

ENVELOPE THERMAL PERFORMANCE

Wall

Layer #	1	2	3	4	5	6	7	8
Material	Outside air film	Brick	Wall air space	Fiberboard sheathing	Batt insulation	Gypsum board	None	Inside vert. air film
Thermal conductivity λ , Btu in/h ft ² °F	4.000	6.200	1.149	0.470	0.320	1.110	1.000	1.471
Thickness x, inches		4	1	0.5	3.5	0.625	0	
R=x/ λ , ft ² °F h / Btu	0.3	0.6	0.9	1.1	10.9	0.6	0.0	0.7

Roof

Layer #	1	2	3	4	5	6	7	8
Material	Outside air film	Wood shingles	Fiberboard sheathing	Insulation board	Metal surface	None	None	Inside hor. air film
Thermal conductivity λ , Btu in/h ft ² °F	4.000	1.130	0.470	0.200	314.000	1.000	1.000	1.087
Thickness x, inches		0.375	0.5	3	0.03	0	0	
R=x/ λ , ft ² °F h / Btu	0.3	0.3	1.1	15.0	0.0	0.0	0.0	0.9

ID number	12	11
Total R-value, ft ² oF h / Btu	15	18
Uninterrupted U=1/R, Btu/h ft ² °F	0.067	0.057
Design U-value, Btu/h ft ² °F	0.067	0.057
Assembly maximum U-value, Btu/h ft ² °F	0.084	0.063

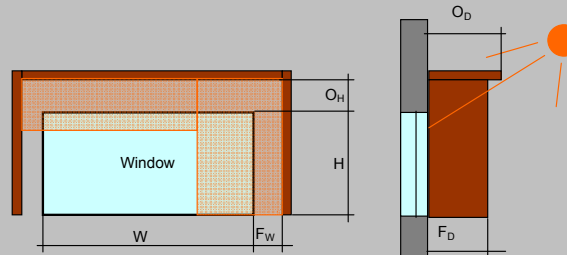
Note: For air spaces the line "Thermal conductivity" shows the air space heat transfer coefficient in Btu/h ft² of. For consistency with the code, specify 1 inch for the air space thickness. For void layers, specify thickness 0.

Absorptance	0.700	0.800
Summer infiltration rate, ft ³ /min/ft ²	0.016	
Winter infiltration rate, ft ³ /min/ft ²	0.032	

Window

Window-to-wall area ratio	11%
U-value allowance, Btu/h ft ² °F	0.67
SHGC allowance	0.39
Glazing	Double
Spacing	1/4 inches
Frame	Aluminum with thermal break
Window type	Operable
Design U-value, Btu/h ft ² °F	0.650
Interior solar attenuation factor, ISAF	1.00
Direct solar irradiance SHGC _{dir} at 0°	0.70
at incidence angle 40°	0.67
at incidence angle 50°	0.64
at incidence angle 60°	0.58
at incidence angle 70°	0.45
at incidence angle 80°	0.23
Diffusive irradiance SHGC _{diff}	0.60

External shading	Orientation	Overhang depth, OD/H	Overhang offset, OH/H	Fin depth, FD/W	Fin offset, FW/W
Elevation 1	West	0%	0%	0%	0%
Elevation 2	East	0%	0%	0%	0%
Elevation 3	North	0%	0%	0%	0%
Elevation 4	South	0%	0%	0%	0%



Door

U-value allowance, Btu/h ft ² °F	0.69
Design U-value, Btu/h ft ² °F	0.46

Floor slab on grade

Foundation wall construction and edge insulation R-value	Heat loss per linear foot of wall perimeter, Btu/h ft °F
4 in block wall, brick facing, R-5.4	0.49

The edge insulation R is shown in ft²°F h/Btu

Construction class 7 Table 22, Chapter 30, ASHRAE Fundamentals, 2005

Basement

Soil conductivity, Btu/h ft °F	0.8
Wall below grade R-value, h ft ² °F/Btu	1.47
Wall insulation R-value, h ft ² °F/Btu	0