

Table 9 . . . Coefficients of Transmission (U) of Frame Partitions or Interior Walls*
Coefficients are expressed in Btu per (hour) (square foot) (Fahrenheit degree difference in temperature between the air on the two sides), and are based on still air (no wind) conditions on both sides

Example—Wall B 1		Example of Substitution	
Resistances used are given below in this table or in Table 3 or 4		Resistances used are given below in this table or in Table 3 or 4	
Construction	Resistance (R)	Replace item 2 with wood fiber hardboard (¼ in.)	
1. Surface (still air)	0.68	Total resistance	3.07
2. Gypsum bd. (½ in.)	0.38	Deduct 2. Gypsum wall board (¾ in.)	0.38
3. Air space ^b	0.97	Difference	0.68
4. Gypsum wall board (¾ in.)	0.38	Add 2. Hardboard (¼ in.)	0.18
5. Surface (still air)	0.68	Total resistance	3.83
Total resistance	3.07	U = 1/R = 1/3.83 =	0.35
U = 1/R = 1/3.07 =	0.34		
See value 0.34 in boldface type in table below.			

To Adjust U Values for Construction with Added Insulation between Members, See Table 16

Type of Interior Finish		Single Partition (Finish on Only One Side of Stud)	Double Partition (Finish on Both Sides of Stud)
Material	R	U	U
		A	B
Gypsum bd. (3/8 in.)	0.38	0.60	0.34
Gypsum lath (3/8 in.) and 1/2 in. plas. (lt. wt. agg.)	0.64	0.50	0.28
Gypsum lath (3/8 in.) and 1/2 in. plas. (sand agg.)	0.41	0.58	0.32
Metal lath and 1/2 in. plas. (lt. wt. agg.)	0.47	0.55	0.31
Metal lath and 1/2 in. plas. (sand agg.)	0.13	0.67	0.39
Insul. bd. (3/8 in.)	1.43	0.36	0.19
Insul. bd. lath (3/8 in.) and 1/2 plas. (sand agg.)	1.68	0.35	0.19
Plywood: (3/8 in.)	0.31	0.60	0.34
(3/8 in.)	0.47	0.55	0.31
(3/8 in.)	0.63	0.50	0.28
Wood panels (3/8 in.)	0.94	0.43	0.24
Wood-lath and 1/2 in. plas. (sand agg.)	0.40	0.57	0.32
Sheet-metal panels adhered to wood (framing)	0	0.74	0.43
Glass and glass blocks			

See Table 18

* See text section Calculating Overall Coefficients for basis of calculations.

^b To adjust U values for the effect of added insulation between framing members, see Table 16.

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VENTILATED ATTICS—HOW TO USE TABLE 17

Table 17 is intended to be used with Table 11, Part D of Table 16, and Fig. 4, or when ceiling resistance is known. Its purpose is to determine the resistance to heat flow of the attic space under various conditions of ventilating air temperatures and rates, ceiling resistance, roof or sol-air temperatures, and surface emissivities.^a Ventilating air temperature is the outdoor design temperature.

The total resistance, 1/U, obtained by adding the ceiling and attic resistances can be converted to a U value so that the heat gain may be calculated. The applicable temperature difference is that difference between room air and sol-air temperature or between room air and roof temperatures. (See footnote d, Table 17.)

Table 17 may be used for both pitched and flat residential roofs over attic spaces. When there is an attic floor, the ceiling resistance should be that which applies to the complete ceiling-floor construction.

All values in Table 16, Part D, include the resistance of a non-reflective surface facing the attic space. Therefore, if separate calculations are made, include only the value of a non-reflective surface and not the value of a reflective surface in determining ceiling resistance. The use of Table 17, Part B, will account for this reflective surface.

Example 8: Determine the heat gain for a 1000 sq ft ceiling of ½-in. gypsum board and ½-in. lightweight aggregate plaster with no flooring above, when insulated with a 2-in. foil-enclosed fibrous blanket. The blanket is installed so as to form a reflective air space between the ceiling and the blanket. The attic has a gable roof which meets the ventilation requirements in Table 3, Chapter 23. (Use ventilation rate of 0.1 cfm per sq ft.) Design temperatures are: indoor air = 75 F, outdoor air = 95 F, and sol-air = 180 F.

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Table 10 . . . Coefficients of Transmission (U) of Masonry Partitions*
Coefficients are expressed in Btu per (hour) (square foot) (Fahrenheit degree difference in temperature between the air on the two sides), and are based on still air (no wind) conditions on both sides

Example—Wall C 2		Example of Substitution	
Resistances used are given below in this table or in Table 3 or 4		Resistances used are given below in this table or in Table 3 or 4	
Construction	Resistance (R)	Replace item 3 with gypsum tile (4 in.)	3.55
1. Inside surface (still air)	0.68	Total resistance	1.11
2. Plas. (lt. wt. agg.) ½ in.	0.39	Deduct 3. Cement block (cinder agg.) (4 in.)	1.11
3. Cement block (cinder agg.) ^b (4 in.)	1.11	Difference	3.14
4. Plas. (lt. wt. agg.) ½ in.	0.39	Add 3. Gypsum tile (4 in.)	1.07
5. Inside surface (still air)	0.68	Total resistance	3.81
Total resistance	3.55	U = 1/R = 1/3.81 =	0.26
U = 1/R = 1/3.25 =	0.31		
See value 0.31 in boldface type in table below.			

Type of Partition		Surface Finish					Number	
		None	Plas. (lt. wt. agg.) ½ in.		Plas. (cinder agg.) ½ in.			
			One side 0.39	Two sides 0.78	One side 0.11	Two sides 0.22		
Material	R	U	U	U	U	U		
		A	B	C	D	E		
Resistance								
Hollow concrete block								
(Cinder agg.)								
(3 in.)		0.88	0.45	0.38	0.33	0.43	0.41	1
(4 in.)		1.11	0.40	0.35	0.31	0.39	0.37	2
(8 in.)		1.78	0.32	0.29	0.26	0.31	0.30	3
(12 in.)		1.89	0.31	0.27	0.25	0.30	0.29	4
(Lt. wt. agg.)								
(3 in.)		1.27	0.38	0.33	0.30	0.36	0.35	5
(4 in.)		1.50	0.35	0.31	0.27	0.34	0.32	6
(8 in.)		2.00	0.30	0.27	0.24	0.29	0.28	7
(12 in.)		2.27	0.28	0.25	0.23	0.27	0.26	8
(Gravel agg.)								
(8 in.)		1.11	0.40	0.35	0.31	0.39	0.37	9
(12 in.)		1.28	0.38	0.33	0.29	0.36	0.35	10
Hollow clay tile								
(3 in.)		0.80	0.45	0.39	0.34	0.44	0.42	11
(4 in.)		1.11	0.40	0.35	0.31	0.39	0.37	12
(8 in.)		1.68	0.35	0.31	0.27	0.33	0.32	13
(8 in.)		1.85	0.31	0.28	0.25	0.30	0.29	14
Hollow gypsum tile								
(8 in.)		1.35	0.37	0.32	0.29	0.35	0.34	15
(4 in.)		1.67	0.33	0.29	0.26	0.32	0.31	16
Solid plaster walls								
Gypsum lath (½ in.) and plas.								
½ in. each side								
(Lt. wt. agg.)		1.39	0.36	—	—	—	—	17
(Sand agg.)		0.71	0.48	—	—	—	—	18
1 in. each side								
(Lt. wt. agg.)		1.73	0.32	—	—	—	—	19
(Sand agg.)		0.81	0.46	—	—	—	—	20
Metal lath and plas. ^b								
2 in. total thickness								
(Lt. wt. agg.)		1.28	0.38	—	—	—	—	21
(Sand agg.)		0.36	0.58	—	—	—	—	22
2½ in. total thickness								
(Lt. wt. agg.)		1.60	0.34	—	—	—	—	23
(Sand agg.)		0.45	0.55	—	—	—	—	24
Glass and glass blocks								

See Table 18

See Table 18

* See text section Calculating Overall Coefficients for basis of calculations.
^b Metal core and supports disregarded. Plaster troweled smooth both sides.