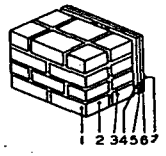
TABLE 6. COEFFICIENTS OF TRANSMISSION (U) OF SOLID MASONRY WALLS[a]

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.



EXAMPLE

Resistances used are given below in this table or in Table 3 or 4.

Construction	Resistance (R)
1. Outside surface (15 mph wind)	*0.17*
2. Face brick (4 in.)	*0.44*
3. Common brick (4 in.)	*0.80*
4. Air space[b]	*0.97*
5. Gypsum lath (⅜ in.)	*0.32*
6. Plas. (sand agg.) ½ in.	*0.09*
7. Inside surface (still air)	*0.68*
Total resistance	3.47
$U = 1/R = 1/3.47 =$	0.29

See value 0.29 in bold face type in table below.

EXAMPLE OF SUBSTITUTION

Resistances used are given below in this table or in Table 3 or 4.

Assume plain wall—no furring or plaster.	
Total resistance	*3.47*
Deduct	
4. Air space	*0.97*
5. Gypsum lath (⅜ in.)	*0.32*
6. Plas. (sand agg.) ½ in.	*0.09*
Resistance deducted	*1.38*
Total resistance	*2.09*
$U = 1/R = 1/2.09 =$	0.48

TO ADJUST U VALUES FOR CONSTRUCTION WITH ADDED INSULATION BETWEEN FURRING STRIPS, SEE TABLE 16.

EXTERIOR CONSTRUCTION[c]		INTERIOR FINISH											
		NONE	PLAS. ⅝ IN. ON WALL		METAL LATH AND ¾ IN. PLAS. ON FURRING		GYPSUM LATH (⅜ IN.) AND ½ IN. PLAS ON FURRING			INSUL. BD. LATH (½ IN.) AND ½ IN. PLAS. ON FURRING		WOOD LATH AND ½ IN. PLAS.
			(Sand Agg.)	(Lt. Wt. Agg.)	(Sand Agg.)	(Lt. Wt. Agg.)	No Plas.	(Sand Agg.)	(Lt. Wt. Agg.)	No Plas.	(Sand Agg.)	(Sand Agg.)
RESISTANCE →		*0.11*	*0.39*	*0.15*	*0.47*	*0.32*	*0.41*	*0.64*	*1.43*	*1.68*	*0.40*	
MATERIAL	R	U	U	U	U	U	U	U	U	U	U	U
Brick (face and common)[d]												
(6 in.)	*0.61*	0.68	0.64	0.54	0.39	0.34	0.36	0.35	0.33	0.26	0.25	0.35
(8 in.)	*1.24*	0.48	0.45	0.41	0.31	0.28	0.30	0.29	0.27	0.22	0.22	0.29
(12 in.)	*2.04*	0.35	0.33	0.30	0.25	0.23	0.24	0.23	0.22	0.19	0.19	0.23
(16 in.)	*2.84*	0.27	0.26	0.25	0.21	0.19	0.20	0.20	0.19	0.16	0.16	0.20
Brick (common only)												
(8 in.)	*1.60*	0.41	0.39	0.35	0.28	0.26	0.27	0.26	0.25	0.21	0.20	0.26
(12 in.)	*2.40*	0.31	0.30	0.27	0.23	0.21	0.22	0.22	0.21	0.18	0.17	0.23
(16 in.)	*3.20*	0.25	0.24	0.23	0.19	0.18	0.19	0.18	0.18	0.16	0.15	0.18
Stone (lime and sand)												
(8 in.)	*0.64*	0.67	0.63	0.53	0.39	0.34	0.36	0.35	0.32	0.26	0.25	0.35
(12 in.)	*0.96*	0.55	0.52	0.45	0.34	0.31	0.32	0.31	0.29	0.24	0.23	0.31
(16 in.)	*1.28*	0.47	0.45	0.40	0.31	0.28	0.29	0.28	0.27	0.22	0.22	0.29
(24 in.)	*1.92*	0.36	0.35	0.32	0.26	0.24	0.25	0.24	0.23	0.19	0.19	0.24
Hollow clay tile												
(8 in.)	*1.85*	0.36	0.36	0.32	0.26	0.24	0.25	0.25	0.23	0.20	0.19	0.25
(10 in.)	*2.22*	0.33	0.31	0.29	0.24	0.22	0.23	0.22	0.21	0.18	0.18	0.23
(12 in.)	*2.50*	0.30	0.29	0.27	0.22	0.21	0.22	0.21	0.20	0.17	0.17	0.21
Poured concrete												
30 lb per cu ft												
(4 in.)	*4.44*	0.19	0.19	0.18	0.16	0.15	0.15	0.15	0.14	0.13	0.13	0.15
(6 in.)	*6.66*	0.13	0.13	0.13	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.11
(8 in.)	*8.88*	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.09
(10 in.)	*11.10*	0.08	0.08	0.08	0.08	0.07	0.08	0.08	0.07	0.07	0.07	0.08
80 lb per cu ft												
(6 in.)	*2.40*	0.31	0.30	0.27	0.23	0.21	0.22	0.22	0.21	0.18	0.17	0.22
(8 in.)	*3.20*	0.25	0.24	0.23	0.19	0.18	0.19	0.18	0.18	0.16	0.15	0.18
(10 in.)	*4.00*	0.21	0.20	0.19	0.17	0.16	0.16	0.16	0.15	0.14	0.14	0.16
(12 in.)	*4.80*	0.18	0.17	0.17	0.15	0.14	0.14	0.14	0.14	0.12	0.12	0.14
140 lb per cu ft												
(6 in.)	*0.48*	0.75	0.69	0.58	0.41	0.36	0.38	0.37	0.34	0.27	0.26	0.37
(8 in.)	*0.64*	0.67	0.63	0.53	0.39	0.34	0.36	0.35	0.32	0.26	0.25	0.33
(10 in.)	*0.80*	0.61	0.57	0.49	0.36	0.32	0.34	0.33	0.31	0.25	0.24	0.33
(12 in.)	*0.96*	0.55	0.52	0.45	0.34	0.31	0.32	0.31	0.29	0.24	0.23	0.31

TABLE 6. COEFFICIENTS OF TRANSMISSION (U) OF SOLID MASONRY WALLS (*Concluded*)[a]

EXTERIOR CONSTRUCTION[c]		INTERIOR FINISH										
		NONE	PLAS. ⅝ IN. ON WALL		METAL LATH AND ¾ IN. PLAS. ON FURRING		GYPSUM LATH (⅜ IN.) AND ½ IN. PLAS. ON FURRING		INSUL. BD. LATH (½ IN.) AND ½ IN. PLAS. ON FURRING		WOOD LATH AND ½ IN. PLAS.	
			(Sand Agg.)	(Lt. Wt. Agg.)	(Sand Agg.)	(Lt. Wt. Agg.)	No Plas.	(Sand Agg.)	(Lt. Wt. Agg.)	No Plas.	(Sand Agg.)	(Sand Agg.)
RESISTANCE →		*0.11*	*0.39*	*0.15*	*0.47*	*0.32*	*0.41*	*0.64*	*1.43*	*1.68*	*0.40*	
MATERIAL	R	U	U	U	U	U	U	U	U	U	U	U
Concrete block (gravel agg.)												
(8 in.)	*1.11*	0.52	0.48	0.43	0.33	0.29	0.31	0.30	0.28	0.23	0.22	0.30
(12 in.)	*1.28*	0.47	0.45	0.40	0.31	0.28	0.29	0.28	0.27	0.22	0.22	0.29
(Cinder agg.)												
(8 in.)	*1.72*	0.39	0.37	0.34	0.27	0.25	0.26	0.25	0.24	0.20	0.20	0.25
(12 in.)	*1.89*	0.36	0.35	0.32	0.26	0.24	0.25	0.24	0.23	0.19	0.19	0.24
(Lt. wt. agg.)												
(8 in.)	*2.00*	0.35	0.34	0.31	0.26	0.23	0.24	0.24	0.22	0.19	0.19	0.24
(12 in.)	*2.27*	0.32	0.31	0.28	0.24	0.22	0.23	0.22	0.21	0.18	0.18	0.22

[a] See text section Calculating Overall Coefficients for basis of calculations.

[b] To adjust U values see note just above this table.

[c] If stucco or structural glass is applied to the exterior, the additional resistance value of 0.10 would have a negligible effect on the U value.

[d] Brick, 6 in. (5½ in. actual) is assumed to have no backing. Walls 8, 12 and 16 in. have 4 in. of face brick and balance of common brick.

Insulating Materials

In order to determine the benefit derived from the addition of insulating materials to a given construction, the overall coefficient of heat transmission U_i of the insulated construction may be compared with the corresponding coefficient U without insulation. Table 16 (Part A to Part E) and Fig. 6 may be used for determining the coefficients of transmission of constructions with any combination of fibrous, bulk, or mass insulation and air spaces of various effective emissivities.

Example 2: Find the coefficient of transmission of a frame wall consisting of ½ x 8 in. bevel lap wood siding, building paper, $^{25}/_{32}$ in. wood sheathing, studs, gypsum lath, and sand aggregate plaster, with 2 in. fibrous insulation between studs.

Solution: According to the example calculation in Table 5 a wall of this construction with no insulation between studs has a coefficient U of 0.24. Referring to Table 16 Part A, it will be found that a wall of this value with 2 in. fibrous insulation between the studs has a coefficient U of 0.087.

Attention is called to the necessity of applying the insulating material in accordance with the manufacturer's specification. The engineer must evaluate carefully the economic considerations involved in the selection of an insulating material as adapted to various building constructions. Lack of proper evaluation, or improper installation may lead to unsatisfactory results. Special attention must be given to vapor barriers as outlined in