"FAST RADIANT" DYMYSTIFIED

One of the most significant benefits of Warmboard is its ability to quickly adjust to temperature changes and keep a conditioned space at the desired comfortable temperature. We call this "fast radiant", because unlike competing radiant heat solutions, Warmboard reacts faster. This unique benefit is a result of Warmboard's low mass *and* high conductivity.

A radiant heat panel has a very simple function to perform; conduct heat from warm water in a tube to the surface of your floor. Warmboard performs this simple function so well because of the following:

*** Its unique aluminum lined channels make direct contact with the tubing.**
*** That same aluminum is highly conductive and covers the entire floor surface.**
*** Finish flooring heats quicker with the aluminum proximity and area covering.**
*** The total mass of the floor assembly is very low.**

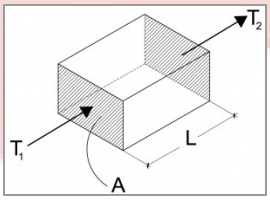
Warmboard is a simple concept, which maximizes the speed with which heat is delivered under all circumstances. The key to this is Warmboard's low mass. When a radiant heating system needs to react quickly to the demand for more heat, or conversely less heat, a low mass system will always outperform.

Here is how: The aluminum in Warmboard has a specific heat similar to traditionally applied thin-pour material. This means that an equivalent heat input will raise equal amounts of material (mass) at the same rate. However the mass is not the same. Warmboard weighs 3.1 lbs per square foot and because it's the structural subfloor, there's no additional mass added in framing or construction.

In contrast, a thin-pour of 1 ½" weighs 14.5 lbs. When installed above a subfloor, this adds 2.5 lbs per square foot for a ¾" plywood subfloor. Assuming the same finished flooring materials are used, Warmboard's 3.1 lbs per square foot has 5.5 times less mass than thin-pour's 17 lbs assembly. Heating less mass takes less time and reacts faster; in this case, Warmboard will react 5.5 times faster than thin pour.
Warmboard's conductivity also contributes to its fast delivery of heat. To understand this, takea look at the basic equation for heat flow:

Heat flow (F) equals the difference in temperature, or delta T (ΔT) times the Coefficient of Conductivity (K) times cross sectional area (A) divided by the length (L) over which heat must flow.

$$F = \frac{\Delta T \, K \, A}{L}$$



Comparing thin-pour to Warmboard in this equation, ΔT remains constant and L (tube spacing) is 12". K is 360 times greater for Warmboard (aluminum compared to a gypsum-based thin pour) and A is 60 times lower for Warmboard (.025" of aluminum to 1 ½" of gypsum based thin pour).

Based on the aforementioned, Warmboard will have heat flow that is six times faster than traditional thin pour systems. If you were to change the thin pour tubing spacing to a very tight 6", Warmboard's heat flow is still 3 times greater. Greater heat flow equates to faster radiant heat.

A structure's heat loss, starting point temperature, system water temperature, occupancy rate, and much more, significantly affect any heating system's ability to respond. But when these two floor assemblies are compared side-by-side, Warmboard's superiority for heat transfer is clearly evident. Based on the science behind Warmboard, it can deliver radiant heat at a rate 5 to 10 times faster than traditional thin-pour systems.

For the homeowner, this means that floors become noticeably warm within minutes. Ambient air temperature in most cases can increase from 2° to 5° degrees per hour when the need for heat arises. The important features of low mass and high conductivity combine to make Warmboard one of the fastest radiant heat systems available.