

TABLE 16. COEFFICIENTS OF TRANSMISSION (U) OF PITCHED ROOFS
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 an outside wind velocity of 15 mph.

TYPE OF CEILING (Applied Directly to Roof Rafters)	WOOD SHINGLES (On 1 x 4 Wood Strips Spaced 2 in. Apart)			ASPHALT SHINGLES OR ROLL ROOFING (On Solid Wood Sheathing) ^a			SLATE OR TILE ^b (On Solid Wood Sheathing) ^c		
	INSULATION BETWEEN RAFTERS			INSULATION BETWEEN RAFTERS			INSULATION BETWEEN RAFTERS		
	Blanket or Bat (Thickness Below)			Blanket or Bat (Thickness Below)			Blanket or Bat (Thickness Below)		
	None	1 in.	2 in.	3 in.	None	1 in.	2 in.	3 in.	None
No Ceiling Applied to Rafters	A	B	C	D	E	F	G	H	I
Metal Lath and Plaster ^d	0.49	0.15	0.10	0.081	0.52	0.15	0.11	0.084	0.56
Gypsum Board (1/2 in.) Decorated	0.31	0.14	0.10	0.081	0.33	0.15	0.10	0.083	0.34
Wood Lath and Plaster ^e	0.30	0.14	0.10	0.080	0.32	0.15	0.10	0.082	0.33
Gypsum Lath (1/2 in.) Plastered ^f	0.29	0.14	0.10	0.079	0.31	0.14	0.10	0.081	0.32
Plywood (1/2 in.) Plain or Decorated	0.29	0.14	0.099	0.079	0.30	0.14	0.10	0.081	0.31
Insulating Board (1/2 in.) Plastered	0.22	0.12	0.083	0.072	0.23	0.12	0.081	0.074	0.24
Insulating Board Lath (1 in.) Plastered ^g	0.23	0.12	0.083	0.072	0.22	0.12	0.080	0.073	0.23
	0.16	0.10	0.078	0.064	0.17	0.10	0.079	0.065	0.17

^a Coefficients corrected for framing on basis of 15 per cent area, 2 in. x 4 in. (nominal), 16 in. on centers.

^b Figures in Columns I, J, K and L may be used with sufficient accuracy for rigid asbestos shingles on wood sheathing. Layer of slate's felt neglected.

^c Sheathing and wood strips assumed 1/2 in. thick.

^d Plaster assumed 1/2 in. thick.

^e Plaster assumed 1 in. thick.

^f No air space included in 1-A, 1-E or 1-I; all other coefficients based on one air space.



Heat Transmission Coefficients of Building Materials

TABLE 17. COMBINED COEFFICIENTS OF TRANSMISSION (U) OF PITCHED ROOFS^a AND HORIZONTAL CEILINGS—BASED ON CEILING AREA^b

Coefficients are expressed in Btu per (hour) (square foot of ceiling area) (Fahrenheit degree difference in temperature between the air on the two sides), and are based on an outside wind velocity of 15 mph.

CEILING COEFFICIENT ^c (From TABLE 11)	TYPE OF ROOFING AND ROOF SHEATHING						NUMBER
	WOOD SHINGLES ON WOOD STRIPS ^d			ASPHALT SHINGLES ^e OR ROLL ROOFING ON WOOD SHEATHING ^e			
	No Roof Insulation (Rafters Exposed) ($U_r = 0.48$)	1/4 In. Insu- lating Board on Under Side of Rafters ($U_r = 0.22$)	1 In. Insu- lating Board on Under Side of Rafters ($U_r = 0.16$)	No Roof Insulation (Rafters Exposed) ($U_r = 0.53$)	1/4 In. Insu- lating Board on Under Side of Rafters ($U_r = 0.23$)	1 In. Insu- lating Board on Under Side of Rafters ($U_r = 0.17$)	
	A	B	C	D	E	F	
0.10	0.085	0.073	0.066	0.087	0.074	0.067	19
0.11	0.092	0.078	0.07	0.094	0.079	0.071	20
0.12	0.099	0.082	0.074	0.10	0.083	0.075	21
0.13	0.11	0.087	0.078	0.11	0.088	0.079	22
0.14	0.11	0.091	0.081	0.11	0.093	0.083	23
0.15	0.12	0.096	0.084	0.12	0.097	0.086	24
0.16	0.13	0.10	0.087	0.13	0.10	0.089	25
0.17	0.13	0.10	0.090	0.13	0.10	0.092	26
0.18	0.14	0.11	0.093	0.14	0.11	0.095	27
0.19	0.14	0.11	0.095	0.15	0.11	0.098	28
0.20	0.15	0.11	0.098	0.15	0.12	0.10	29
0.21	0.15	0.12	0.10	0.16	0.12	0.10	30
0.22	0.16	0.12	0.10	0.17	0.12	0.11	31
0.23	0.16	0.12	0.10	0.17	0.12	0.11	32
0.24	0.17	0.13	0.11	0.18	0.12	0.11	33
0.25	0.17	0.13	0.11	0.18	0.13	0.11	34
0.26	0.18	0.13	0.11	0.19	0.13	0.11	35
0.27	0.18	0.13	0.11	0.19	0.13	0.12	36
0.28	0.19	0.14	0.12	0.19	0.14	0.12	37
0.29	0.19	0.14	0.12	0.20	0.14	0.12	38
0.30	0.20	0.15	0.12	0.20	0.14	0.12	39
0.34	0.21	0.15	0.12	0.22	0.15	0.13	40
0.35	0.22	0.15	0.13	0.22	0.15	0.13	41
0.36	0.22	0.15	0.13	0.22	0.15	0.13	42
0.37	0.23	0.15	0.13	0.23	0.16	0.13	43
0.45	0.25	0.17	0.13	0.26	0.17	0.14	44
0.50	0.29	0.18	0.14	0.30	0.19	0.15	45
0.61	0.29	0.18	0.15	0.31	0.19	0.15	46
0.62	0.30	0.19	0.15	0.31	0.19	0.15	47
0.67	0.31	0.19	0.15	0.33	0.20	0.16	48
0.69	0.31	0.19	0.15	0.33	0.20	0.16	49

^a Calculations based on 1/2 pitch roof ($n = 1.2$) using the following formula:

$$U = \frac{U_r \times U_{ce}}{U_r + \frac{U_{ce}}{n}}$$

U = combined coefficient to be used with ceiling area.
 U_r = coefficient of transmission of the roof.
 U_{ce} = coefficient of transmission of the ceiling.
 n = the ratio of the area of the roof to the area of the ceiling.

^b Use ceiling area (not roof area) with these coefficients.

^c Coefficients in Columns D, E and F may be used with sufficient accuracy for tile, slate and rigid asbestos shingles on wood sheathing.

^d Based on 1 x 4 in. strips spaced 2 in. apart.

^e Sheathing assumed 1/2 in. thick.

^f Values of U_{ce} to be used in this column may be selected from Table 11.