

«NOISE-QUENCHING»  
 LIGHTWEIGHT CURTAINS

**Problem – Challenge**

Noise is annoying. It interrupts communication, reduces productivity and tires people out – in extreme cases it can even make them ill. Sound absorbing surfaces are therefore needed in rooms where people work, talk to each other or are trying to relax.

However so called acoustically «hard» materials such as glass and concrete, which are commonly used in interior design, scarcely absorb sound at all. Heavy curtains made of material such as velvet are often used to absorb sound. On the other hand, lightweight and transparent curtains are acoustically almost useless.

At least they were until now.



**Solution**

Researchers at Empa, in cooperation with textile designer Annette Douglas and silk weavers Weisbrod-Zürcher AG, have developed in a project financed by the commission of Innovation and Technology (CTI) lightweight, translucent curtain materials, which are excellent at absorbing sound.

Researchers first developed a mathematical model to illustrate both the microscopic structure of the fabric as well as its macroscopic composition. On the basis of numerous acoustic measurements made on various samples, specifically woven by Weisbrod-Zürcher, they were able to gradually optimise the acoustic properties of the fabric. Annette Douglas then succeeded in translating the new findings into weaving techniques.

The readings that were achieved with the new curtains in the reverberation room are excellent. The weighted sound absorption coefficient is between 0.5 and 0.6, the new textiles «quench» five times more sound than conventional translucent curtains. The new curtains have just gone onto the market.

