

Acoustics

according to DIN EN ISO 354



Always there for you – 24 hours a day:
shop.englisch.at/en/



Subscribe to our newsletter now –
this way you won't miss any news!



Our environment – whether indoors or outdoors – is filled with noises and sounds. Every day we are confronted with this "nuisance factor". Be it through road traffic noise, construction machinery, airplanes, or simply the conversation volume of employees in an office.

This noise, measured in decibels (dB), can be perceived as extremely disturbing in different frequencies – whether high or low – and is also harmful to health in the long run.

Besides other materials, textiles – used correctly – can be used against excessive noise pollution.

Basically, we distinguish between soundproofing (insulating) and sound-filtering (absorbing) materials.

Sound-insulating textiles are used where you want to keep the noise out – e.g., road traffic noise. Here, textiles are used which, with their smooth surface and dense structure (e.g., Blackout), prevent sound waves from penetrating and thus create a blockade – an insulation to the inside.

Sound-absorbing materials are used where you want to improve the room acoustics, filter the noise level generated in the room and reduce the "reverberation", such as in an open-plan office with several workplaces. Here we can offer one of the best "noise filters" with our Lana articles.

The 'noise filter ability' of materials is classified into absorber classes

Our Lana series belongs to absorber class A – which means that 90% of the noise generated is filtered. Sound propagates in waves; these waves bounce off solid objects (walls, windows) undiminished and are reflected back into the room. If fabrics are now used as a "filter", these sound waves must pass through the fabrics, lose energy, and the output noise level is reduced depending on the nature of these filter fabrics. For an absorber class A, 90% of these outgoing waves are filtered and only 10% are released back into the room.

Sound absorber class A	Sound filtering 100 – 90 %
Sound absorber class B	Sound filtering 85 – 80 %
Sound absorber class C	Sound filtering 75 – 60 %
Sound absorber class D	Sound filtering 55 – 30 %
Sound absorber class E	Sound filtering 25 – 15 %

However, to create a perfect acoustic atmosphere, an interaction of all relevant factors that can contribute to noise reduction in a room is necessary. Especially when planning new projects – whether offices/restaurants or other large-area facilities – a holistic acoustic assessment/planning should always be carried out beforehand.

With existing software tools, the "virtual" sound reinforcement of a room is no longer a problem. In this way, with a desired "final decibel value", appropriate "noise filters" (flooring, ceiling and/or wall panels, furniture up to curtains) are already considered and planned in the room planning. However, if such acoustic room planning is omitted, one should not be disappointed if fabrics alone cannot provide the perfect solution, but only mitigate the problem!

Here are concrete examples of which noise pollution occurs: If 2 people talk in a room at normal volume, we measure a noise pollution of approx. 30 dB. For every additional person who joins this conversation, the load is increased by 3 dB. So with 20 people in a room talking to each other, one assumes a total load of over 80 dB.

At 110 dB, the noise level on motorways is on average. When an airplane takes off, we measure between 110 and 140 dB.

The testing of sound absorption takes place in laboratories with their own complex installation:



The test results are then summarized from a sum of partial results into an average value:

1 Task

On behalf of Englisch Dekor GmbH & Co. KG, 1210 Vienna, Austria, the sound absorption of the curtain fabric type Lana, hanging gathered with 100% fullness according to DIN EN ISO 354, was to be determined in the reverberation room.

The test was carried out for an arrangement with a wall distance of 100 mm (mounting type G-100).

The results had to be assessed according to DIN EN ISO 11654 and ASTM C 423..

2 Basics

The following documents are based on this test report:

- DIN EN ISO 354 "Acoustics – Measurement of sound absorption in reverberation rooms." December 2003
- DIN EN ISO 11654 "Acoustics – Sound absorbers for use in buildings – Assessment of sound absorption." July 1997
- ISO 9613-1 "Acoustics; attenuation of sound during propagation outdoors; part 1: calculation of the absorption of sound by the atmosphere." June 1993
- ASTM C 423-09a "Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." Revision: 09a. October 2009
- DIN EN 29053: Materials for acoustic applications Determination of flow resistance. May 1993

