

Acoustical behaviour of ETTLIN/lux® Decolux

Description of the acoustical impedance measurements with ETTLIN/lux® Decolux

The acoustical impedance measurement determines a material's degree of sound absorption. This degree indicates which part of the incident sound energy is absorbed by the tested material. The sound absorption level is measured between 0 and 1 (0 = no absorption; 1 = total absorption).

The human voice lies within the frequency range of 250 Hz to 2 kHz. So for the acoustics in an open-plan office it is important to absorb this exact range as best as possible to guarantee an undisturbed working environment.

In the measurements carried out the structure of an acoustic box had been simulated, which is suitable for the integration of light effects via the arrangement of the rear panel and Decolux fabric. In this setup the Decolux fabric is at a certain distance (7 cm) in front of an acoustically effective rear panel.

Two measurements of acoustical impedance were made:

- large impedance measuring tube (Ø 100mm): frequency range 50 Hz to 1,6 kHz
- small impedance measuring tube (Ø 29 mm): frequency range 500 Hz to 6,4 kHz

The following measuring setup types were tested in both impedance measuring tubes:

- acoustically effective rear panel without fabric in front
- acoustically effective rear panel with Decolux 2301 fabric in front (distance: 7 cm)
- acoustically effective rear panel with Decolux 2102 fabric in front (distance: 7 cm)

Both products Decolux 2301 and Decolux 2102 had been selected for being the fabrics that show the greatest differences within the Decolux range. The two chosen fabrics are supposed to reflect the entire spectrum of the Decolux collection as well as possible.

Result

The differences between the two fabrics Decolux 2301 and Decolux 2102 are so small that the results of the measurements are representative for the entire collection.

In a few frequency ranges the sound absorption level slightly deteriorates (in the range from 2 to 2,5 kHz by about 15 % plus in the range from 4 to 5,5 kHz by about 5 %). In contrast sound absorption level in the remaining frequency ranges increases. The largest improvement occurs in the range from 200 Hz to 1,6 kHz with an increase by up to 120 % at 800 Hz.

This is the exact frequency range that is important for an office's acoustics. Therefore Decolux can be used to encase an acoustically effective rear panels without concerns.