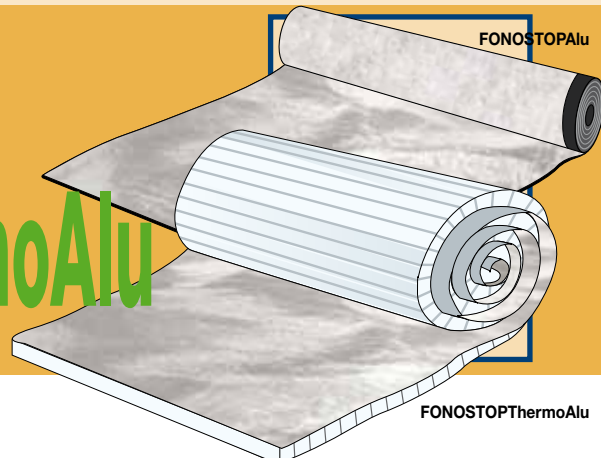


# FONOSTOPAlu

DOUBLE-LAYER HIGHLY RESILIENT ACOUSTIC INSULATION AGAINST FOOT TRAFFIC NOISE, LINED WITH ALUMINIUM FOIL, FOR INSULATING SLABS WITH UNDERFLOOR HEATING

# FONOSTOPThermoAlu

THERMAL INSULATION COUPLED WITH HIGHLY RESILIENT ACOUSTIC INSULATION AGAINST FOOT TRAFFIC NOISE, LINED WITH ALUMINIUM FOIL, SUPPLIED IN ROLLS, FOR INSULATING SLABS WITH UNDERFLOOR HEATING



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

## PROBLEM

Insulation panels normally used in heated floors act as thermal insulators but not as sufficient acoustic insulators against foot traffic noise according to the levels imposed by DPCM 05/12/1997. What's more, the parameters usually foreseen in the building plans often impose the simultaneous reduction in the screed that incorporates the piping network, which could cause uneven heating of the floor, creating "strips of heat".

## SOLUTION

**FONOSTOPAlu** is a multi-purpose acoustic insulation against foot traffic noise made up of a soundproof foil with top face lined with reflecting aluminium foil protected by a plastic film (reflectance ~ 90%) with high thermal conductivity ( $\lambda \sim 236 \text{ W/mK}$ ) and very high heat diffusion rate (diffusivity  $\alpha = 8,2 \cdot 10^{-5} \text{ m}^2/\text{s}$ ). It is consequently a specific insulation product designed for floor slabs with underfloor heating, where the top aluminium coated face distributes the heat in the floating floor evenly by conduction, consequently distributing the temperature of the floor surface and eliminating the problem of "strips of heat", even in rather thin screeds. The foil is impermeable to water, gas and water vapour, it protects the underlying layers while laying the screed and protects the thermal insulation against water vapour, which starting from the warm face of the same, tends to dampen it and reduce its insulation capacities. The soundproof foil on the bottom face is coupled with non-woven polyester sound-resilient fabric obtained through a special "elastic needling" process, being an exclusive INDEX project. The fibres are elastic and do not crumble when compressed or bent. **FONOSTOPAlu**, unlike many plastic cellular insulation materials, even if it is light, has sufficient weight and has such a strong "grip" (adherence to laying surface) that it does not move under site traffic. **FONOSTOPAlu** is the outcome of research activities of Index in the field of acoustic insulation. It is designed

meticulously for the specific purpose for which it is to be used and does not derive from rejects of other production cycles or from the adaptation of materials conceived for other applications

**FONOSTOPAlu** is produced in rolls of 10x1.05 meters. The top aluminium coated face has a textile overlap wing of 5 cm, 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.

INDEX has designed **FONOSTOPThermoAlu** to resolve the thermal-acoustic insulation problems of floor slabs with underfloor heating with just one product. **FONOSTOPThermoAlu** is the result of coupling **FONOSTOPAlu** with an expanded polystyrene panel cut in strips, so that the product can be wound in rolls making it easier and quicker to lay than products supplied in panels. The top layer of **FONOSTOPAlu** is a seamless waterproof and airtight element, which optimises acoustic performance; the foil prevents the "non-woven fabric" from getting soaked with fresh cement mortar that would annul its elasticity, plus it also acts as a vapour barrier for the underlying thermal insulation when the floor slab borders with unheated rooms. The efficiency of the thermal insulation is provided mainly by the layer of self-extinguishing AE sintered expanded polyst-

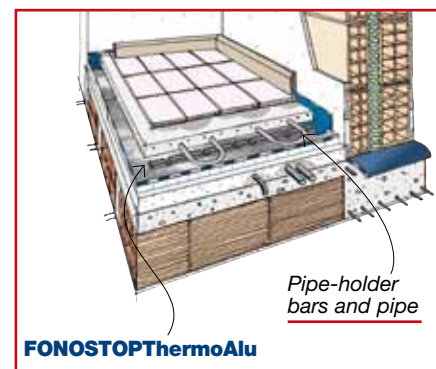
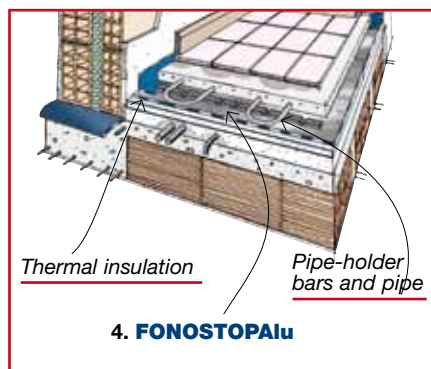
ylene EPS 120 with high resistance to compression, which stops the thickness from altering over time. The EPS 120 material is a stable waterproof insulation product, with conductivity coefficient  $\lambda=0,035 \text{ W/mK}$ , which is cut in 50 mm strips. **FONOSTOPThermoAlu** is supplied in 100 cm wide rolls, complete with 5 cm textile overlap wing; the top face of the product is lined with aluminium foil whereas the bottom face is made up of the insulation strips in white EPS 120.

## FIELDS OF USE

**FONOSTOPAlu** is used for the acoustic insulation against foot traffic noise of intermediary floor slabs with underfloor heating. It is generally laid over standard flat and smooth insulation panels, before laying the heating pipes. When there is not enough room for the thermal insulation, **FONOSTOPAlu** can be used on its own, laying it on the cement-based foundations before laying the pipes.

**FONOSTOPThermoAlu** is used for the thermal-acoustic insulation of floor slabs with underfloor heating and fulfils all the functions requested on its own.

Both products can be used under a reinforced cement-based screed or under a screed in unreinforced self-levelling anhydrite.



## METHOD OF USE AND PRECAUTIONS

In the case of **FONOSTOPAlu** the thermal insulation panels are laid first, whereas **FONOSTOPThermoAlu** is laid directly on the foundations. The rolls of **FONOSTOPAlu** or **FONOSTOPThermoAlu** are to be unrolled in their natural unrolling direction with the top aluminium-coated face facing upwards and are to be overlapped at the sides by arranging the overlap wing on the adjacent sheet and carefully matching the elements up. On the short side, neither materials are overlapped but are carefully brought together end-to-end. They 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 overlap lines and the transversal joining lines of the sheets are then to be carefully sealed with the special adhesive SIGILTAPE, stuck over the same. The floating screed must be completely detached not just from the floor slab but also from the walls and from anything coming out of the slab that should cross it. To do this, starting from the insulation material laid on the slab surface, the perimeter walls are to be lined by 15 cm with the special FONOCCELL angular self-adhesive elements in expanded polyethylene, which will be turned up and over the surface by 5 cm to glue them to the insulation layer on which they will be further blocked with the adhesive SIGILTAPE. Any parts or pipes that should cross the insulation sheet and the floating screed vertically shall be lined carefully with FONOCCELL. The heating pipes will then be laid, which will be held in position by special modular plastic bars in which the seats for the pipes are arranged, every 5 cm, and which will be glued in advance to the aluminium-coated

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# FONOSTOPAlu

Thickness	6,5 mm approx	
• Alu-foil	0,012 mm	
Roll size	1,05x15,0 m	
Mass per unit area	1,1 kg/m <sup>2</sup>	
Watertightness (EN 1928)	1 KPa	
Water vapour diffusion coefficient (soundproof foil)	μ 1.500.000	
Dynamic stiffness (ITC certificate conforming to UNIEN29052 p. 1st) load 200 kg/m <sup>2</sup>	Apparent dynamic stiffness $s^*_t = 4 \text{ MN/m}^3$	Dynamic stiffness $s^* = 21 \text{ MN/m}^3$ (*)
Theoretical estimation of the reduction level in foot traffic noise (*)	$\Delta L_w = 28 \text{ dB}$	
Compression testing under load of 200 kg/m <sup>2</sup> (EN 1606)	Reduction in thickness ≤1 mm ca.	
Compressibility (EN 12431:2000 - Established thickness)	≤2 mm	
Resistance to loading	35 kg	
• static (EN 12730)	20 cm	
• dynamic (EN 12691)		
Thermal conductivity	0,045 W/mK	
• Non-woven fabric λ	236 W/mK	
• Alu-foil λ		
Thermal diffusion	α = 8,2 · 10 <sup>-5</sup> m <sup>2</sup> /s	
• Alu-foil		

# FONOSTOPThermoAlu

**ACOUSTIC PERFORMANCE:** see FONOSTOPAlu specifications

**Expanded polystyrene EPS 120**

Designation code (EN 13163)	EPS EN13163-T1-L1-W1-S1-P3-DS(N)5-BS170-CS(10)120			
Compression strength 10% compression (EN 826)	≥120 KPa [ CS(10)120 ]			
Dimensional stability 48 h at 23°C R.H. (EN 1604)	±0,5% [ DS(N)5 ]			
Bending strength (EN 12089)	≥170 KPa [ BS170 ]			
Long term water absorption by immersion (EN 12087)	<5%			
Water vapour transmission (EN 12086)	30±70 μ			
Thickness T1	20 mm	30 mm	40 mm	50 mm
Thermal resistance R <sub>D</sub> (EN 12667)	0,55 m <sup>2</sup> K/W	0,85 m <sup>2</sup> K/W	1,10 m <sup>2</sup> K/W	1,40 m <sup>2</sup> K/W
Thermal conductivity	0,035 W/mK			
Specific heat	1.20 kJ/kgK			
Reaction to fire (EN 13501-1)	Euroclass E			

**FONOSTOPThermoAlu**

Type	25	35	45	55
Thickness (*)	26 mm	36 mm	46 mm	56 mm
Thermal resistance R (*) (EN 12667)	0,65 m <sup>2</sup> K/W	0,95 m <sup>2</sup> K/W	1,20 m <sup>2</sup> K/W	1,50 m <sup>2</sup> K/W
Roll size	1x10 m	1x8 m	1x6 m	1x5 m
Width of sound-resilient foil	1,05 m	1,05 m	1,05 m	1,05 m

(\*) Value established on the material subjected to a load of 1 KPa (100 kg/m<sup>2</sup>).

**WARNING:** The dynamic stiffness values  $s^*$  marked in red are the only ones useful for provisional calculation in conformity with EN 12354-2.

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face with a strip of hot extruded glue using the special electrical glue gun. The heating pipes, in the case of reinforced cement-based screeds, can be bound or secured with appropriate devices to the electrically welded metal reinforcement but for both systems, what's most important is never to perforate or secure the pipes across the insulation material, otherwise its insulating properties will be jeopardised. The screed is then laid without perforating the insulation or moving the overlaps. The screed will be prepared and sized according to the instructions of the designer of the heating system.



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.

• FOR ANY FURTHER INFORMATION OR ADVICE ON PARTICULAR APPLICATIONS, CONTACT OUR TECHNICAL OFFICE • IN ORDER TO CORRECTLY USE OUR PRODUCTS, REFER TO INDEX TECHNICAL SPECIFICATIONS •

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