SOUNDCONTROL® - ACOUSTIC ABSORBER FOR METAL ROOFS

SOUNDCONTROL® C5481 is a self-adhesive acoustic absorber that was developed for metal constructions. It reduces the rainfall noise and offers a maximum broad-band sound absorption inside the room.

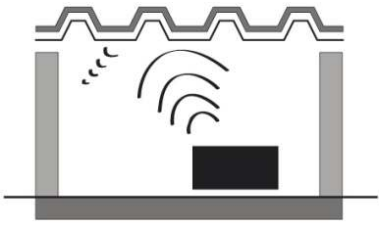
SOUNDCONTROL® C5481 is so effective because of its porous structure which assures high acoustic performance.

RAINFALL NOISE REDUCTION

The noise of raindrops falling on a metal roof is incomparably bigger than the noise caused by raindrops falling on clay tiles. Therefore it is disturbing for people and their activities inside the building.

The noise caused by raindrops falling on the metal roof surface spreads throughout the metal construction and finds its way into the room.
SOUNDCONTROL® C5481 works as an insulation layer for the rainfall noise.

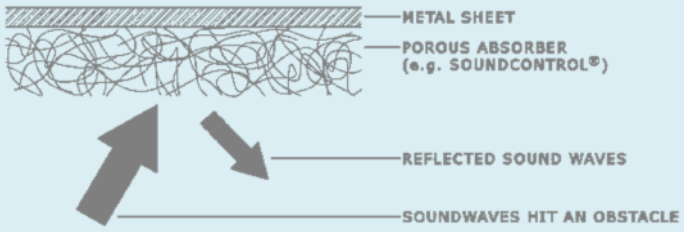
SOUND ABORPTION INSIDE A ROOM



The sound absorption of **SOUNDCONTROL® C5481** reaches the highest values where the frequency is above 1000 Hz. Therefore it is particularly effective in rooms where impulsive noise takes place (metal and wooden industry). In combination with other acoustic materials it can be very effective also in rooms and halls for other purposes.
Particularly problematic are noisy activities in closed metal constructions, where sound intensity amplifies significantly. This is because of poor sound absorption capability of metal sheets, which causes echo in a room.

SOUND ABSORBTION – THEORETICAL BACKGROUND

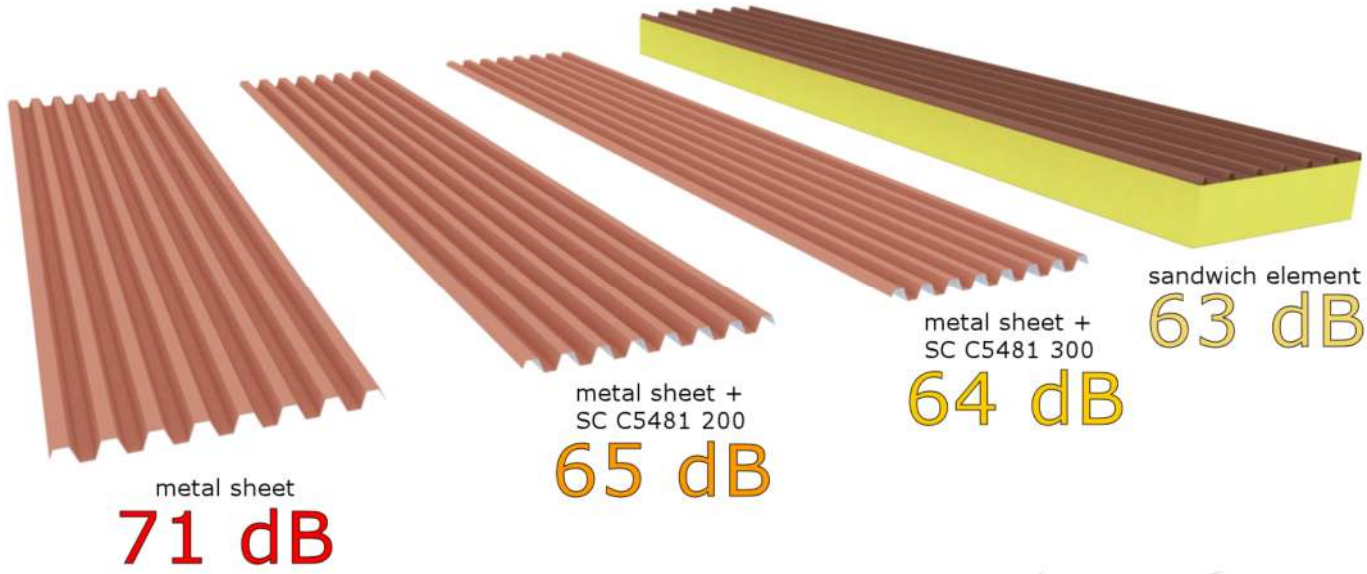
Sound absorption of a given material is frequency-dependent and is affected by the size, shape, location, and mounting method used. The absorption coefficient α defines the extent to which a material absorbs energy ($0 \leq \alpha \leq 1$). High α value (close to 1) means high level of sound absorption (low level of sound reflection) and a low α value (close to 0) means low level of sound absorption (high level of sound reflection).



Materials with porous structure have good sound absorption capabilities.

ACOUSTIC MEASURMENTS FOR RAINFALL NOISE REDUCTION

Our products have been tested at the CSTB institute, where they have developed a method for measuring the rainfall noise. In the laboratory test they measured the impact noise of simulated rain drops equal to natural rain falling on the metal sheet. The method was standardized with EN ISO 140 – 18. Metal sheets with and without **SOUNDCONTROL® C5481** were being compared.



SOUND INTENSITY LEVELS (L_{IA}) COMPARISON (ISO EN 140/18)

Metal sheet* alone = **71 dB**

Metal sheet* + **SOUNDCONTROL® C5481 200** = **65 dB**; **NOISE REDUCTION (ΔL_{IA}): 6 dB**

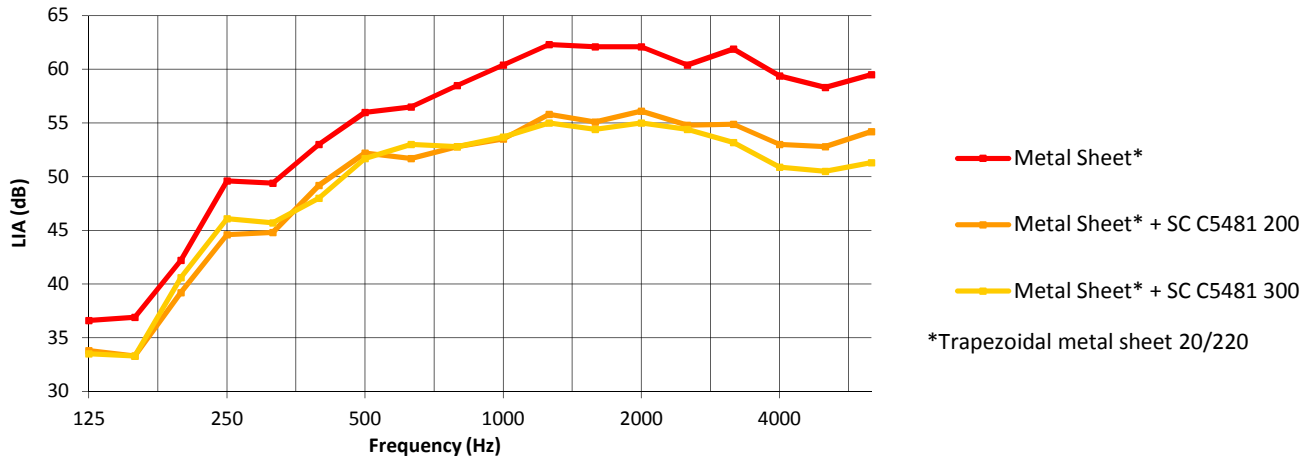
Metal sheet* + **SOUNDCONTROL® C5481 300** = **64 dB**; **NOISE REDUCTION (ΔL_{IA}): 7 dB**

ALTERNATIVE: Sandwich element**: 63 db; **NOISE REDUCTION (ΔL_{IA}): 8 dB**

*Trapezoidal metal sheet 20/220

**Double metal sheet with rockwool insulation (insulation density: 18kg/m², insulation thickness: 150 mm)

Graph: Sound levels intensity comparison (ISO EN 140/18)



NOTE

Human ear senses a sound pressure decrease from 90dB to 85dB (-5 dB) in a room as a substantial noise reduction of 34%.

ACOUSTIC MEASUREMENTS FOR SOUND ABSORPTION INSIDE A ROOM

CSTB Institute has performed acoustic measurements for **SOUNDCONTROL® C5481** in two different environments:

- *garage (dimensiones: 48 x 34 x 2,5m)*
- *metal industry workshop (dimensiones: 30 x 20 x 3,5m)*

	*Trapezoidal metal sheet 20/220	Garage		Workshop	
		1m from source	10m from source	1m from source	10m from source
THE RESULTS	Bare metal roof*	106 dB(A)	103 dB(A)	105 dB(A)	103 dB(A)
	Metal roof*+ SC C5481 200	105 dB(A)	97 dB(A)	102 dB(A)	98 dB(A)
	Metal roof* + SC C5481 300	105 dB(A)	97 dB(A	102 dB(A)	97 dB(A)

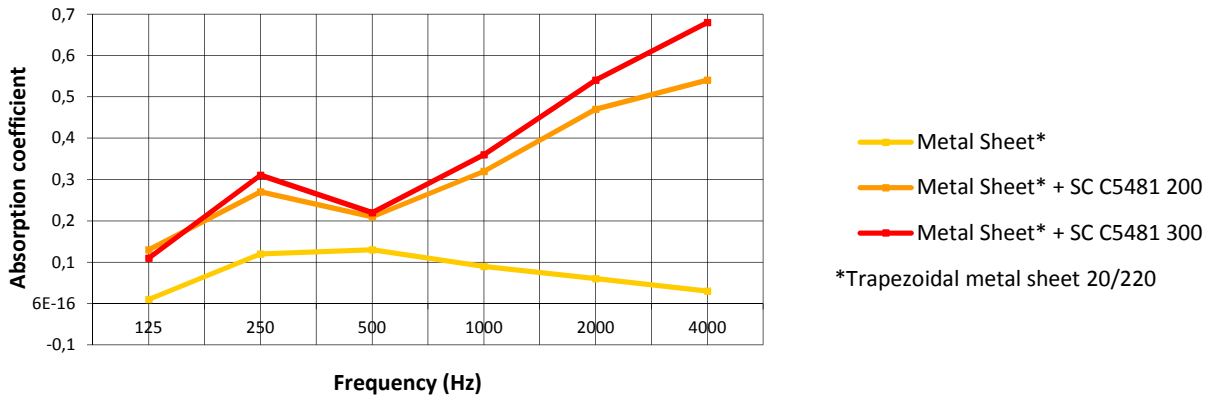
*Trapezoidal metal sheet 20/220

In the frequency range considered (100 to 5000Hz), the maximum decrease in pressure level (associated to the reverberated acoustic field) that can be achieved very far from the noise source, corresponds to 6 dB(A) for the metal roof* with **SOUNDCONTROL® C5481 200** treatment and to 7 dB(A) metal roof* with **SOUNDCONTROL® C5481 300** treatment, compared to the bare metal roof*.

TESTING IN A REVERBERATION ROOM

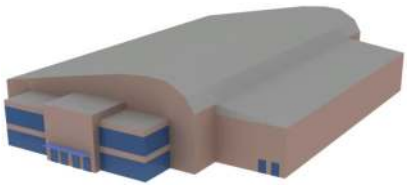
Sound absorption capabilities of a metal sheet* alone and metal sheet* with **SOUNDCONTROL® C5481 200** & **300** have been tested in a reverberation room.

Graph: Absorption coefficient (α) comparison (EN ISO 354)



Metal sheet* by itself has very poor sound absorbing capabilities. However, a metal sheet* with **SOUNDCONTROL® C5481** shows a significant improvement in sound absorption. The results are shown in the following graph.

FIELDS OF USE



SPORT HALLS

CATTLE BARNS

PRODUCTION UNITS

RESIDENTAL HOUSES

SOUNDCONTROL® C5481 is typically used for INDUSTRIAL HALLS, SPORT HALLS, WORKSHOPS, GARAGES, RESIDENTAL HOUSES, etc.
Easy application and durability makes it an ideal choice for any environment where reverberated sound loss is required.

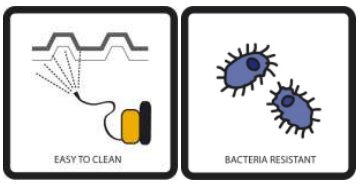
STRONG POINTS

Not insulated metal roofs are usually exposed to bigger temperature differences inside and outside the room, which causes the condensation process. In this case, **SOUNDCONTROL® C5481** serves as an absorbing medium which prevents dripping as a consequence of condensation process.

SOUNDCONTROL® C5481 can be applied to a metal sheet with a help of a simple application device.

SOUNDCONTROL® C5481 does not contain any chemical additives. Therefore it does not emit any harmful substances and is completely safe to use in most environments.

In comparison to alternatives, **SOUNDCONTROL® C5481** represents a simple and cost-effective solution for improving acoustic in a metal construction.



SOUNDCONTROL® C5481 is resistant to bacteria and easy to maintain. If necessary, it can be cleaned also with common water blasters.

SOUNDCONTROL® C5481 is a long lasting solution for your metal roof. It is resistant to aging and does not need any special maintenance.