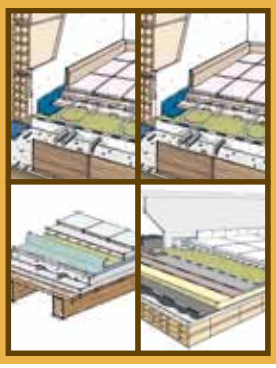
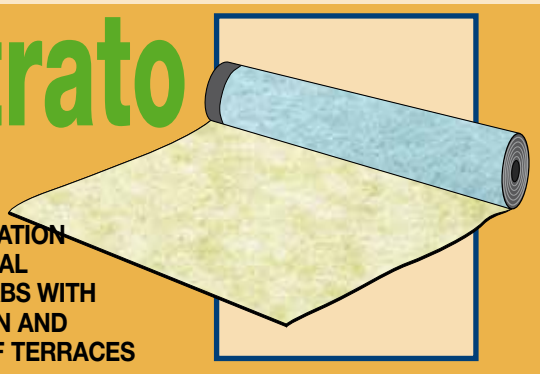


FONOSTOPStrato



MULTI-FUNCTIONAL DOUBLE LAYER ACOUSTIC INSULATION AGAINST FOOT TRAFFIC NOISE WITH HIGH MECHANICAL RESISTANCE FOR INDOOR AND OUTDOOR FLOOR SLABS WITH FLOATING FLOORS. IT ALSO WORKS AS A PROTECTION AND SEPARATION SHEET FOR THE WATERPROOF LAYER OF TERRACES

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

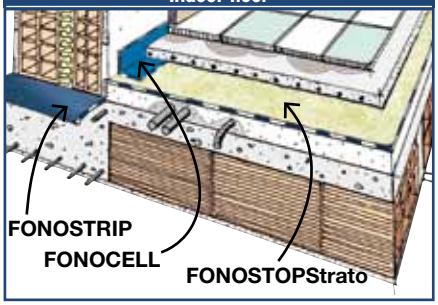
PROBLEM

The installation of resilient material between a floating screed, on which any type of flooring can be laid, and the load-bearing floor slab, reduces the spreading of impact noise or foot traffic noise (ΔL_w) and increases insulation against airborne noise (ΔR_w). It also represents the most flexible and effective insulation technique available.
The levels of insulation against foot traffic noise imposed by the Premier's Decree (DPCM) dated 5th December 1997 also apply to floor slabs of terraces where the lack of an insulation layer against foot traffic noise between the flooring screed and the thermal and waterproofing insulation layering often carries the transmission of noise directly to the rooms below. What's more, if the floor screed is cast directly on the waterproof coat, any cracks that form in the floors of the terraces could damage the waterproof coat underneath.

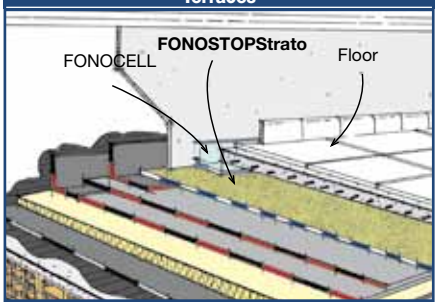
SOLUTION

The use on terraces of economic acoustic insulation products that are too light and that may perforate on foundations or on yielding thermal insulation products or that move under building site traffic, defy any savings expected because numerous acoustic bridges could form. For this specific field of use INDEX has designed a new insulation product against foot traffic noise, named **FONOSTOPStrato**. It is light (about 1 kg/m^2), but offers high mechanical resistance, privileging resistance to punching. Moreover, in addition to increasing resistance to static punching, in order also to increase resistance to dynamic punching, the elasticity of the material had to be increased. This simultaneously resulted in the beneficial effect of achieving a dynamic stiffness in line with most of the rival materials on the same market section.
FONOSTOPStrato is an acoustic insulation product against foot traffic noise supplied in rolls of 1×15 meters. Its top face consists of a thin protective foil in non-woven thermally fixed polyester fabric. This foil acts as a protective barrier against stress caused by site traffic and laying procedures of the screed on lightened, yielding foundations, but also acts as a shield against perforation caused by the roughness of the floor slab if laying in a double face-opposite-face layer.
The foil of the top face is 5 cm longer than the white non-woven sound-resilient fabric of the bottom face; this is done to create an overlap wing, which protects the side joining line of the sheets against the intrusion of cement mortar of the screed, which would otherwise create an acoustic bridge once it sets hard. The bottom face consists of a resilient layer of non-woven polyester fabric with special "elastic needling", being an exclusive INDEX project, which guarantees that thickness is maintained under load and also a good elastic reaction. The fibres are not irritant, they are flexible and do not crumble when compressed or folded.
FONOSTOPStrato also has a high ultimate elongation rating, which enables it to adapt to uneven laying surfaces without breaking. The lining of the top face of the product prevents the liquid mortar - when the screed is laid - from encapsulating the fibres of the elastic non-woven fabric underneath, which would eliminate its insulating properties, while the free fibres of the fabric underneath adhere to the foundations and prevent the sheet from moving when the upper layers are being laid. **FONOSTOPStrato** is a multi-functional acoustic insulation product. It is used to insulate both indoor floors and terrace paving, for which it is also acts as an excellent protective layer of the waterproof coat while the screed is being laid. If the screed is demolished, it prevents the coat from breaking and facilitates repair work.
FONOSTOPStrato, also protects the waterproof coat against the transmission of cracks generated by dimensional variations in the overlying cement hood.

Indoor floor



Terraces



METHOD OF USE AND PRECAUTIONS

SINGLE LAYER APPLICATIONS. The rolls of **FONOSTOPStrato** are to be unrolled in their natural unrolling direction with the bottom face covered with softer non-woven fabric facing the laying surface. They are to be overlapped at the sides by arranging the overlap wing on the adjacent sheet and carefully matching-up the non-woven fabric of the faces underneath.
On the short side, the sheets are not overlapped but carefully brought together end-to-end.
The sheets will cover the whole floor slab and are to be blocked and trimmed-off at the foot of the perimeter walls of the room to be insulated.
All the longitudinal overlapping lines and the transversal joining lines of the sheets are then to be carefully sealed with the special adhesive SIGILTAPE, stuck over the same.
To insulate the floating screed from perimeter walls, the latter are to be lined with 10 cm of the extruded polyethylene separation self-adhesive FONOCELL strip, to limit the thickness of the screed, which will be turned over by 5 cm and glued on the insulation material laid on the floor slab where it will be further secured with adhesive SIGILTAPE.
Note. Make sure you lay FONOCELL on terraces only after the waterproof coat has been protected by a layer of plaster mortar reinforced with a metal net and make sure to seal the gap between the flooring and the skirting board with a flexible sealant.

DOUBLE LAYER APPLICATIONS. If you are installing **FONOSTOPStrato** in a double layer, make sure the first layer will be laid on site in the opposite direction to the natural unrolling direction of the roll, with the bottom face covered with softer non-woven fabric facing upwards. Overlap the sheets lengthwise along the overlap strip and bring the ends of the sheets together without overlapping them; the sheets of the first layer will cover the whole floor slab and are to be blocked and trimmed-off at the foot of the perimeter walls of the room to be insulated but not sealed. The second layer will then be unrolled parallel with the first layer, in its natural unrolling direction, making sure to offset it to lay it over the joining lines of the first layer. The laying and sealing methods of the second sheet will be those already explained for the system laid in a single layer.

FONOSTOPStrato

Thickness		4,0 mm approx	
Roll size		1,00×15,00 m	
Mass per unit area		1,0 kg/m² approx	
Heat capacity per unit area (1)		0,950 KJ/m²K	
Thermal resistance **R**		0,075 m² K/W (2)	
Dynamic stiffness • FONOSTOPStrato single-layer	Apparent dynamic stiffness s'_t = 20 MN/m³		Dynamic stiffness s' = 57 MN/m³
Theoretical estimate of the reduction level in foot traffic noise (3)		ΔL_w = 21 dB	
Resistance to tensile stress (UNI-EN 12311-1) • ultimate tensile stress • ultimate elongation		500/500 N/50 mm 50/100%	
Impermeability (UNI-EN 13111)		Supera la prova	
Aqueous vapour diffusion coefficient		μ = 8.000	
Thermal conductivity coefficient λ.		0,045 W/mK	

(1) Apparent value obtained by calculating values of every component expressed per unit area of whole product (m²) (2) Value established on the material subjected to a load of 1 KPa (100 kg/m²)
WARNING: only the dynamic stiffness values **s'**, ringed in red, are values useful for an estimate calculation conforming to standard EN 12354-2.
(3) Simplified calculation method TR UNI 11175 (Guide to the Standards of the UNI EN 12354 series for predicting the acoustic performance of buildings) for screeds with surface density of 100 kg/m². The dynamic stiffness was calculated in the Applied Acoustics Laboratory of INDEX S.p.A., after measuring dynamic stiffness and air permeability.

MODULAR ACOUSTIC INSULATION AGAINST FOOT TRAFFIC NOISE

THEORETICAL ESTIMATE OF THE REDUCTION LEVEL IN FOOT TRAFFIC NOISE

Example of simplified calculation method
TR UNI 11175 - (Guide to the Standards of UNI EN 12354 series for predicting the acoustic performance of buildings) for
FLOOR SLAB of 20+4 IN CLAY-CEMENT MIX OF 300 kg/m²
LIGHTENED FOUNDATION WITH DENSITY OF 300 kg/m³
thickness 10 cm ($L_{n,w,eq}$ = 76 dB)
SCREEDS WITH SURFACE DENSITY **m'**=100 kg/m²

Calculation of the **fo** resonance frequency of the floating screed system, resilient layer:

$$fo = 160\sqrt{\frac{s'}{m'}} = 160\sqrt{\frac{57}{100}} = 120 \text{ Hz}$$

$$\Delta L_w = 30 \text{ Log } (\frac{f}{fo}) + 3 = \mathbf{21\ dB}$$

where **f** = 500 Hz (of reference)

$$L_{n,w} = L_{n,w,eq} - \Delta L_w + K \qquad \text{where } K = 3$$

$$L_{n,w} = \mathbf{58\ dB}$$

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The figures shown are average indicative figures relevant to current production and may be changed or updated by INDEX S.p.A at any time without previous warning. The advice and technical information provided, is what results from our best knowledge regarding the properties and the use of the product.

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