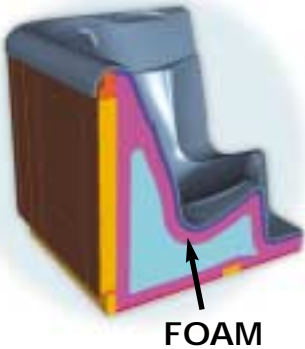


# Hot Spring® Spa Insulation vs. Air Insulation

MANUFACTURERS' CLAIMS CAN BE CONFUSING. GET THE FACTS.

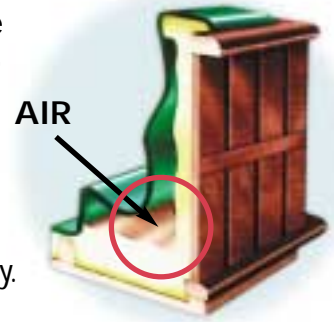


Hot Spring, **The Energy Smart™ Spa**, is fully insulated with multiple layers of high-density polyurethane foam.

- Layers of foam are strategically applied to the spa shell and within the cabinet cavity. Foam density varies, including 30 lb., 2 lb., .5 lb., and 40 lb. foam, to provide significant energy efficiency.

When considering purchasing a spa with “air space” insulation, you should know...

- When air is trapped in a small space it is unable to move, therefore it is unable to create a convection (movement) atmosphere. In this environment air *can be* a relatively good insulator, for example in thermal windows. *However, if you didn't need to see through windows, foam would be a better insulator.*
- In large, unobstructed areas such as the air gaps in some spas, the air is free to move. This establishes a convection (movement) atmosphere in which heat is readily lost. For example, when you blow air over a hot drink it cools very quickly. *When air cannot move it's a good insulator, but when it can move it's a poor insulator.*
- **Further**, when the relative humidity level in the air is high (as in a spa), air's thermal properties are further reduced.



**Convection + High Humidity = Low Thermal Properties of Air**

**To get a better understanding of Hot Spring® Spa insulation vs. Air insulation, you should know...**

Material	Thickness	“R” Value	“R” Value is a rating of insulating materials — the higher the “R” Value the better the insulation.
Polyurethane Foam (Hot Spring®)	1"	6.25* inch/inch	
Air Space (includes convection)	1"	0.90* inch/inch	

\*Hornbostel, Carl. (1991). Construction Materials: Types, Uses and Applications. 2nd ed. New York, NY: John Wiley & Sons, Inc. 465.

**Polyurethane foam is more than 6 times better than air as an insulator.**