

Insulation R-Value Chart: R per Inch, Batts & Thickness

R-value per inch for ten common insulation types, the inches each needs to reach R-30, R-38, R-49 and R-60, and fiberglass batt R-values with their thickness.

R-value per inch and thickness for common targets

Material	R per inch	R-30	R-38	R-49	R-60
Blown-in fiberglass (loose-fill)	R-2.5	12.0"	15.2"	19.6"	24.0"
Blown-in cellulose (loose-fill)	R-3.6	8.3"	10.6"	13.6"	16.7"
Blown-in mineral wool	R-3.1	9.7"	12.3"	15.8"	19.4"
Fiberglass batts	R-3.2	9.4"	11.9"	15.3"	18.8"
Mineral wool batts	R-4	7.5"	9.5"	12.2"	15.0"
EPS rigid foam board	R-3.9	7.7"	9.7"	12.6"	15.4"
XPS rigid foam board	R-5	6.0"	7.6"	9.8"	12.0"
Polyiso rigid foam board	R-6	5.0"	6.3"	8.2"	10.0"
Open-cell spray foam	R-3.7	8.1"	10.3"	13.2"	16.2"
Closed-cell spray foam	R-6.5	4.6"	5.8"	7.5"	9.2"

Thickness = target R ÷ R per inch, the same formula as our insulation thickness calculator. Loose-fill figures are settled depth; real products vary, so the bag's coverage chart is the final word.

Fiberglass batts: R-value and thickness

Batt	Thickness	Fits
R-11	3.5"	2×4 wall
R-13	3.5"	2×4 wall
R-15	3.5"	2×4 wall (high density)
R-19	6.5"	2×8 floor/ceiling; compresses in a 2×6
R-21	5.5"	2×6 wall (high density)
R-30	10.25"	2×12 or attic floor
R-38	12.5"	Attic floor
R-49	13.5"	Attic floor

Johns Manville batt fact sheet figures. Compressing a batt lowers its R-value: R-19 squeezed into a 5.5 in 2×6 cavity performs at about R-17 to R-18.

Cavity depths (actual lumber size)

Lumber	2×4	2×6	2×8	2×10	2×12
Depth	3.5"	5.5"	7.25"	9.25"	11.25"

R-values add up in layers: R-13 in the cavity plus R-5 of rigid foam outside is about R-18 through the insulated part of the wall. Framing conducts heat, so the whole-wall figure is lower.