

THERMAL RESISTANCE OF WOOD STRUCTURAL PANELS

For many wood structural panel applications, an important consideration is thermal resistance, or insulating effectiveness. For most practical purposes it is neither necessary nor feasible to determine the actual species makeup of the plywood or OSB. For determining the overall heat transfer coefficient (U value) of a construction assembly, APA uses a thermal conductivity, $k = 0.80$ (Btu•in./h•ft²•°F) for softwood, as listed by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). Use of this single value simplifies computations, and produces only insignificant differences in resulting design heat losses. The table below shows thermal resistance, R , for several panel thicknesses, based on $k = 0.80$. Thermal resistance represents the ability of the material to retard heat flow and is the reciprocal of k adjusted for actual material thickness.

Panel Thickness (in.)	Thermal Resistance, R (°F•ft²•h/Btu)
1/4	0.31
5/16	0.39
3/8	0.47
7/16	0.55
15/32	0.59
1/2	0.62
19/32	0.74
5/8	0.78
23/32	0.90
3/4	0.94
7/8	1.09
1	1.25
1-1/8	1.41

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