

you will stay longer and come back again. Customers are more likely to stay and browse in shops with an attractive design and pleasant acoustic atmosphere. Environments that are visually and acoustically appealing have a positive impact on customers and help them to make decisions.

Good acoustics are not only important for the purposes of improving customer satisfaction and visitor numbers. Shops also need to make sure that they comply with the relevant standards and directives in order to provide a safe and acoustically optimised workplace environment for their employees.

#### **Shopping centres**

The shopping centres that have been appearing in and on the outskirts of town and city centres for years are not just there for functional shopping – customers visit these centres to have a day out and enjoy a bit of retail therapy. Noise causes disruption and creates stress – and no one wants that in their free time! Customers will stay longer in a quiet environment where sound is dampened than in a noisy atmosphere. And experience has shown that if they stay longer, they spend more.

Sound-absorbing ceiling and wall surface areas – in large atriums, for example – create a comfortable atmosphere and encourage customers to stay. These means they can relax in open-style restaurants in between their purchases and enjoy their shopping trip to the full.

#### **Swimming pool/spa**

Noise levels are always high in swimming baths and leisure pools, and the acoustics play a major role in determining visitors' comfort, along with the air and water temperature. Although people will be expecting a certain level of noise in swimming baths or "fun pools", those visiting the spa areas are looking for rest and relaxation. Sound-absorbent ceiling and wall coverings and elements reduce the reverberation and dampen noise significantly, thus guaranteeing a relaxing atmosphere.

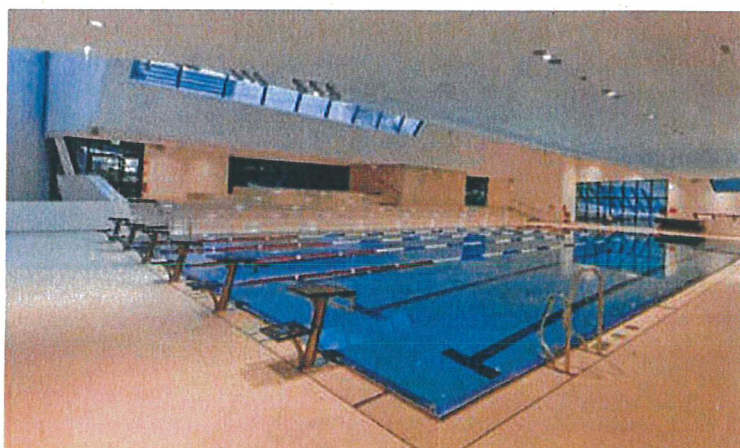
#### **Theatre/concert**

Making sure that a concert hall sounds good is no mean feat. Planning the acoustics of cultural buildings such as concert halls, theatres, and opera houses is an extremely challenging task for planners and acousticians. The requirements – particularly with regard to the room acoustics – are very complex and go beyond considerations such as reverberation time and extraneous noise. In this case, acoustic quality is also a major factor, and is described, planned, and measured using ab-

stract parameters such as early reverberation time, intensity, distinctness, clarity, lateral fraction, diffusion, and so on. The top priority is always to create the perfect listening experience from every part of the hall, whether audience members are sitting in the stalls, circle, or a box. To ensure that this is the case, the acoustic products and systems must be tailored to the specific requirements of the building in question.

#### **Acoustics in educational institutions**

It is impossible to learn and teach in a noisy environment. Noise is one of the main causes of disturbance in schools and nurseries in particular. Implementing effective room-acoustic measures is the only way to ensure successful learning and teaching in these institutions. Due to the multifunctionality of the rooms, the construction materials used in the education sector need to meet high standards with regard to comfort, durability, aesthetic appeal, and sustainability – as demonstrated by the products in the StoSilent portfolio.



Kärnten Therme spa, AT-Villach, StoSilent Distance



# StoSilent acoustic systems

## Application fields arranged by ambient interior climate

Our StoSilent acoustic systems are suitable for a wide range of acoustic applications and virtually all usage areas – primarily in interiors under normal climate conditions. In addition, the systems can also be used in swimming baths and in protected outdoor areas. The prerequisite is always appropriate structural and building physical heat and moisture protection which is planned professionally according to requirements and the application in question. While in interi-

StoSilent – fields of application					
Use and building elements	Requirements: Sufficient structural heat and moisture protection for the relevant building elements	Interior			
		• Habitable room • Interior wall • Intermediate floor	• Habitable room • External wall • Ceiling towards the outside	<ul style="list-style-type: none"> <li>Swimming bath (climate-controlled), max. 30° C, max. 70 % humidity</li> <li>Wall and ceiling</li> <li>No condensation, no splash water, not over ice-cold pools</li> <li>No brine pools</li> </ul>	
Stress	Air temperature	≤ 30 °C	≤ 25 °C	≤ 30 °C	≤ 30 °C
	Humidity	≤ 70 %	≤ 70 %	≤ 70 %	≤ 70 %
	Stress class according to Table 8 from EN 13964 * Class B includes class A if class A is not listed separately.	B*	A	B*	B*
	Condensation/precipitation/splash water	No	No	No	No
System	Wind load max. 1.0 kN/m²	No	No	No	No
	StoSilent Distance	With rear ventilation	With rear ventilation	With rear ventilation and anti-corrosion load-bearing construction	
	StoSilent Direct	✓	Calculations required as proof	x	x
	StoSilent Modular 100	✓	✓	✓	With anti-corrosion load-bearing construction
	StoSilent Modular 200/210	✓	✓	✓	
	StoSilent Compact Sil	✓	✓	✓	x
	StoSilent Compact Miral	✓	✓	✓	✓
Coating	StoSilent Top Basic	✓	✓	✓	✓
	StoSilent Top Finish	✓	✓	✓	✓
	StoSilent Decor	✓	✓	✓	✓
	StoColor	✓	✓	✓	✓

✓ Approved X Not possible



ors, StoSilent systems primarily regulate the room acoustics, in areas such as shopping arcades and the entrances to multi-storey and underground car parks they dampen noise to create a more peaceful, comfortable environment. The following overview shows which of the systems can be used for the different application fields in exterior and interior areas.

## Interior and exterior

Application					
Exterior					Interior or exterior
<ul style="list-style-type: none"> <li>Swimming bath (climate-controlled), max. 30 °C, max. 70 % humidity</li> <li>Over ice-cold pools</li> <li>Sauna exit</li> <li>Ice rink</li> <li>Wall and ceiling</li> </ul>	<ul style="list-style-type: none"> <li>Ground-level open arcade</li> <li>Shopping arcade</li> <li>Protected against precipitation</li> <li>Ceiling</li> </ul>	<ul style="list-style-type: none"> <li>Balcony ceiling</li> <li>Access balcony</li> <li>Loggia</li> <li>Outside/external wall</li> </ul>	<ul style="list-style-type: none"> <li>Underground car park</li> <li>Ceiling towards heated rooms</li> </ul>	<ul style="list-style-type: none"> <li>Entrance to underground car park</li> <li>Multi-storey car park</li> <li>Underground station</li> <li>Ceiling</li> </ul>	<ul style="list-style-type: none"> <li>Other applications</li> </ul>
≤ 30 °C	-20 °C to 40 °C	-20 °C to 40 °C	-20 °C to 40 °C	-20 °C to 40 °C	
≤ 70 %	20 % to 90 %	20 % to 90 %	20 % to 90 %	20 % to 90 %	
Yes	No	No	No	No	No
No	No	Yes	No	Yes	
x	✓	x	✓	Adjust sub-construction to wind load	
x	✓	x	✓	✓	
x	x	x	x	x	
x	x	x	x	x	
x	x	x	x	x	
x	✓	x	✓	✓	
x	✓	x	x	x	
x	x	x	x	x	
x	✓	x	✓	✓	
x	✓	x	✓	✓	

The detailed technical specifications and information on the products contained in the Technical Data Sheets and approvals must be observed.

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# Technical characteristics

## Concise facts and figures

Technical characteristics	StoSilent Distance						
StoSilent	StoSilent Board 100	StoSilent Board 110	StoSilent Board 200	StoSilent Board 210	StoSilent Board 300	StoSilent Board 310	StoSilent Board 310 F
Degree of absorption*	$\alpha_{w}$ up to 0.80	$\alpha_{w}$ up to 0.80	$\alpha_{w}$ up to 0.55	$\alpha_{w}$ up to 0.55	$\alpha_{w}$ up to 0.60	$\alpha_{w}$ up to 0.55	$\alpha_{w}$ up to 0.45
EN 13501 building material classification	A2-s1, d0	A2-s1, d0	A2-s1, d0	A2-s1, d0	B-s1, d0	B-s1, d0	B-s1, d0
Finish	StoSilent Top	StoSilent Decor	StoSilent Top	StoSilent Decor	StoSilent Top	StoSilent Decor	StoSilent Decor
Finish	In accordance with the StoColor System, pastel colour shades	In accordance with the StoColor System, silicate products	In accordance with the StoColor System, pastel colour shades	In accordance with the StoColor System, silicate products	In accordance with the StoColor System, pastel colour shades	In accordance with the StoColor System, silicate products	In accordance with the StoColor System, silicate products
Texture of the finish	Smooth coating (with finest graining)	Spray plaster (fine texture)	Smooth coating (with finest graining)		Smooth coating (with finest graining)	Spray plaster (fine texture)	Spray plaster (fine texture)
LRV of the finish	75.4 %	90.0 %	75.4 %	90.0 %	75.4 %	90.0 %	90.0 %
LRV of the finish	77.0 %	83.0 %	77.0 %	83.0 %	77.0 %	83.0 %	83.0 %
Whiteness of the finish	69.0 %	66.0 %	69.0 %	66.0 %	69.0 %	66.0 %	66.0 %
Thermal conductivity	0.087 W/(mK)	0.085 W/(mK)	0.084 W/(mK)	0.086 W/(mK)	0.089 W/(mK)	0.082 W/(mK)	0.082 W/(mK)
sd value	0.12 m	0.13 m	0.21 m	0.19 m	0.16 m	0.11 m	0.11 m
pH value of coating/plaster	8–9	11–12	8–9	11–12	8–9	11–12	11–12
Minimum bending radius	–	–	10 m	10 m	10 m	10 m	5 m
System thickness***	approx. 28 mm	approx. 27 mm	approx. 28 mm	approx. 27 mm	approx. 18 mm	approx. 17 mm	approx. 17 mm
kg/m <sup>2</sup> board	7.0	7.2	9.2	9.0	5.7	5.4	5.5
kg/m <sup>2</sup> coating (wet)	5.5	2.7	5.5	2.7	5.5	2.7	2.7
kg/m <sup>2</sup> coating (dry)	4.1	1.8	4.1	1.8	4.1	1.8	1.8
kg/m <sup>2</sup> system without sub-construction (dry)	11.1	9.0	13.3	10.8	9.8	7.2	7.3
Boards/formats/weight	1200 x 625 x 25 mm	1200 x 625 x 25 mm	1200 x 800 x 25 mm	1200 x 800 x 25 mm	1200 x 800 x 15 mm 1200 x 800 x 25 mm 2400 x 1200 x 15 mm	1200 x 800 x 15 mm 1200 x 800 x 25 mm 2400 x 1200 x 15 mm	1200 x 800 x 15 mm 2400 x 1200 x 15 mm
Coating variants	StoSilent Top Finish StoSilent Top Basic	StoSilent Decor M StoSilent Decor MF	StoSilent Top Finish StoSilent Top Basic	StoSilent Decor M StoSilent Decor MF	StoSilent Top Finish StoSilent Top Basic	StoSilent Decor M StoSilent Decor MF	StoSilent Decor M StoSilent Decor MF
Application: min. temperature of air/building element/coating	12 °C	12 °C	12 °C	12 °C	12 °C	12 °C	12 °C
Application: max. relative humidity/building element moisture level****	70 %	70 %	70 %	70 %	70 %	70 %	70 %

\* Weighted sound absorption coefficient in accordance with EN ISO 11654

\*\* Absorption area per test object – value dependent on format and suspension height

\*\*\* Without sub-construction/suspension

\*\*\*\* In the case of higher values, special approval must be sought through consultation



StoSilent Direct		StoSilent Compact		StoSilent Modular		
StoSilent Board MW 100–46 mm	StoSilent Board MW 100–66 mm	StoSilent Compact Sil	StoSilent Compact Miral	StoSilent Modular 100	StoSilent Modular 200	StoSilent Modular 210
$\alpha_w$ up to 0.95	$\alpha_w$ up to 1.00	$\alpha_w$ up to 0.45	$\alpha_w$ up to 0.35	**	**	**
A2-s1, d0	A2-s1, d0	B-s1, d0	A2-s1, d0	B-s1, d0 (PET board)	B-s1, d0 (carrier board) C-s3, d0 (PET nonwoven fibre)	B-s1, d0 (carrier board) C-s3, d0 (PET nonwoven fibre)
Seamless: • StoSilent Top • StoSilent Decor Visible joints: • StoSilent Decor • StoColor Climasan • Without coating	Seamless: • StoSilent Top • StoSilent Decor Visible joints: • StoSilent Decor • StoColor Climasan • Without coating	StoSilent Decor	–	PET nonwoven fibre	StoSilent Top Finish	StoSilent Decor
Various	Various	In accordance with the StoColor System	Limited tintability in accordance with the StoColor System	Not tintable	In accordance with the StoColor System, pastel colour shades	In accordance with the StoColor System, silicate products
Smooth coating/ spray plaster (fine texture)	Smooth coating/ spray plaster (fine texture)	Spray plaster (fine texture)	Heavily textured	Fine, unidirectional fibre structure	Smooth coating (with finest graining)	Spray plaster (fine texture)
Various	Various	–	–	–	75.4 %	90.0 %
Various	Various	85.0 %	80.0 %	85.0 %	77.0 %	83.0 %
Various	Various	62.0 %	44.0 %	–	69.0 %	66.0 %
0.040 W/(mK)	0.040 W/(mK)	0.048 W/(mK)	0.10 W/(mK)	–	–	–
< 0.2 m	< 0.2 m	0.05 – 0.06 m	0.01 – 0.03 m	–	–	–
8–12	8–12	11–12	12	–	–	–
5 m	5 m	Depending on substrate	Depending on substrate	Not possible	Not possible	Not possible
approx. 56 mm	approx. 76 mm	approx. 25 mm	approx. 15 mm	26 mm	approx. 18 mm	approx. 17 mm
6.0	7.9	–	–	–	–	–
5.2 (Decor), 5.0 (Top)	5.2 (Decor), 5.0 (Top)	10.0	7.5	–	–	–
4.0 (Decor), 3.7 (Top)	4.0 (Decor), 3.7 (Top)	3.75	4.0	–	–	–
14.5 (Decor M), 14.2 (Top)	16.4 (Decor M), 16.1 (Top)	–	–	–	–	–
800 x 600 x 46 mm	800 x 600 x 66 mm	–	–	1150 x 750 mm/3.2 kg 1150 x 1150 mm/4.2 kg 1250 x 1250 mm/4.6 kg 2350 x 1150 mm/6.3 kg 3000 x 1250 mm/7.9 kg	1170 x 770 mm/10 kg 1206 x 1206 mm/15.1 kg 2406 x 801 mm/20.9 kg 2406 x 1206 mm/32.2 kg	1170 x 770 mm/9.8 kg 1206 x 1206 mm/14.8 kg 2406 x 801 mm/20.5 kg 2406 x 1206 mm/31.6 kg
Without coating StoColor Climasan StoSilent Decor M StoSilent Decor MF StoSilent Top Basic StoSilent Top Finish	Without coating StoColor Climasan StoSilent Decor M StoSilent Decor MF StoSilent Top Basic StoSilent Top Finish	StoSilent Decor M StoSilent Decor MF	StoSilent Miral AP StoColor Silent	–	StoSilent Top Finish StoSilent Top Basic (coating already applied at the factory)	StoSilent Decor M StoSilent Decor MF (coating already applied at the factory)
12 °C	12 °C	12 °C	12 °C	–	–	–
70 %	70 %	70 %	70 %	–	–	–

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