



TOPSILENT Bitex TOPSILENT Adhesiv TOPSILENT Duo

ACOUSTIC INSULATION MADE UP OF A HIGH DENSITY SOUND-RESISTANT FOIL WITH VERY HIGH CRITICAL FREQUENCY FOR THE ACOUSTIC AIRTIGHT PLASTERING OF AIR SPACES IN BRICK WALLS AND ACOUSTIC IMPROVEMENT OF PLASTERBOARD WALLS

GRANTS *LEED* CREDITS

CHARACTERISTICS		ENVIRONMENTAL		
ACOUSTIC INSULATION	REACTION TO FIRE	ECO GREEN	RECYCLABLE	SAFE WASTE

1 PROBLEM

How to acoustically insulate the air spaces of brick walls or to improve the acoustic performance of plasterboard walls with sound-resistant foils that are lead-free, since lead is toxic.

2 SOLUTION

TOPSILENT is a high density foil that has the acoustic properties of a foil of lead even if it is completely lead-free. It acoustically insulates just like a foil of lead of the same weight, but is free from the typical toxicological problems of this metal. **TOPSILENT Bitex**, in the standard version, is a foil with polypropylene textile coating on both faces, which consequently results to be a particularly efficient "gripper" to many types of adhesives, be they synthetic or with hydraulic bonding agents.

TOPSILENT Duo is the version where one of the faces with the polypropylene finish is replaced by thick felt in non-woven polyester fabric with dynamic stiffness of $s^2=21$ MN/m³, which further contributes in acoustic insulation. In **TOPSILENT Adhesiv** one of the faces of the polypropylene finish is replaced by a coating of self-adhesive product protected by a silicone film.

APPLICATION FIELDS

The foils of **TOPSILENT Bitex**, **TOPSILENT Adhesiv** and **TOPSILENT Duo** are used in the building industry to improve the acoustic properties of plasterboard panels of insulating false-walls and false-ceilings. They can also be used to line the inside of wooden shutter boxes to improve the acoustic insulation of external walls, or as shock-absorbers on metal sheet panels. **TOPSILENT Duo** can also be used successfully in the insulation of light wood floors, where it adds a high level of insulation against foot traffic noise and provides a contribution due to its weight. **TOPSILENT Bitex**, **TOPSILENT Adhesiv** and **TOPSILENT Duo** can advantageously substitute plastering and internal rendering of the air space of traditional double

walls. **TOPSILENT Duo** will be laid with the face covered with the non-woven felt face against the wall. Seeing as it is strongly resistant to water vapour, in the case of external walls, it will be laid on the warm face of the insulation fibre acting as a vapour barrier.

METHOD OF USE

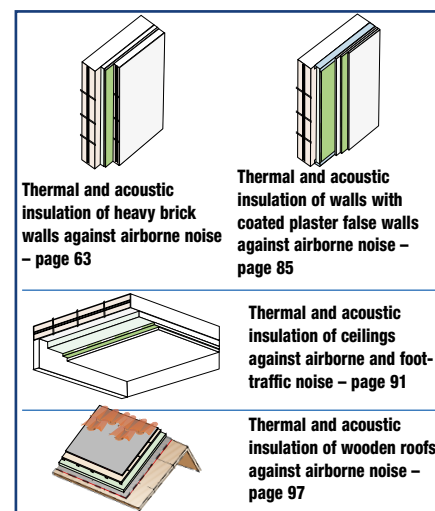
The foils can be glued to the plasterboard or wood panels with FONOCOLL on the coloured part of the polypropylene fabric, while to glue on brick and concrete walls, use plaster-based glue GIPSCOLL (for securing to brick or concrete walls, you are recommended to apply the **TOPSILENT** foil using polypropylene dowels).

They can be screwed to the metal frame or stapled with metal staples to a pre-existent panel.

FONOCOLL is a glue product in water emulsion for the rapid gluing of **TOPSILENT Bitex** and **TOPSILENT Duo** on plasterboard or wood panels in acoustic insulation systems. The glue is spread on the panel in a ratio of 150÷200 g/m².

TOPSILENT Duo is applied in boxes with the face covered with felt facing the outside. If it is used as an acoustic insulation in floors, it is to be laid face down. The width of 120 cm is to be used for coupling on plasterboard panels, while the width of 100 cm is also available for other uses.

TOPSILENT Adhesiv reduces laying times and does not require the use of nails. Simply remove the silicone film and press the sheet on the surface to be insulated. Laying by simple self-adhesion is to be suspended when the temperature is lower than +5°C and/or aided by hot air or flame tools when the temperature is below +10°C and/or in particular conditions of damp.

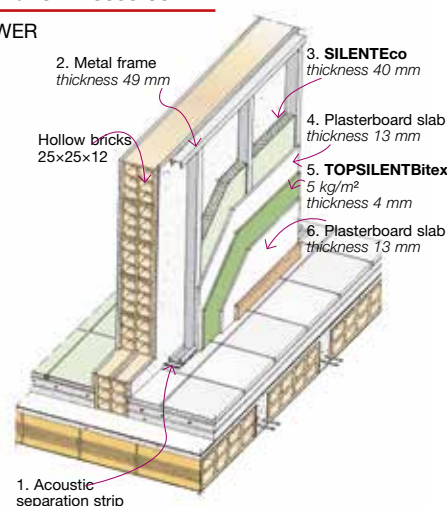


Single wall (conventional brick) - Thickness 12 cm, insulated with contacting plasterboard on a metal frame

Certification "IEN G. Ferraris" n. 35561/07

SOUNDPROOFING POWER

$R_w = 61.3$ dB
 $\Delta R_w = 16.0$ dB



2nd DIVISION
2nd LINE



5th DIVISION
2nd LINE

		TOPSILENTDuo	TOPSILENTBitex	TOPSILENTAdhesiv
Mass per unit area		5 kg/m ²	4 kg/m ² 5 kg/m ²	5 kg/m ²
Roll size		0.60 x 8.50 m	0.60 x 11.50 m 0.60 x 8.50 m 1.20 x 11.50 m 1.20 x 8.50 m	1.00 x 8.50 m
Thickness		9 mm	3 mm 4 mm	4 mm
• total		4 mm	3 mm 4 mm	4 mm
• phonoresilient foil		5 mm	- -	-
• non-woven fabric				
Aqueous vapour diffusion coefficient		μ 100 000	μ 100 000	μ 100 000
Thermal conductivity λ		0.045 W/mK	-	-
• of the non-woven fabric		0.170 W/mK	0.170 W/mK	0.170 W/mK
• of the phonoresilient foil				
Specific heat.		1.20 KJ/KgK	1.20 KJ/KgK	1.20 KJ/KgK
Critical frequency (thickness 10 mm, dens. 1 250 kg/m ³)		>85 000 Hz	>85 000 Hz	>85 000 Hz
Dynamic stiffness	UNI EN 29052/1	s' = 21 MN/m ³	-	-
Sound insulating power (calculated)		26 dB	24 dB 26 dB	26 dB
Fire reaction class	EN 13501-1	Euroclass B-s1,d0 (*)	Euroclass B-s1,d0 (*)	-
Fire resistance		-	EI 120 (*)	-
Certification		ITC ZAG den Istituto Giordano	ITC den Istituto Giordano	ITC den Istituto Giordano

(*) Certified by Istituto Giordano, classification report n. 324903.

(*) Certified by Istituto Giordano, classification report n. 324825.

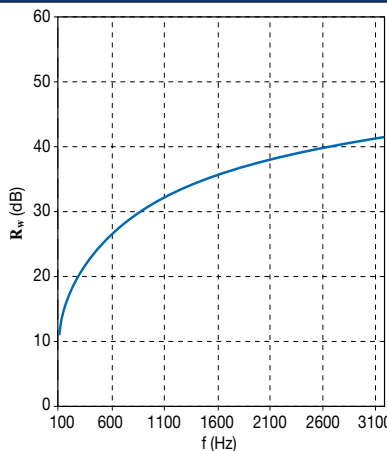
(*) ZAG Certification no. P0578/13-530-2 on self-bearing plasterboard and TOPSILENTBitex walls

the numerous possible uses and the possible interference of conditions or elements beyond our control, we assume no responsibility regarding the results which are obtained. The purchasers, of their own accord and under their own responsibility, must establish the suitability of the product for the envisaged use.

FREQUENCY ANALYSIS OF THE SOUND-INSULATING POWER

To estimate the soundproofing power of the sound-resistant foil **TOPSILENTBitex**, one can theoretically consider a wall made of just the material (lab tests too also exploit the same method: the soundproofing power of the sample material is measured in 1 m x 1 m) exploiting the indications available in technical literature to evaluate its level. We therefore consider our even wall made up of just **TOPSILENTBitex** having the following physical characteristics:
 MASS PER UNIT AREA m' = 5 Kg/m²
 DENSITY ρ = 1.250 Kg/m³
 and evaluate its soundproofing power in terms of frequency according to the equation below that illustrates the Law of Mass:
 R = 20 log (m' f) - 42.5

ρ [Kg/m ³]	f [Hz]	R [dB]
5	100	11.4794
5	125	13.4176
5	160	15.5618
5	200	17.5
5	250	19.4382
5	315	21.4456
5	400	23.5206
5	500	25.4588
5	630	27.4662
5	800	29.5412
5	1000	31.4794
5	1250	33.4176
5	1600	35.5618
5	2000	37.5
5	2500	39.4382
5	3150	41.4456



From what is expressed through the application of this law, one can see that the soundproofing power is not to be considered constant for all the frequencies, but increases by 6 dB per octave. In actual fact, such trend really only occurs at intermediate frequencies. In the low frequency zone, there is a problem related to the fact that the walls "enter" in resonance with the sound. These frequencies depend on the contour conditions (geometric characteristics of the walls and binding method). As for the high frequencies, one will notice another zone where the curve is no longer linear, at a specific frequency, called "coincidence frequency", where the wall starts to vibrate (flexing vibration), reducing its soundproofing power R; this phenomenon only occurs if the sound waves have a different affect compared to the normal direction on the wall.

• THE TECHNICAL SPECIFICATIONS MAY BE VIEWED AND DOWNLOADED ON THE RELEVANT PRODUCT DATA SHEET AT www.indexspa.it •

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