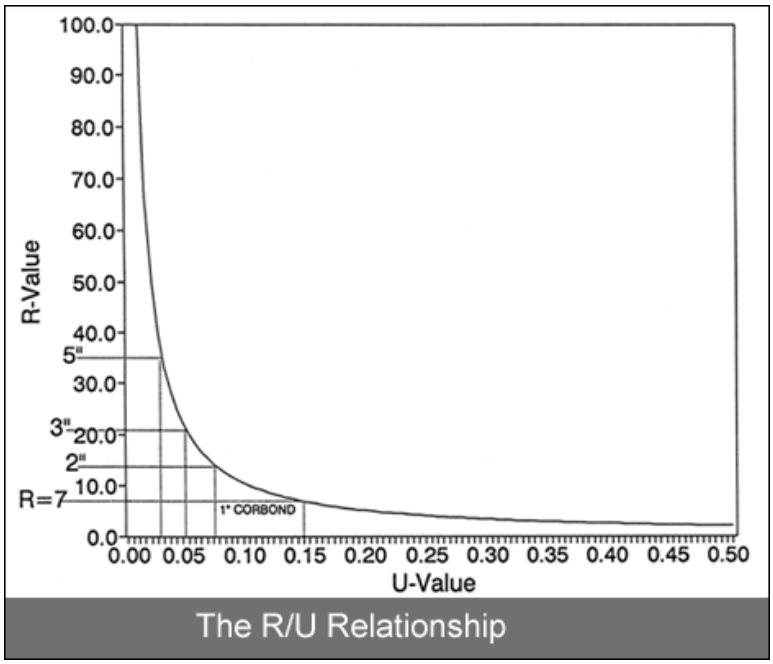
Conduction

Conduction is reported in R = I/U. R reported this way has to do only with the Conductive Mechanism, yet is today the definitive design factor for insulation in the marketplace.



The R/U Relationship

Graphing the R/U relationship from 0-100R reveals the classic diminishing returns of ever higher R-Values; that is if there are no other impacts on R-Value performance.

Corbond Corporation has developed an alternative method of reporting the effectiveness of insulation, which is *Efficiency* (similar to furnaces and boilers). Beginning with heat flow through bare plywood - 0% efficient – and adding thickness. Therefore, % Efficiency = 1 – (End heat flow/ Beginning heat flow)

CORBOND® 68°F/18°F 50°F △Temp	Btu/Hour 24.5 sq. Ft. test area	% Efficiency (Reduction in Heat Loss)
0" (plywood only)	558	0
1" (2.54 cm)	156	72%
1 1/2" (3.80 cm)	104*	81%
2" (5.08 cm)	79*	86%
2 1/2" (6.35 cm)	65*	88%
3" (7.62 cm)	59	90%
4" (10.16 cm)	48*	92%
5" (12.70 cm)	38	93%
6" (15.24 cm)	33*	94%
7" (17.78 cm)	30	95%

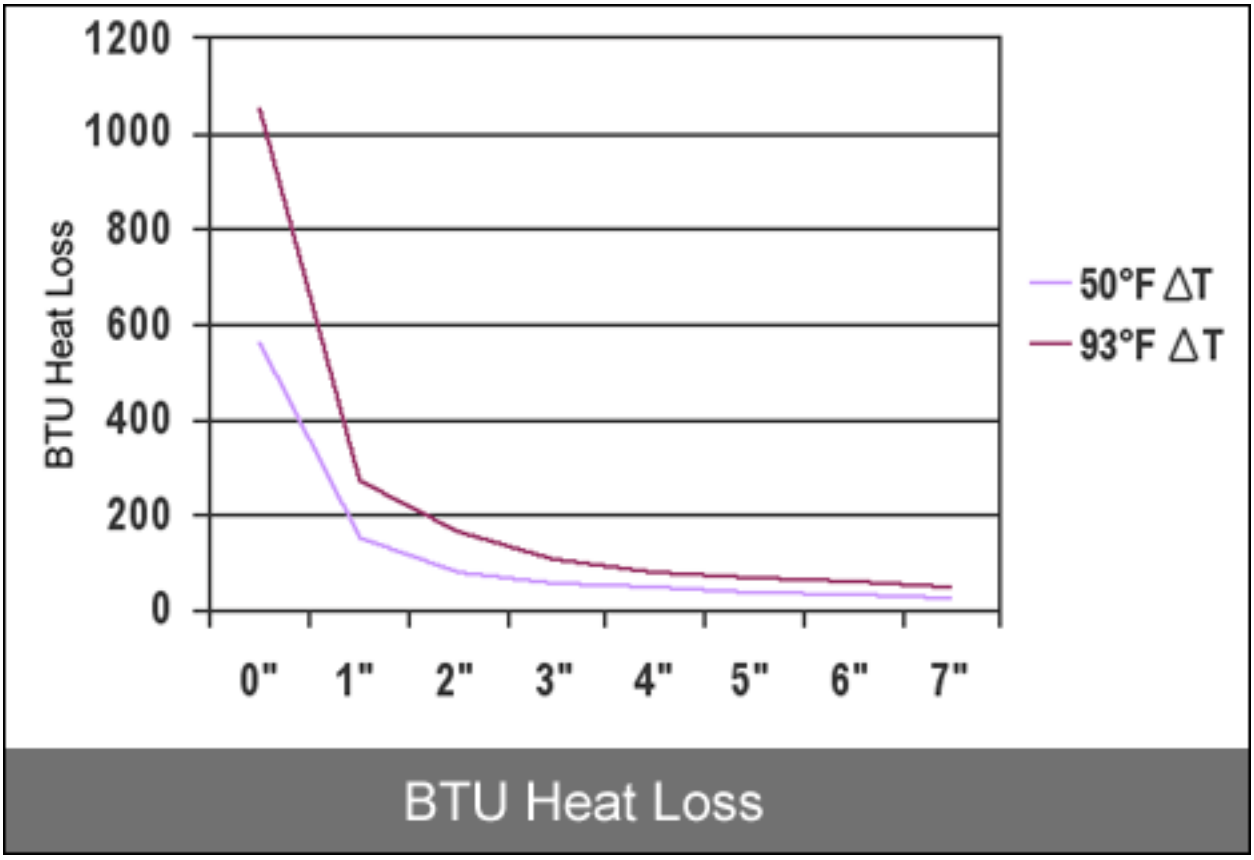
Efficiency testing with a 50° F difference in temperature

CORBOND® 68°F/-25°F 93°F △Temp	Btu/Hour 24.5 sq. Ft. test area	% Efficiency (Reduction in Heat Loss)
0" (plywood only)	1050	0
1" (2.54 cm)	277	74%
1 1/2" (3.80 cm)	202*	81%
2" (5.08 cm)	165*	84%
2 1/2" (6.35 cm)	135*	87%
3" (7.62 cm)	109	90%
4" (10.16 cm)	78*	92.6%
5" (12.70 cm)	69	93.4%
6" (15.24 cm)	60*	94.3%
7" (17.78 cm)	53	95%

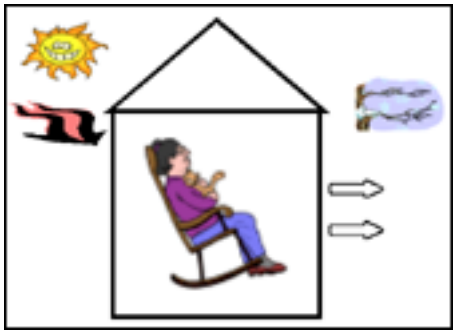
Efficiency testing with a 93° F difference in temperature

This is not a closed cavity test but simply an application of a given thickness of our insulation product to plywood without additional air barriers.

Graphing product efficiency illustrates the diminishing value of greater thickness & R-value. You will note that optimum efficiencies of the spray in place polyurethane can be achieved with a very small thickness.



Radiant



The Radiant Mechanism has a large impact on comfort in both hot and cold climates. It is difficult to measure but common belief is that any radiant energy impact on a persons skin outside their comfort zone causes them to change a thermostat setting despite the surrounding ambient air temperature or how tightly the building envelope may be air-sealed. Radiant heat from the sun turns to the conductive mechanism when it strikes the surface of a building, is conducted through that material – fast or slowly depending on the materials conductivity – and reradiated to the next cavity in the construction.

Convection

Convective loops – like radiant, effects comfort because of "drafts" which prompt changes in thermostat setting despite ambient indoor air temperatures. These “drafts” tend to make the