



## EFFECTIVE R-VALUES FOR BATT INSULATION\*

1. Measure the insulation thickness.
2. Determine the condition of the installation using the following criteria:
  - Good—No gaps or other imperfections.
  - Fair—Gaps over 2.5% of the insulated area. (This equals 3/8 inch space along a 14.5 inch batt.)
  - Poor—Gaps over 5% of the insulated area. (This equals 3/4 inch space along a 14.5 inch batt.)
3. Look up the effective R-value of the installed insulation using the condition and measured inches.

Measured Batt Thickness (inches)	"Good"	"Fair"	"Poor"
	Effective R-value (2.5 per inch)	Effective R-value (1.8 per inch)	Effective R-value (0.7 per inch)
0	0	0	0
1	3	2	1
2	5	4	1.5
3	8	5	2
4	10	7	3
5	13	9	3.5
6	15	11	4
7	18	13	5
8	20	14	5.5
9	23	16	6
10	25	18	7
11	28	20	8
12	30	22	8.5

\*Derived from ASHRAE document "Heat Transmission Coefficients for Walls, Roofs, Ceilings, and Floors" 1996

### DEFAULT WINDOW VALUES

Frame Type	Glazing Type	U-Value	SHGC	U-Value with low e	SHGC with low e
Wood	Single	.90	.65	N/A	N/A
	Single w/Storm	.49	.71	N/A	N/A
	Double	.49	.58	.39	.45
	Triple	.39	.53	.30	.45
Vinyl	Double	.46	.57	.36	.45
	Triple	.36	.52	.36	.45
Metal	Single	1.31	.80	N/A	N/A
	Double	.87	.73	N/A	N/A
Metal w/Thermal Break	Double	.65	.66	.53	.52
	Triple	.53	.60	.43	.52



## TYPICAL INSULATION R-VALUES

Insulation Type	R-value per inch	Typical Applications
Cellulose, loose fill	3.7	Attic Floor
Cellulose, high density	3.2	Walls, Enclosed Cavities, Framing Transitions
Fiberglass, batts	3.0*	Basement Ceiling, Open Stud Walls, Attic Floor*
Fiberglass, loose fill	2.8	Attic Floor, Walls (existing)
Fiberglass, loose fill, fluffed below manufacturer's standards	uncertain	Do not install, or correct by blowing over with higher density
Rockwool	3.0	Attic Floor, Walls, Basement Ceiling (may be loose or batts)
Vermiculite	2.7	Attic Floor
Poly-isocyanurate, rigid board	7.0	Foundation Walls, Attic Access Doors
Polystyrene, expanded rigid board	4.0	Foundation Walls, Sill Plate
Polystyrene, extruded rigid board	5.0	Foundation Walls, Sub-Slab, Sill Plate
Low Density Urethane, sprayed foam	3.7	Attics, Walls (new construction); Sill Plate, Band Joist, Framing Transitions
Urethane, sprayed foam	6.0	Attics, Walls (new construction); Sill Plate, Band Joist, Framing Transitions
Urea Formaldehyde Foam	4.0	Attics, Walls (existing)

*\*See chart on back of sheet for existing fiberglass batt evaluation*