Description

R979N thermoformed panel is used to make the insulation layer in heating and cooling underfloor radiant systems.
The panel is composed of:
• a thermoformed insulating plate of sintered expanded polystyrene (EPS);
• a surface covering plate of sintered expanded polystyrene (0,6 mm thick).
The combined use of these two elements offers an effective density lower than the density of a classic thermoformed insulating panel, with a much higher resistance to deformation due to trampling.
The R979N panel offer the possibility to lay pipes diagonally, more and more required by walls geometries of modern houses, and sound-proofing thanks to the double density insulating plate; that is two EPS layers with different density: higher density is up to favour compression, lower density is under to reduce mass and increase elasticity in order to filter vibrations and give acoustic comfort.

Versions and product codes

Product code	Size		N. of panels	Total useful surface
	h [mm]	T [mm]		
R979NY003	30	Straight laying: T50	10	11,20
		45° laying°: T70		
R979NY005	50	Straight laying: T50	6	6,72
		45° laying: T70		
R979NY006	63	Straight laying: T50	5	5,60
		45° laying: T70		

T = Pitch (mm); h = Height (mm)

Warning.
Store in covered place, not expose to direct sunlight also after the installation, until laying the screed.

Use

The use of R979N panel is vital to make a radiant system; it permits to heat rooms quickly and with contained power, since it limits the mass of heated structures and it reduces heat losses downwards.
In fact, by using R979N thermoformed insulation panel, comfortable room temperature is obtained, though floor temperature is low (around 24÷26 °C), as prescribed by UNI EN 1264. Consequently, indispositions and structural problems typical of old installation techniques are completely absent.
By improving the performance of the thermoformed insulation panel, the quantity of pipe laid and the corresponding circulating water flow are reduced. In this way, number of circuits, diameter of supply pipes, circulators hydraulic heads and potentiality of thermal central unit are limited. As a consequence, energy conservation is immediate while the environment is respected.

Characteristics

The particular configuration of the protuberance enables to firmly tangle pipes with an external diameter of max. 18 mm.
Hence, the use of R979N panel enables to reduce the workforce for the laying of the pipe considerably and enables to make circuits characterized by threads of 50 mm and multiples. The three thicknesses available, 30, 50 and 63 mm high, give the user the chance to make heating and cooling underfloor system in all construction sites, even when the available room is limited, such as during renovations.
All R979N insulation panels are equipped with a very easy and effective coupling system. In fact, surface covering element exceeds by 50 mm on two sides compared to the insulating plate below. These two exceeding strips and the adjacent panels are superimposed (fig. 2) and thus wedge reciprocally. This constitutes a base for radiant circuits that is homogeneous and without thermal bridges. These would be created if panels were not coupled firmly. R979N panel enables to lay pipes diagonally.

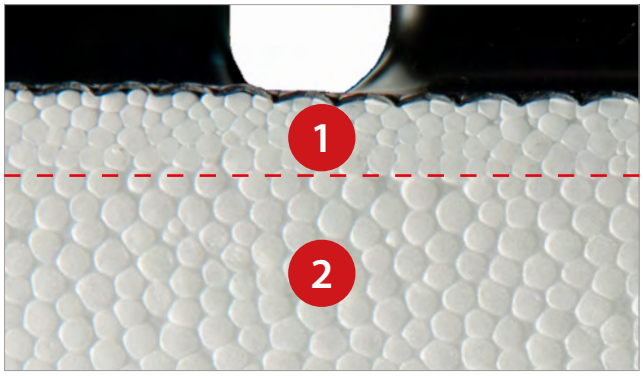


Fig. 1: double density for R979NY005 and R979NY006 panels (1: higher density layer ; 2: lower density layer)

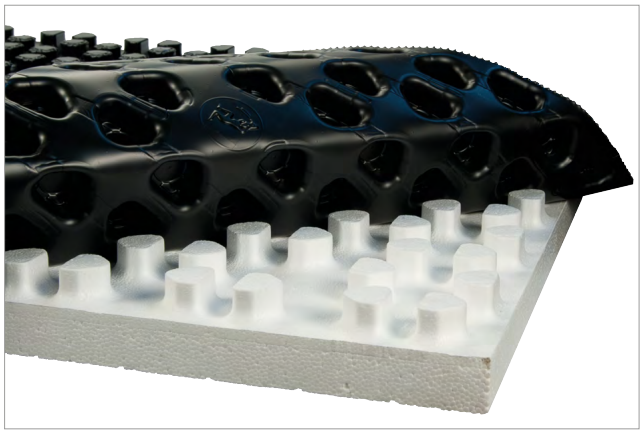
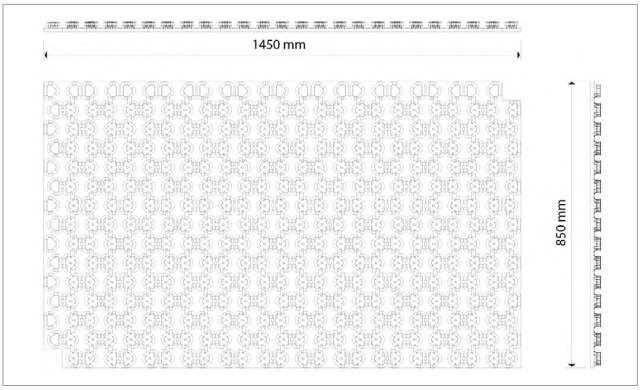


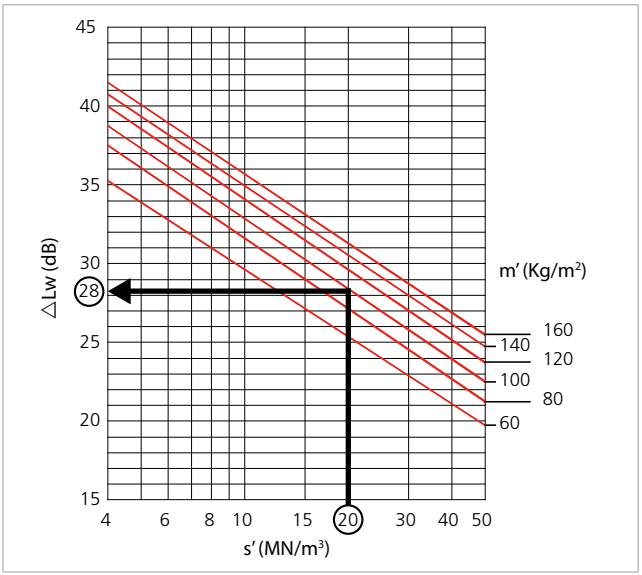
Fig. 2

Dimensions



Sound absorption

R979NY005 and R979NY006 panels have a double density EPS insulation plate (see fig.1). This determines an excellent sound-proofing capacity. In compliance with EN 13163, R979NY005 - R979NY006 panels are in class SD 20, that corresponds to a dynamic rigidity s'≤ 20 MN/m³, calculated according to EN13172.



UNI EN 12354-2: the chart shows sound-proofing performance of R979NY005 - R979NY006 panels. This is obtained with double density that determines a limited value of dynamic rigidity and thus sound-proofing improves when ΔLw trampling is higher.

Laying

The laying of R979N panels is quick and easy, thanks to the presence, on two sides, of exceeding strips (fig. 3) that allow panels to wedge perfectly.

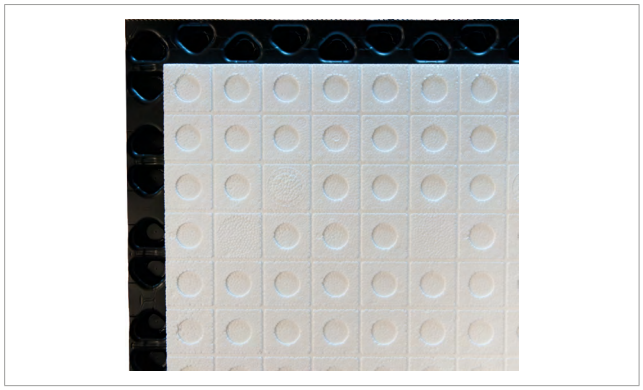


Fig. 3

Lay K369A perimetrical wall insulation (very important with insulation function to eliminate the thermal bridge and to permit the smallest floor dilatations). Lay and wedge panels so that the following rows are staggered. This avoids that panels rise up for reasons related to disconnections of the surface or to pipe rigidity that tends to rise, above all in curvatures, because of the mechanical memory acquired during the rolling up.

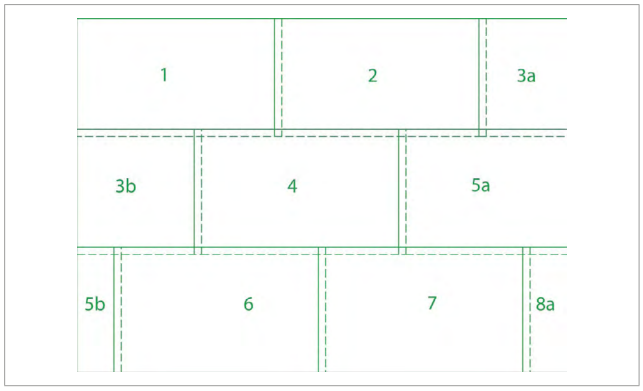


Fig. 4

In order to have a quicker laying of panels, the scheme in fig. 4 should be followed.
Exceeding strips of plate n.1 are simply removed with a cutter, then it is laid in the most suitable corner to start laying.
Plate n.2 is trimmed only on its longer side. The strip on the shorter side enables to couple to plate n.1.
This operation is repeated on all the plates of the first row. For the following rows, each panel is coupled to the adjacent row, in a staggered way, keeping an element aligned. When the pipe is laid, before laying the concrete with additive K376, it is recommended to lay a sheet of electro-welded net with loose network on the panel. Its function is to stiffen the concrete that can bear heavy concentrated loads (such as heavy furniture or closets) without crushing. The encumbrance required for a radiant panel system in a house is given by the height of the thermoformed insulation panel (30, 50 or 63 mm) in addition to the thickness of the concrete (at least 30 mm, according to UNI EN 1264-4) and of the surface finish made of tiles or glued parquet. Systems made by using R979N insulation panel and K369A perimetrical wall insulation are characterized by high thermal performance and short time to make them operative, in virtue of reduced thermal inertia deriving from the small mass of the structure involved. Thus, these specific features permit to control the temperature in the different rooms, by setting possible alleviations too, in order to further increase energy conservation that is already high and peculiar to radiant systems compared to traditional convention systems.

Technical data

R979NY003	
Panel dimensions	1450 x 850 mm
Effective dimensions	1400 x 800 mm
Panel surface	1,23 m^2
Effective surface	1,12 m^2
Laying distance between the axis	Straight: 50 mm Diagonal: 70 mm
Total thickness	30 mm (Protuberance: 19 mm; plate thickness: 11 mm)
Pipes diameter	max. 18 mm
Norms according to EN 13163 norm	EPS-EN 13163-T1-L1-W1-S1-P3-DS(N)5-DLT(1)5-BS250-CS(10)150
Fire class EN 4102-1	B 2
Fire class EN 13501-1	E
Trampling insulation improvement	-
Dynamic rigidity EN 13163	-
Thermal conductivity	0,035 W/mK
Thermal resistance	0,45 m^2 K/W
Thermal dimensional stability	80 °C
Density	30 kg/m^3
Traffic load	75 kPa (7500 kg/m^2)
Min. compression resistance with 10% crushing	≥ 250 kPa
Humidity protection according to DIN 18560	Polystyrene (PS) 0,6 mm
Colour	Black

R979NY005	
Panel dimensions	1450 x 850 mm
Effective dimensions	1400 x 800 mm
Panel surface	1,23 m^2
Effective surface	1,12 m^2
Laying distance between the axis	Straight: 50 mm Diagonal: 70 mm
Total thickness	50 mm (Protuberance: 19 mm; plate thickness: 31 mm)
Pipes diameter	max. 18 mm
Norms according to EN 13163 norm	EPS-EN 13163-T4-L1-W1-S1-P3-DS(N)5-BS100-SD20-CP2
Fire class EN 4102-1	B 2
Fire class EN 13501-1	E
Trampling insulation improvement	28 dB
Dynamic rigidity EN 13163	20 MN/m^3
Thermal conductivity	0,040 W/mK
Thermal resistance	0,90 m^2 K/W
Thermal dimensional stability	80 °C
Density	upper side/thin: 30 kg/m^3 underside/thick: 13 kg/m^3
Traffic load	5 kPa (500 kg/m^2)
Min. compression resistance with 10% crushing	≥ 100 kPa
Humidity protection according to DIN 18560	Polystyrene (PS) 0,6 mm
Colour	Black

R979NY006	
Panel dimensions	1450 x 850 mm
Effective dimensions	1400 x 800 mm
Panel surface	1,23 m^2
Effective surface	1,12 m^2
Laying distance between the axis	Straight: 50 mm Diagonal: 70 mm,
Total thickness	63 mm (Protuberance: 19 mm; plate thickness: 44 mm)
Pipes diameter	max. 18 mm
Norms according to EN 13163 norm	EPS-EN 13163-T4-L1-W1-S1-P3-DS(N)5-BS100-SD20-CP2
Fire class EN 4102-1	B 2
Fire class EN 13501-1	E
Trampling insulation improvement	28 dB
Dynamic rigidity EN 13163	20 MN/m^3
Thermal conductivity	0,040 W/mK
Thermal resistance	1,25 m^2 K/W
Thermal dimensional stability	80 °C
Density	upper side/thin: 30 kg/m^3 underside/thick: 13 kg/m^3
Traffic load	5 kPa (500 kg/m^2)
Min. compression resistance with 10% crushing	≥ 100 kPa
Humidity protection according to DIN 18560	Polystyrene (PS) 0,6 mm
Colour	Black

Normative reference

- **UNI EN 1264:** underfloor heating – Systems and components
- **EN 13163:** thermal insulation products for buildings – Factory made products of expanded polystyrene (EPS) – Specification
- **UNI EN 12354-2:** acoustics in construction – Evaluation of acoustic performance of buildings starting from products performance– Trampling insulation

Technical specifications

R979NY003

Thermoformed panel for underfloor radiant system, 30 mm high. It is composed of an insulation layer of sintered expanded polystyrene (EPS) and 0,6 mm covering plate of black thermoformed polystyrene. For pipes with diameter of max 17 mm with laying distance between the axis 50 mm (straight laying) or 70 mm (45° diagonal laying). Dimensions: 1450 x 850 mm (useful: 1400x800 mm), surface 1,12 m^2.

R979NY005

Thermoformed panel for underfloor radiant system, 50 mm high. It is composed of an insulation layer of sintered expanded polystyrene (EPS) and 0,6 mm covering plate of black thermoformed polystyrene. For pipes with diameter of max 17 mm with laying distance between the axis 50 mm (straight laying) or 70 mm (45° diagonal laying). Dimensions: 1450 x 850 mm (useful: 1400x800 mm), surface 1,12 m^2.

R979NY006

Thermoformed panel for underfloor radiant system, 63 mm high. It is composed of an insulation layer of sintered expanded polystyrene (EPS) and 0,6 mm covering plate of black thermoformed polystyrene. For pipes with diameter of max 17 mm with laying distance between the axis 50 mm (straight laying) or 70 mm (45° diagonal laying). Dimensions: 1450 x 850 mm (useful: 1400x800 mm), surface 1,12 m^2.

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