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SIPLAST LIGHTWEIGHT INSULATING CONCRETE BULLETIN:

INSULATION BOARD QUALITY

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SIPLAST*FLASH*

Insulperm Insulation Board is an engineered product that is significantly different from generic holey board. Insulperm's differences improve the performance of the finished lightweight insulating concrete roof deck.

The design of Insulperm features more holes than standard holey board. These additional holes ensure that air is not trapped under the board at the time of application, thereby improving the bonding of the Insulperm to the slurry coat. The additional holes in Insulperm also increase the rate of moisture dissipation from the insulating concrete system. This moisture dissipation may either be in the form of liquid moisture or the form of moisture vapor. The number and distribution of holes is an important difference between standard holey board and Insulperm.

Increasing the number of holes in Insulperm adds to the manufacturing process and therefore, cost. However, these design features significantly improve the bonding, moisture dissipation rate, and adhesion of Insulperm as compared to generic holey board.

Insulperm is manufactured to meet **ASTM Standard C578 Type I** criteria. Type I is a level of physical properties that specifies board density range to be 0.9 to 1.0 pcf, the thermal value to be 4.0 R/inch, compression resistance at 10.0 psi, and flexural strength to be 25 psi, minimum. These specifications represent the board quality approved by Factory Mutual, Underwriters Laboratories, Florida Building Code and other regulatory agencies. Holey board supplied by commodity manufactures and suppliers to the job site may not meet ASTM standard C578 Type I and there are no quality controls in place by other lightweight manufacturers to ensure that it does... Some board manufactured for actual use in the field more closely meets ASTM C578 Type XI properties. Type XI properties consist of minimum 0.7 pcf density board, a thermal value of 3.3 R/inch, compression resistance at 5.0 psi, and flexural strength at 10.0 psi. Clearly, Type XI board does not provide the physical properties requirements. For this reason Siplast has always supplied the lightweight concrete as well as the EPS board to ensure the system we provide meets our published guidelines. Other lightweight manufacturers leave the purchase of the board to the applicator and they do not provide any form of field quality control to ensure the board and the lightweight material meet their requirements before issuing a warranty.

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EPS board with properties below Type I standards can affect the thermal resistance of the roof assembly. The table below shows the effect of reduced density and thermal value.

	Actual Board Density	R-Value Per Inch	Percent Difference From Claimed 4.0 R/inch
Sample 1	0.85	3.86	-3.5%
Sample 2	0.84	3.84	-4.0%
Sample 3	0.77	3.71	-7.2%
Sample 4	0.76	3.70	-7.6%
Sample 5	0.79	3.75	-6.3%

Clearly, the building owner will not receive the insulating value specified for the job or the long term performance specified, nor will he realize true cost savings from using a lower cost, Type XI EPS board. Instead, over time, he will bear the increased heating and cooling costs associated with the lower thermal resistance of a cheaper board.

There is always a higher initial cost associated with using high quality products that are designed to perform well over time. The informed owner will recognize that the life cycle cost advantages gained by using superior products like Insulperm outweigh a slight up-front premium.

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