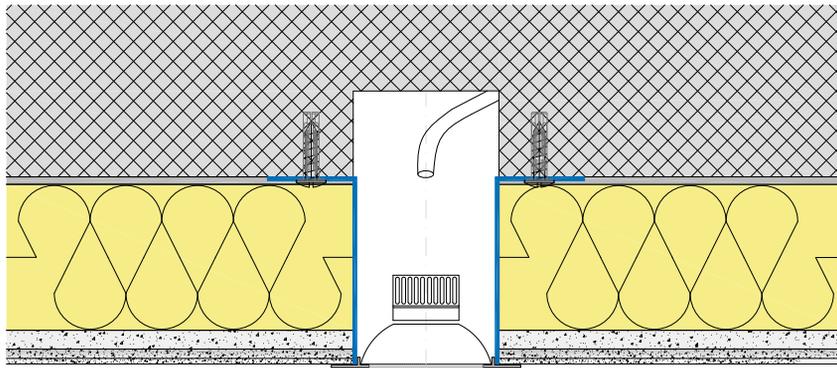
Important: Depending on the heat development and expansion of the respective material of the luminaire, cracks may form in the adjacent coating.



Detail drawing D_076

Mounting rings

In order to prevent damage to the edge during installation or maintenance work on installation elements, the cover rings should be at least 1 cm wide. In the case of installation elements with narrow cover rings, a metal sleeve (prefabricated metal ring) in the diameter of the required ceiling cutout can instead be fitted in advance in the penetration area of the substructure.



Detail drawing D_072

BASWA installation platform (BASWA IP)

The BASWA IP is used for the partial installation of built-in elements with expansion springs, which require low construction thicknesses for fastening. The pressure-resistant nature of the IP prevents the edge of the ceiling cut-out from breaking out and reduces the need for wide cover rings.

The BASWA IP is based on a pressure-resistant, open-pored panel. The installation platform is calibrated to the respective thickness of the BASWA Phon acoustic panel and is available with or without opening cut-out.

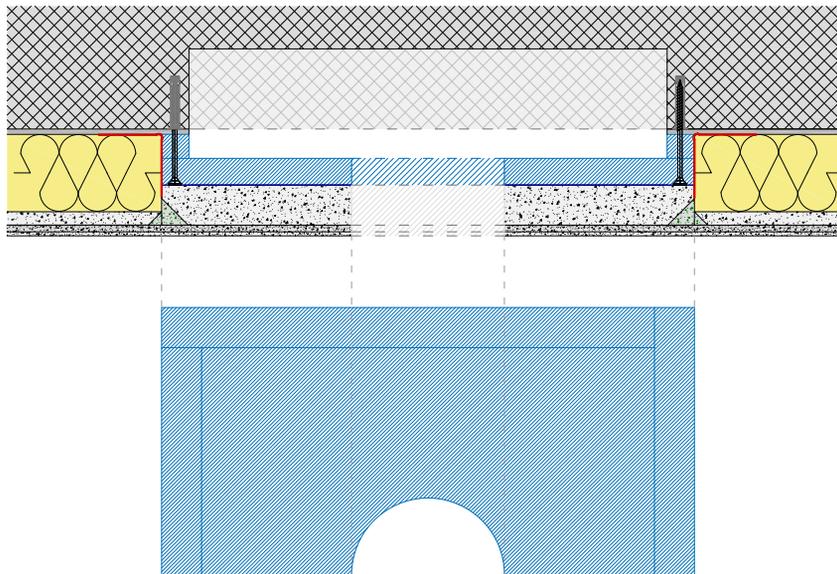
BASWA IP Standard:

200 mm x 200 mm for $d < 140$ mm

300 mm x 300 mm for $90 \text{ mm} < d < 220$ mm

Other dimensions are available on request.

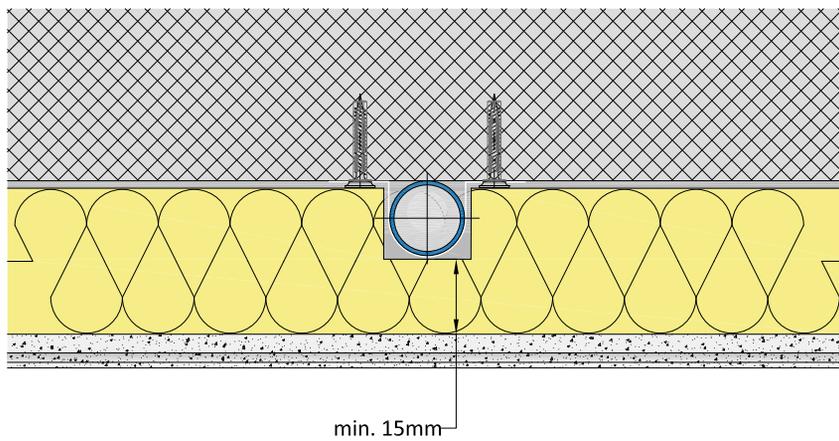
They are glued to the respective substrate, screwed mechanically as required and sealed airtight all around. The acoustic panels are then fully connected to the installation platform, the joints and screw holes are filled with BASWA Fill and ground at the same level.



Detail drawing D_070

Cuts for pipelines

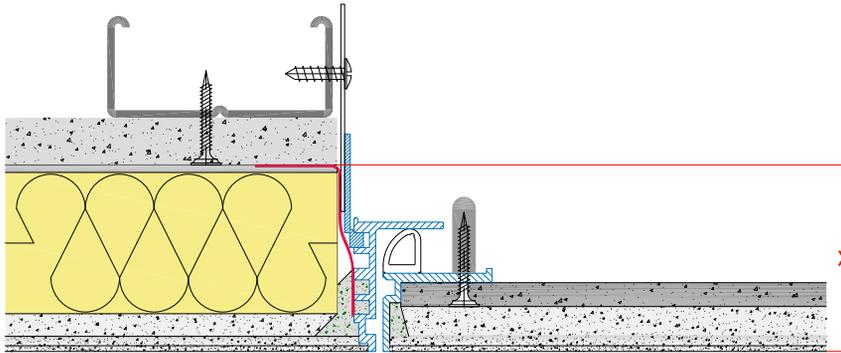
For system thicknesses greater than 50 or 70 mm, visible pipelines (e.g. electric pipes) can be integrated on the back of the acoustic panels. This is an interesting alternative for renovations and the conversion of rooms. It should be noted that the overlap of the pipes must be at least 15 mm and that the pipes are fastened exactly to the ceiling with pipe clamps without sagging. Crossovers of the pipes are not permitted.



Detail drawing D_078

Service openings

The BASWA inspection opening flaps are individually height-adjustable and already RAL9010 PUR-coated. A special breathable acoustic inlay in the door frame prevents the surfaces from ageing differently. It is important that the side connection between the outer frame and the substrate is sealed airtight beforehand. This prevents air from flowing through the adjacent acoustic system.



Detail drawing D_067

In addition, the commercially available height-adjustable products, which must be powder-coated beforehand, can also be used. The lid is coated with the primer and top coat and thus initially receives the same surface as the ceiling. To prevent different ageing of the surfaces, the lid can be fitted with a breathable acoustic inlay from BASWA. (Include inlay thickness 16 mm plus 2 mm coating.)

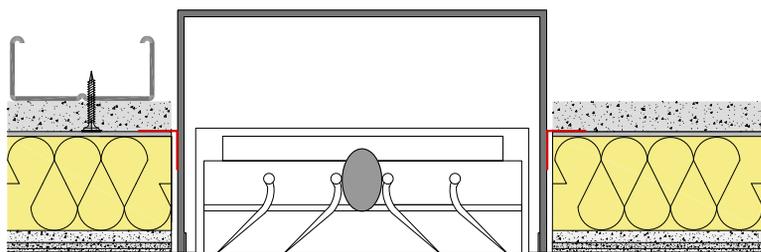
Ventilation ducts and Vacuum and overpressure ceilings

In order to exclude or minimize partial soiling around ventilation slits, the supply and exhaust air should be directed sideways to the wall. If this is not possible, it is important to ensure that the air exchange is as constant and minimal as possible so that no standing air vortices result. With an air outlet angle of 45 °, contamination is greatly reduced.

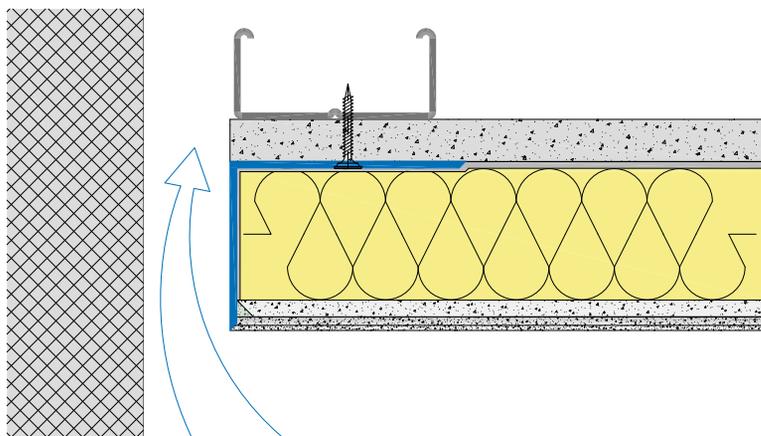
Ventilation outlets

Ventilation ducts behind suspended ceilings should be sealed in such a way that no additional negative pressure is created in the ceiling cavity.

Ideally, the ventilation ducts or pipes should penetrate the plasterboard construction by the height of the BASWA acoustic system to be installed (30 / 40 / 50 or 70 mm). The sheet metal channels protruding from the gypsum plasterboard construction should be sealed airtight all around (prevention of partial contamination of the acoustic system by air flow). The acoustic panels are then pushed firmly against the sheet metal channels. Remaining gaps are filled with BASWA Fill.



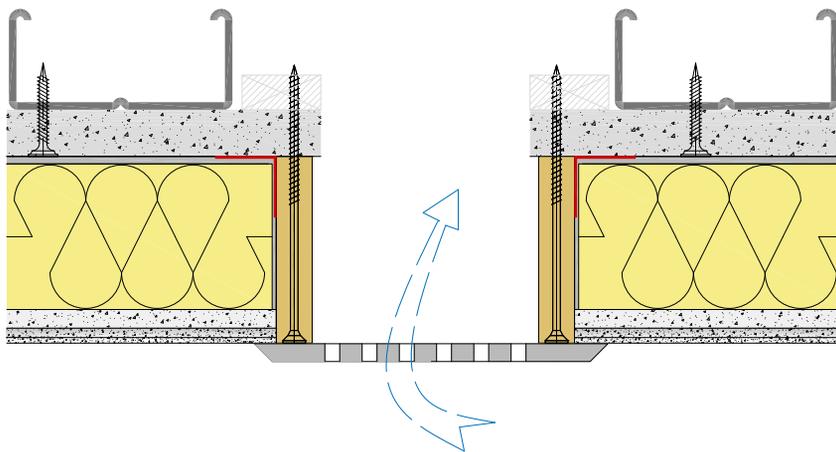
Detail drawing D_065



Detail drawing D_021

Pressure compensation for suspended ceilings

If there is a risk of air pressure differences (installation space to the interior), unforeseen soiling can be prevented by installing a blind hole or lateral shadow joints. For this purpose, the blind hole is covered by a loudspeaker cover, for example. Specialist planners design the dimension.

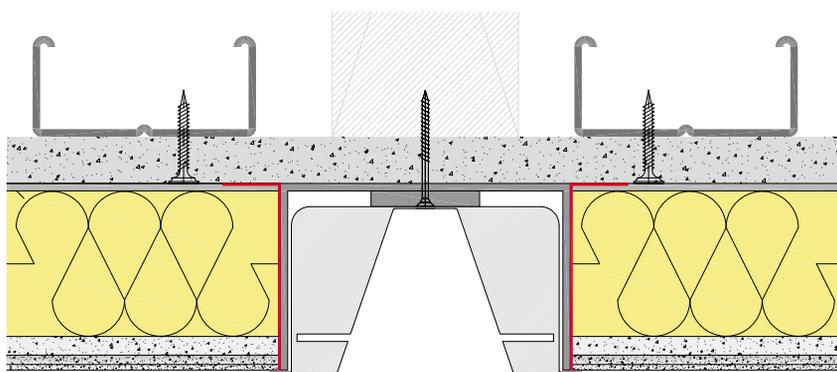


Detail drawing D_077

Conductor rails, curtain rails and the like

Installation of busbars

Busbars are the simplest to install according to the below instructions. The edge of the U-profile, previously mounted at BASWA Phon system height, serves as a flat, parallel trigger edge during coating work. After completion of the ceiling, the rails can be mounted independently in the channel.

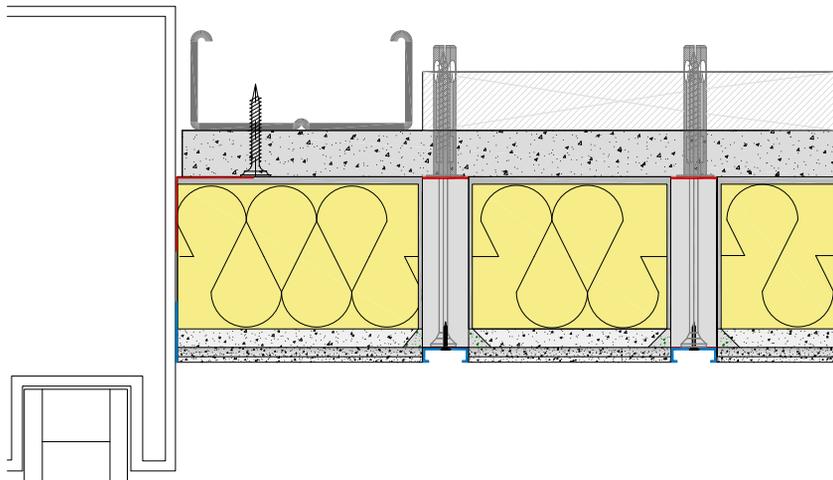


Detail drawing D_057

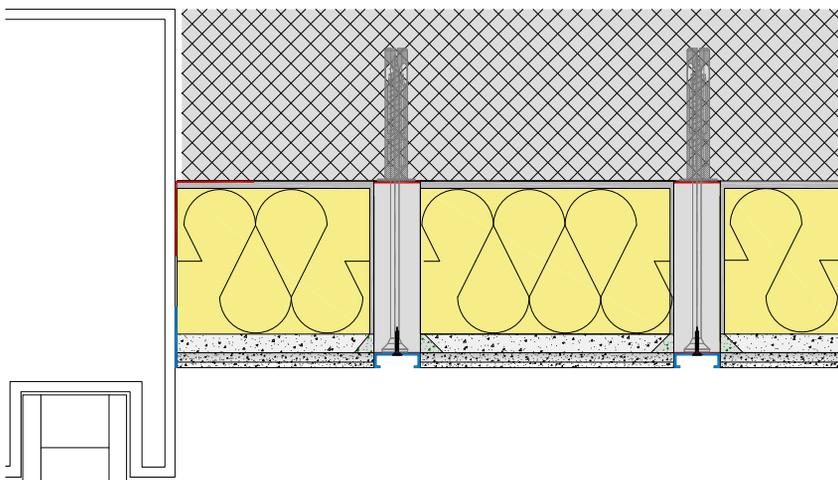
Installation of curtain rails

The types of curtain rails are numerous and, depending on the weight of the curtain, require special detailed solutions in combination with the BASWA acoustic systems. Conventional curtain rail profiles are doubled, glued and screwed to the acoustic system height (30/40/50/70 mm). The acoustic panels are then connected laterally. The thermo-lacquered curtain rail profile also serves as a plaster application aid.

Important: In the connection area of the BASWA acoustic ceilings to façade windows, the dew point in the concrete ceiling or the rear cavity of suspended ceilings must be checked (according to point 5 Dew point prevention, page 31) by a specialist planner (e.g. plan in frost brick inserts).



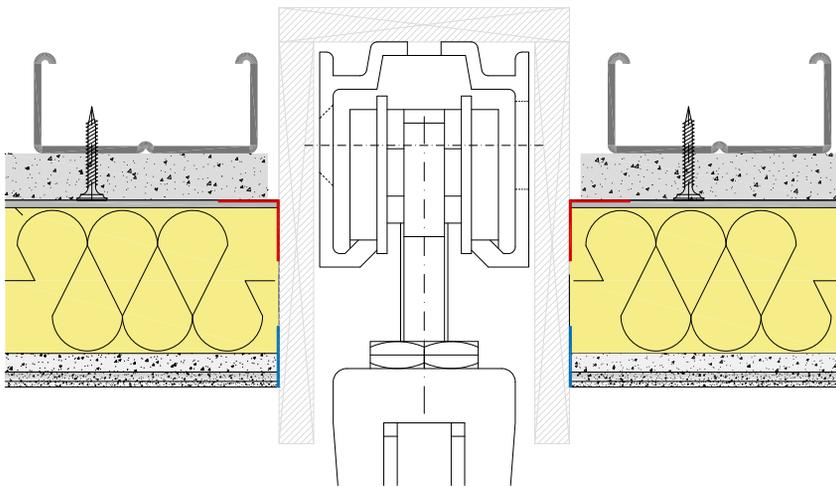
Detail drawing D_059



Detail drawing D_058

Installation of sliding doors and the like

Massive constructive elements such as sliding doors, which generate vibrations or movements, must be separated from the substructure and fastened separately. Here, too, the plaster must be separated by separating strips and the connection of the suspended construction must be sealed airtight.



Detail drawing D_016

Legal notice

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Planning documents for BASWA Phon acoustic systems.

The latest valid version of this document can be found on our website www.baswa.com under the Documentation tab.

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