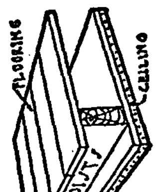
TABLE 12. COEFFICIENTS OF TRANSMISSION (U) OF FRAME CONSTRUCTION CEILINGS AND FLOORS*

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



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			Vermiculite Insulation Between Joists[f]			Mineral Wool Insulation Between Joists[f]			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										0.45	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

(See text p. 189). * See Table 5, Note a.

[a] Coefficients corrected for framing on basis of 15 percent 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 12 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.)

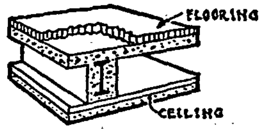
[h] For 25/32 in. insulating board sheathing applied to the under side of the joists, the coefficient for *single* wood floor (Column M) is 0.18 and for *double* wood floor (Column N) is 0.16.

For coefficients with insulation between joists, see Table 6.

TABLE 13. 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



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

[a] Thickness of tile assumed to be 1 in. * See Table 5, Note a.

[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 thickness of concrete, interpolate.

TABLE 14. COEFFICIENTS OF TRANSMISSION (U) OF CONCRETE BASEMENT FLOORS ON GROUND WITH VARIOUS TYPES OF FINISH FLOORING

$U = 0.10^a$ Btu per (hr) (sq ft) (Fahrenheit degree temperature difference between the ground and the air over the floor).

[a] Since authentic data are not available, this coefficient is sometimes used for concrete floors on ground. For more recent procedures refer to *National Bureau of Standards Report* BMS-103.[11, 13]

Basement Floor, Basement Wall and Concrete Slab Floor Coefficients

The heat transfer through basement walls and floors to the ground is dependent on the temperature difference between the air within and that 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[12] at the A.S.H.A.E. Research Laboratory indicate a heat flow of approximately 2.0 Btu per (hr) (sq ft) through an uninsulated concrete basement floor, with a temperature difference of 20 deg between ground temperature and the air temperature 6 in. above the floor. Based on this result a coefficient of 0.10 Btu per (hr) (sq ft) (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 win-