	Ray Magic [®] NK 2x4 submit	tal
	US patent #10113678	
Job	Designer	Contact

Ray Magic[®] NK (Naked) is a high performance hydronic radiant panel. It is installed within the ceiling (and walls) and it is covered with 5/8" regular drywall, wood, or other ceiling material, to create unobstructed radiant surfaces.

The panel consists of a 1 1/2" thick EPS board and aluminum heat transfer plates with propriety omega shaped channels. Pressed into these channels are two symmetrical 8 mm [$\approx 5/16$ "] PE-RT radiant tubing circuits laid out in a serpentine pattern. Each tubing circuit is connected in parallel to 16 mm [$\approx 1/2$ "] PE-RT return and supply lines that run along the length of the panel.

Panels are connected together using patented slide-in fitting technology that allows for internal PE-RT piping expansion and contraction.

Technical specifications¹

Model	Ray Magic® NK		
Part number	RNKD2438		
Features	Quick and easy to install with panel slide-in patented fitting technology		
	High heating and cooling performance		
	90% net radiant surface		
	Installable on 24" o.c. additional channels or between ceiling joist (width from 1 1/2" to 3")		
	Environment-friendly and 100% recyclable		
	Competitive installed cost compared to other radiant floor panel systems		
Size and weight	nominal size W 2' [610 mm] L 4' [1220 mm] H 11/ ₂ " [38 mm]		
	Weight wet (with H ₂ O) 3.25 lbs [1.25 kg] dry 2.75 lbs [1.2 kg]		
Finishing ²	Comes without finishing, can be covered with wood, drywall, or other approved ceiling materials		
Packaging	RM NK 2x4 comes in a 5-panel carton box, with 10 RM couplings and 10 RM caps. Dimension: $51^{\circ} \times 25^{\circ} / 4^{\circ} \times 8^{\circ} / 2^{\circ}$ Weight: 30 lbs.		



Panel connection	Max 10 panels (2x8) per loop connected in series or parallel		
	Panel to panel:	use (2) RM coupling (included with each panel)	
	Panel capping:	use (2) RM cap to cap panel (included with each panel)	
	Panel to headers:	use the Messana 1/2" PEX-A pre-insulated pipe with the RM F1960 adapter $^{\rm 3}$	
Heat exchanger	Aluminum plates omega-shaped to wrap around the pipe to increase thermal exchange surface		
	Thickness:	0.016 inch [0.4mm], 27 gauge	
	Thermal conductivity:	0.18 W/mK when covered with 5/8" gypsum board	
	Radiant pipe:	8 mm [≈ ⁵/16"] PE-RT 3-layer pipe with EVOH oxygen barrier	
	Serpentine pattern:	3 ³/s" o.c. [100 mm], 3" max cut-out allowed	
	Serpentine length:	24 ft per circuit	
		one circuits per panels (total 24 ft of piping)	
Radiant Area	Gross radiant area:	8 sq.ft. (total papel surface)	
	Net radiant area	7.4 sq ft. (total active surface)	
	Net radiant percentage:	93%	
Fluid operating temperature	46 °F to 130 °F		
Cooling capacity	21 Btu/b/sq.ft @55 °F (Max 31 Btu/b/sq.ft @46 °F) with 76 °F room temperature (with 5/8" gypsum board)		
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Heat output	24 Btu/h/sq.ft @100 °F (Max 52 Btu/h/sq.ft @130 °F) with 70 °F room temperature (with 5/8" gypsum board)		
Nominal flow rate	0.05 GPM		
Pressure drop	0.8 ft of head [0.35 psi] @0.1 gpm		
Operating pressure	20 to 40 psi (pressure test at 100 psi)		
Water content	0.115 gal [0.4375 lt], equivalent to approximately 1 lb [0.45 Kg] of water		
Insulation	11/2" EPS board ASTM E84 (Class A rated, R-Value = 6.5)		

Notes

Size, weights and technical characteristics may vary without prior notice.
Use only ceiling material and installation procedures that comply with all local codes.
For third party 1/2" PEX pipe, use the Messana ASTM F1960 connection adapters (Q41/2PPXCOUP).

Thermal performance

Cooling capacity



Heating output



Notes

These thermal performance charts are based on a correlation between internal testing performed using thermal imaging of the panel surface and the test results, according to the nominatives EN 14240 (cooling) and EN 14037 (heating), performed on the previous version of the Ray Magic panel.