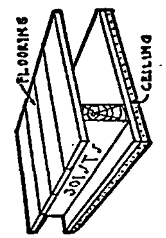
TABLE 11. COEFFICIENTS OF TRANSMISSION (*U*) OF FRAME CONSTRUCTION CEILINGS AND FLOORS

Coefficients are expressed in Btu per (hour) (square foot) (Fahrenheit degree difference between the air on the two sides) and are based on still air (no wind) conditions on both sides.

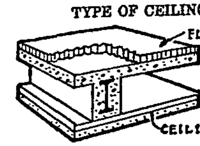


TYPE OF CEILING	Insulation Between, or on Top of, Joists (No Flooring Above): None	Insulating Board on Top of Joists		Blanket or Bat Insulation[f] Between Joists[a]			Vermiculite Insulation Between Joists[a]			Mineral Wool Insulation Between Joists[a]			With Flooring[g] (On Top of Ceiling Joists): Single Wood Floor[b]	Double Wood Floor[c]	Number
		½ In.	1 In.	1 In.	2 In.	3 In.	2 In.	3 In.	4 In.	2 In.	3 In.	4 In.			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
No Ceiling		0.37	0.24										0.46	0.34	1
Metal Lath and Plaster[d]	0.69	0.26	0.19	0.19	0.12	0.093	0.18	0.14	0.11	0.12	0.093	0.077	0.30	0.25	2
Gypsum Board (⅜ in.) Plain or Decorated	0.67	0.26	0.18	0.19	0.12	0.092	0.18	0.13	0.10	0.12	0.092	0.077	0.30	0.24	3
Wood Lath and Plaster	0.62	0.25	0.18	0.19	0.12	0.091	0.17	0.13	0.10	0.12	0.091	0.076	0.28	0.24	4
Gypsum Lath (⅜ in.) Plastered[e]	0.61	0.25	0.18	0.19	0.12	0.091	0.17	0.13	0.10	0.12	0.091	0.076	0.28	0.24	5
Plywood (⅜ in.) Plain or Decorated	0.59	0.24	0.18	0.19	0.12	0.091	0.17	0.13	0.10	0.12	0.091	0.076	0.28	0.23	6
Insulating Board (½ in.) Plain or Decorated	0.36	0.19	0.15	0.16	0.10	0.082	0.14	0.12	0.097	0.10	0.082	0.069	0.22[h]	0.19[h]	7
Insulating Board Lath (½ in.) Plastered[e]	0.35	0.19	0.15	0.15	0.10	0.081	0.14	0.11	0.096	0.10	0.081	0.068	0.21	0.18	8
Insulating Board Lath (1 in.) Plastered[e]	0.23	0.15	0.12	0.12	0.089	0.072	0.12	0.097	0.084	0.089	0.072	0.061	0.16	0.14	9

[a] Coefficients corrected for framing on basis of 15 per cent area, 2 in. x 4 in. (nominal) framing, 16 in. on centers.
[b] 25/32 in. yellow pine or fir.
[c] 25/32 in. pine or fir sub-flooring plus 13/16 in. hardwood finish flooring.
[d] Plaster assumed ¾ in. thick.
[e] Plaster assumed ½ in. thick.
[f] Based on insulation in contact with ceiling and consequently no air space between.
[g] For coefficients for constructions in Columns M and N (except No. 1) with insulation between joists, refer to Table 6. *Example:* The coefficient for No. 3-N of Table 11 is 0.24. With 2 in. blanket insulation between joists, the coefficient will be 0.093. (See Table 6.) (Column D of Table 6 applicable only for 3⅝ in. joists.)
[h] For 25/32 in. insulating board sheathing applied to the under side of the joists, the coefficient for *single* wood floor (Column M) is 0.18 and for *double* wood floor (Column N) is 0.16. For coefficients with insulation between joists, see Table 6.

TABLE 12. COEFFICIENTS OF TRANSMISSION (*U*) OF CONCRETE CONSTRUCTION FLOORS AND CEILINGS

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.



TYPE OF CEILING	Thickness of Concrete[g] (Inches)	No Flooring (Concrete Bare)	Tile[a] or Terrazzo Flooring on Concrete	⅛ In. Asphalt Tile[b] Directly on Concrete	Parquet[c] Flooring In Mastic on Concrete	Double Wood Floor on Sleepers[d]	Number
		A	B	C	D	E	
No Ceiling	3 6 10	0.68 0.59 0.50	0.65 0.56 0.48	0.66 0.58 0.49	0.45 0.41 0.36	0.25 0.23 0.22	1 2 3
½ in. Plaster Applied to Underside of Concrete	3 6 10	0.62 0.54 0.46	0.59 0.52 0.44	0.60 0.53 0.45	0.43 0.39 0.34	0.24 0.22 0.21	4 5 6
Metal Lath and Plaster[e]—Suspended or Furred	3 6 10	0.38 0.35 0.32	0.37 0.34 0.31	0.37 0.35 0.32	0.30 0.28 0.26	0.19 0.18 0.17	7 8 9
Gypsum Board (⅜ in.) and Plaster[f]—Suspended or Furred	3 6 10	0.36 0.33 0.30	0.35 0.32 0.29	0.35 0.33 0.30	0.28 0.27 0.24	0.19 0.18 0.17	10 11 12
Insulating Board Lath (½ in.) and Plaster[f] Suspended or Furred	3 6 10	0.25 0.23 0.22	0.24 0.23 0.21	0.25 0.23 0.22	0.21 0.20 0.19	0.15 0.15 0.14	13 14 15

[a] Thickness of tile assumed to be 1 in.
[b] Conductivity of Asphalt Tile assumed to be 3.1.
[c] Thickness of wood assumed to be 13/16 in.; thickness of mastic, ⅛ in. ($k = 4.5$). Col. D may also be used for concrete covered with carpet.
[d] Based on 25/32 in. yellow pine or fir sub-flooring and 13/16 in. hardwood finish flooring with an air space between sub-floor and concrete.
[e] Thickness of plaster assumed to be ¾ in.
[f] Thickness of plaster assumed to be ½ in.
[g] For other thicknesses of concrete, interpolate.

TABLE 13. COEFFICIENTS OF TRANSMISSION (*U*) OF CONCRETE FLOORS ON GROUND WITH VARIOUS TYPES OF FINISH FLOORING

$U = 0.10^a$ Btu per (hour) (square foot) (Fahrenheit degree temperature difference between the ground and the air over the floor).

[a] Until more complete data are available, it is recommended that a coefficient of 0.10 be used for all types of concrete floors on the ground, with or without insulation. For basement wall below grade, use the same average coefficient (0.10). A lower ground temperature should, however, be used for walls than floors as explained in Chapter 11. For further data see A.S.H.V.E. RESEARCH REPORT No. 1213—Heat Loss Through Basement Walls and Floors, by F. C. Houghten, S. I. Taimuty, Carl Gutberlet and C. J. Brown (A.S.H.V.E. TRANSACTIONS, Vol. 48, 1942, p. 369).

of the ground, on the material constituting the wall or floor, and on the conductivity of the surrounding earth. The conductivity of the earth will vary with local conditions, and is usually unknown. Tests[8] at the A.S.H.V.E. Research Laboratory indicate a heat flow of approximately 2.0 Btu per (hour) (square foot) through an uninsulated concrete basement floor, with a temperature difference of 20 F between ground temperature and the air temperature 6 in. above the floor. Based on this result, a coefficient of 0.10 Btu per (hour) (square foot) (Fahrenheit degree difference) is recommended for calculation where it is desirable to allow for the small basement floor heat loss, *e.g.*, for heated basements.

For basement walls the same coefficient may be used, but due to closer proximity to the surface of the ground, the temperature difference for winter design conditions will be greater than for the floor. The test results