Insulation (list of insulation material)

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R-values per inch given in SI and imperial units In practice, the values for the materials will have been obtained using different methods. Typical values are approximations based on the average of available figures. Clicking on the RSI column sorts by median value of the range. Clicking on the R-value column sorts by lowest value.

Material	RSI per inch (m²·K/(W·in))	R-value per inch (ft²·° F·h/(BTU·in))	RSI per metre (m·K/W)
Vacuum insulated panel	5.28–8.8	R-30–R-50	208–346
Silica aerogel	1.76	R-10	69
Polyurethane rigid panel (CFC/HCFC expanded) initial	1.23–1.41	R-7–R-8	48–56
Polyurethane rigid panel (CFC/HCFC expanded) aged 5–10 years	1.10	R-6.25	43
Polyurethane rigid panel (pentane expanded) initial	1.20	R-6.8	47
Polyurethane rigid panel (pentane expanded) aged 5–10 years	0.97	R-5.5	38
Foil faced Polyurethane rigid panel (pentane expanded)	1.1–1.2		45-48 [1]
Foil-faced polyisocyanurate rigid panel (pentane expanded) initial	1.20	R-6.8	55 [1]
Foil-faced polyisocyanurate rigid panel (pentane expanded) aged 5–10 years	0.97	R-5.5	38
Polyisocyanurate spray foam	0.76–1.46	R-4.3–R-8.3	30–57
Closed-cell polyurethane spray foam	0.97–1.14	R-5.5–R-6.5	38–45
Phenolic spray foam	0.85–1.23	R-4.8–R-7	33–48
Thinsulate clothing insulation[2]	0.28-0.51	R-1.6–R-2.9	11–20
Urea-formaldehyde panels	0.88–1.06	R-5–R-6	35–42
Urea foam[3]	0.92	R-5.25	36.4
Extruded expanded polystyrene (XPS) high-density	0.88–0.95	R-5–R-5.4	26-40[1]
Polystyrene board[3]	0.88	R-5.00	35
Phenolic rigid panel	0.70–0.88	R-4–R-5	28–35
Urea-formaldehyde foam	0.70–0.81	R-4–R-4.6	28–32
High-density fiberglass batts	0.63–0.88	R-3.6–R-5	25–35
Extruded expanded polystyrene (XPS) low-density	0.63–0.82	R-3.6–R-4.7	25–32
Icynene loose-fill (pour fill)[4]	0.70	R-4	28
Molded expanded polystyrene (EPS) high-density	0.70	R-4.2	22-32[1]
Home Foam[5]	0.69	R-3.9	27.0
Rice hulls[6]	0.50	R-3.0	24
Fiberglass batts[7]	0.55–0.76	R-3.1–R-4.3	22–30
Cotton batts (Blue Jean insulation)[8][9]	0.65	R-3.7	26
Molded expanded polystyrene (EPS) low-density	0.65	R-3.85	26
Icynene spray[4][10]	0.63	R-3.6	25
Open-cell polyurethane spray foam	0.63	R-3.6	25

Material	RSI per inch (m²·K/(W·in))	R-value per inch (ft²·°F·h/(BTU·in))	RSI per metre (m·K/W)
Cardboard	0.52–0.7	R-3–R-4	20–28
Rock and slag wool batts	0.52–0.68	R-3–R-3.85	20–27
Cellulose loose-fill[11]	0.52–0.67	R-3–R-3.8	20–26
Cellulose wet-spray[11]	0.52–0.67	R-3–R-3.8	20–26
Rock and slag wool loose-fill[12]	0.44–0.65	R-2.5–R-3.7	17–26
Fiberglass loose-fill[12]	0.44–0.65	R-2.5–R-3.7	17–26
Polyethylene foam	0.52	R-3	20
Cementitious foam	0.35–0.69	R-2–R-3.9	14–27
Perlite loose-fill	0.48	R-2.7	19
Wood panels, such as sheathing	0.44	R-2.5	9 [13]
Fiberglass rigid panel	0.44	R-2.5	17
Vermiculite loose-fill	0.38–0.42	R-2.13–R-2.4	15–17
Vermiculite[14]	0.38	R-2.13	16-17[1]
Straw bale[15]	0.26	R-1.45	16-22[1]
Papercrete[16]		R-2.6-R-3.2	
Softwood (most)[17]	0.25	R-1.41	7.7 [13]
Wood chips and other loose-fill wood products	0.18	R-1	7.1
Aerated/Cellular Concrete (5% moisture)	0.18	R-1	7.1
Snow	0.18	R-1	7.1
Hardwood (most)[17]	0.12	R-0.71	5.5 [13]
Brick	0.030	R-0.2	1.3-1.8[13]
Glass[3]	0.025	R-0.14	0.98
Poured concrete[3]	0.014	R-0.08	0.43-0.87 [13]

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