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

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	INSULATION BETWEEN, OR ON TOP OF, JOISTS (No Flooring Above)												WITH FLOORING[a] (On Top of Ceiling Joists)		REMAN
	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]			Single Wood Floor[b]	Double Wood Floor[c]	
		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										0.45	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 13/32 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[a] (Inches)	TYPE OF FLOORING						NUMBER
		No Flooring (Concrete Bare)	Tile[a] or Terrazo Flooring on Concrete	¼ In. Battleship[b] Linoleum Directly on Concrete	Parquet[c] Flooring In Mastic on Concrete	Double Wood Floor on Sleepers[d]		
		A	B	C	D	E		
No Ceiling	3	0.68	0.65	0.45	0.45	0.25		1
	6	0.59	0.56	0.41	0.41	0.23		2
	10	0.50	0.48	0.36	0.36	0.22		3
½ in. Plaster Applied to Underside of Concrete	3	0.62	0.59	0.43	0.43	0.24		4
	6	0.54	0.52	0.39	0.39	0.22		5
	10	0.46	0.44	0.34	0.34	0.21		6
Metal Lath and Plaster—Suspended or Furred	3	0.33	0.37	0.30	0.30	0.19		7
	6	0.35	0.34	0.28	0.28	0.18		8
	10	0.32	0.31	0.26	0.26	0.17		9
Gypsum Board (⅜ in.) and Plaster[e]—Suspended or Furred	3	0.36	0.35	0.28	0.28	0.19		10
	6	0.33	0.32	0.27	0.27	0.18		11
	10	0.30	0.29	0.24	0.24	0.17		12
Insulating Board Lath (½ in.) and Plaster[e] Suspended or Furred	3	0.25	0.24	0.21	0.21	0.15		13
	6	0.23	0.23	0.20	0.20	0.15		14
	10	0.22	0.21	0.19	0.19	0.14		15

[a]Thickness of tile assumed to be 1 in.

[b]Conductance of linoleum ¼ in. thick is 1.36. Values in Column C may be used with sufficient accuracy for concrete floors covered with carpet.

[c]Thickness of wood assumed to be 13/32 in.; thickness of mastic, ¼ in. (k = 4.5).

[d]Based on 25/32 in. yellow pine or fir sub-flooring and 13/32 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 14. 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).

exact compliance with specifications, and a factor of safety may be employed as a precaution when it is judged desirable.

Roof Coefficients

Computations for wood shingle roofs applied over wood stripping are based on 1 by 4 in. wood strips, spaced 2 in. apart. Values for roofs containing Spanish and French clay roofing tile are assumed the same as for slate roofs. Values for pitched roofs in Table 16 apply where the roof is over a heated attic or top floor so that the heat passes directly through the roof structure, including any interior finish material.