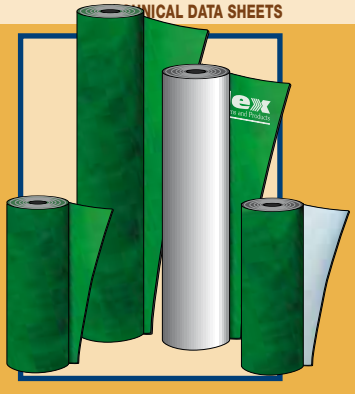
TOPSILENTBitex
TOPSILENTAdhesiv
TOPSILENTDuo



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

CHARACTERISTICS		IMPACT ON THE ENVIRONMENT		
ACOUSTIC INSULATION	FIRE REACTION	ECO GREEN	RECYCLABLE	NON-DANGEROUS WASTE

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.

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. **TOPSILENTBitex**, 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.
TOPSILENTDuo 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 21 MN/m^3, which further contributes in acoustic insulation.
In **TOPSILENTAdhesiv**, one of the faces of the polypropylene finish is replaced by a coating of self-adhesive product protected by a silicone film.

FIELDS OF USE

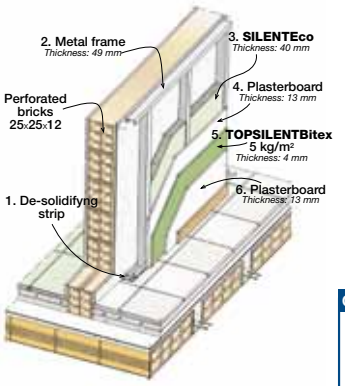
The foils of **TOPSILENTBitex**, **TOPSILENT-Adhesiv** and **TOPSILENTDuo** are used in the building industry to improve the acoustic properties of plasterboard panels of insulating false-walls and false-ceilings. They can also be used to line the inside of wooden shutter boxes to improve the acoustic insulation of external walls, or as shock-absorbers on metal sheet panels. **TOPSILENTDuo** 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. **TOPSILENTBitex**, **TOPSILENTAdhesiv** and **TOPSILENTDuo** can advantageously substitute plastering and internal rendering of the air space of traditional double walls. **TOPSILENTDuo** 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 AND PRECAUTIONS

The foils can be glued to the plasterboard or wood panels with FONOCOLL on the coloured part of the polypropylene fabric. 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 **TOPSILENTBitex** and **TOPSILENTDuo** on plasterboard or wood panels in acoustic insulation systems. The glue is spread on the panel in a ratio of 150÷200 g/m^2.
TOPSILENTDuo 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.
TOPSILENTAdhesiv 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.

ACOUSTIC INSULATION OF WALLS CERTIFIED BY "IEN G. FERRARIS"

LEAN-TO FALSE-WALL IN PLASTERBOARD ON METAL FRAME



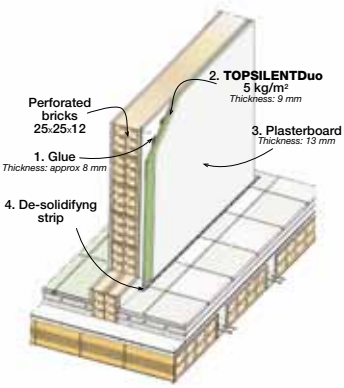
CHARACTERISTICS OF WALL
- Total thickness 23 cm
- Weight 178 kg/m^2

SOUNDPROOFING POWER
R_w = 61,3 dB

TRANSMITTANCE
U = 0,5365 W/m²K

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

THIN FALSE-WALL IN GLUED PLASTERBOARD



CHARACTERISTICS OF WALL
- Total thickness 18 cm
- Weight 167 kg/m^2

SOUNDPROOFING POWER
R_w = 51,9 dB

TRANSMITTANCE
U = 1,3425 W/m²K

CERTIFICATION
"IEN G. Ferraris"
n. 35561/08

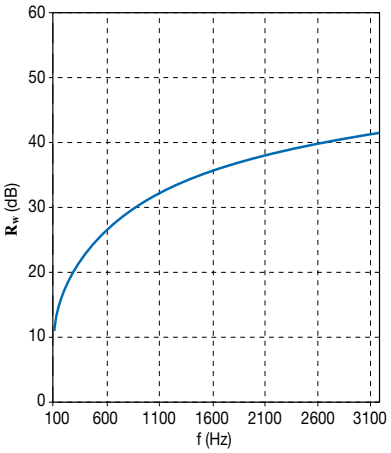
	TOPSILENTDuo	TOPSILENTBitex		TOPSILENTAdhesiv
Mass per unit area	**5 kg/m²**	**4 kg/m²**	**5 kg/m²**	**5 kg/m²**
Roll size	0,60×8,50 m	0,60×11,50 m 1,20×11,50 m	0,60×8,50 m 1,20×8,50 m	1,00×8,50 m
Thickness • total • phono-resilient foil • non-woven fabric	 9 mm 4 mm 5 mm	 3 mm 3 mm –	 4 mm 4 mm –	 4 mm 4 mm –
Specific heat	1,70 KJ/KgK	1,70 KJ/KgK	1,70 KJ/KgK	1,70 KJ/KgK
Aqueous vapour diffusion coefficient	μ = 100.000	μ = 100.000	μ = 100.000	μ = 100.000
Thermal conductivity coefficient λ • phono-resilient foil • non-woven fabric	 0,170 W/mK 0,045 W/mK	 0,170 W/mK –	 0,170 W/mK –	 0,170 W/mK –
Critical frequency (thickness 10 mm, dens. 1.250 kg/m³)	>85.000 Hz	>85.000 Hz	>85.000 Hz	>85.000 Hz
Dynamic stiffness (UNI EN 29052/1)	s' = 21 MN/m³	–	–	–
Phono-insulating power (calculated value)	27 dB	24 dB	27 dB	27 dB
Fire reaction class (UNI 9177)	**Class 1 (1)**	**Class 1 (2)**	**Class 1 (2)**	–
Certifications	Istituto Giordano	Istituto Giordano		

(1) Certification Istituto Giordano n. 171105/RF3601. Approval of "Ministry of Interior" n. VR2172B10D100003.
(2) Certification Istituto Giordano n. 171105/RF3602. Approval of "Ministry of Interior" n. VR2172B10D100003.

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 × 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 (ρ f) – 42,5

ρ [Kg/m²]	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	21,44561
5	400	23,5206
5	500	25,4588
5	630	27,46621
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	41,44561



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.

ANIT Associated

The data in this publication is the result of laboratory tests or observations on site and this does not guarantee the repeatability of the results in equivalent systems.

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