

Materials R-Value Reference Chart

R-values per inch given in SI & Imperial units - Typical values are approximations, based on the average of available results.

Material	m ² •K/(W•in)	ft ² •°F•h/(BTU•in)
Vacuum insulated panel	5.28–8.8	R-30–R-50
Silica aerogel	1.76	R-10
Polyurethane rigid panel (CFC/HCFC expanded) initial	1.23–1.41	R-7–R-8
Polyurethane rigid panel (CFC/HCFC expanded) aged 5–10 years	1.1	R-6.25
Polyurethane rigid panel (pentane expanded) initial	1.2	R-6.8
Polyurethane rigid panel (pentane expanded) aged 5–10 years	0.97	R-5.5
Foil-faced polyisocyanurate rigid panel (pentane expanded) initial	1.2	R-6.8
Foil-faced polyisocyanurate rigid panel (pentane expanded) aged 5–10 years	0.97	R-5.5
Polyisocyanurate spray foam	0.76–1.46	R-4.3–R-8.3
Closed-cell polyurethane spray foam	0.97–1.14	R-5.5–R-6.5
Phenolic spray foam	0.85–1.23	R-4.8–R-7
Thinsulate clothing insulation	1.01	R-5.75
Urea-formaldehyde panels	0.88–1.06	R-5–R-6
Urea foam[10]	0.92	R-5.25
Extruded expanded polystyrene (XPS) high-density	0.88–0.95	R-5–R-5.4
Polystyrene board[10]	0.88	R-5.00
Phenolic rigid panel	0.70–0.88	R-4–R-5
Urea-formaldehyde foam	0.70–0.81	R-4–R-4.6



High-density fiberglass batts	0.63–0.88	R-3.6–R-5
Extruded expanded polystyrene (XPS) low-density	0.63–0.82	R-3.6–R-4.7
Icynene loose-fill (pour fill)[11]	0.7	R-4
Molded expanded polystyrene (EPS) high-density	0.7	R-4.2
Air-entrained concrete[12]	0.69	R-3.90
Home Foam[13]	0.69	R-3.9
Fiberglass batts[14]	0.55–0.76	R-3.1–R-4.3
Cotton batts (Blue Jean insulation)[15]	0.65	R-3.7
Molded expanded polystyrene (EPS) low-density	0.65	R-3.85
Icynene spray[11]	0.63	R-3.6
Open-cell polyurethane spray foam	0.63	R-3.6
Cardboard	0.52–0.7	R-3–R-4
Rock and slag wool batts	0.52–0.68	R-3–R-3.85
Cellulose loose-fill[16]	0.52–0.67	R-3–R-3.8
Cellulose wet-spray[16]	0.52–0.67	R-3–R-3.8
Rock and slag wool loose-fill[17]	0.44–0.65	R-2.5–R-3.7
Fiberglass loose-fill[17]	0.44–0.65	R-2.5–R-3.7
Polyethylene foam	0.52	R-3
Cementitious foam	0.35–0.69	R-2–R-3.9
Perlite loose-fill	0.48	R-2.7
Wood panels, such as sheathing	0.44	R-2.5
Fiberglass rigid panel	0.44	R-2.5
Vermiculite loose-fill	0.38–0.42	R-2.13–R-2.4
Vermiculite[12]	0.38	R-2.13
Straw bale[18]	0.26	R-1.45
Softwood (most)[19]	0.25	R-1.41
Wood chips and other loose-fill wood products	0.18	R-1
Snow	0.18	R-1
Hardwood (most)[19]	0.12	R-0.71
Brick	0.03	R-0.2
Glass[10]	0.025	R-0.14
Poured concrete[10]	0.014	R-0.08