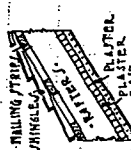
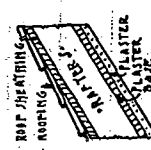


TABLE 12. COEFFICIENTS OF TRANSMISSION (U) OF PITCHED ROOFS^a

Coefficients are expressed in Btu per hour per square foot per degree Fahrenheit difference in temperature between the air on the two sides, and are based on an outside wind velocity of 16 mph.

TYPICAL CONSTRUCTION	TYPE OF ROOFING AND ROOF SHEATHING	INSULATION BETWEEN ROOF RAFTERS	No.	TYPE OF CEILING (APPLIED DIRECTLY TO ROOF RAFTERS)									
				A	B	C	D	E	F	G	H	I	
	Wood Shingles on Wood Strips ^b	None	1	0.46	0.30	0.29	0.29	0.22	0.21	0.16	0.12	0.10	Corkboard (2 in.) and Plaster (1/2 in.)
		1/2 in. Flexible ^c	2		0.17	0.16	0.16	0.14	0.13	0.11	0.091	0.079	Corkboard (1 1/2 in.) and Plaster (1/2 in.)
		1 in. Flexible ^c	3		0.13	0.12	0.12	0.11	0.11	0.092	0.078	0.069	Rigid Insulation (1 in.) and Plaster (1/2 in.)
		Bright Aluminum Foil ^d	4		0.22	0.21	0.21	0.17	0.17	0.13	0.10	0.085	Rigid Insulation (1/2 in.) and Plaster (1/2 in.)
		3/4 in. Rock Wool ^e	5		0.063	0.062	0.062	0.058	0.058	0.053	0.048	0.044	Rigid Insulation (1/2 in.)
	Asphalt Shingles, Rigid Asbestos Shingles, Composition Roofing, or Slate or Tile Roofing ^d on Wood Sheathing ^f	None	6	0.56	0.34	0.32	0.32	0.24	0.23	0.17	0.13	0.11	Rigid Insulation (1 in.)
		1/2 in. Flexible ^c	7		0.18	0.17	0.17	0.14	0.14	0.12	0.094	0.083	Rigid Insulation (1/2 in.)
		1 in. Flexible ^c	8		0.13	0.13	0.13	0.11	0.11	0.095	0.080	0.071	Rigid Insulation (1/2 in.)
		Bright Aluminum Foil ^d	9		0.24	0.23	0.23	0.18	0.18	0.14	0.11	0.093	Rigid Insulation (1/2 in.)
		3/4 in. Rock Wool ^e	10		0.065	0.064	0.064	0.060	0.059	0.054	0.049	0.045	Rigid Insulation (1/2 in.)

^aComputed from factors marked by * in Table 2. Nos. 6 to 10, inclusive, based on 1/2-in. thick slate.

^bBased on 1 in. by 4 in. strips spaced 2 in.

^cFigures based on two air spaces. Insulation may also be applied to under side of roof rafters with furring strips between.

^dRoofing felt between roof sheathing and slate or tile neglected in calculations.

^eAssumed 3/4 in. thick based on the actual width of 2 in. by 4 in. rafters.

^fSheathing assumed 3/4 in. thick.

^gAir space faced on one side with bright aluminum foil.

CHAPTER 5—HEAT TRANSMISSION COEFFICIENTS AND TABLES

TABLE 13. COEFFICIENTS OF TRANSMISSION (U) OF DOORS, WINDOWS AND SKYLIGHTS
Coefficients are based on a wind velocity of 16 mph, and are expressed in Btu per hour per square foot per degree Fahrenheit difference in temperature between the air inside and outside of the door, window or skylight

A. Windows and Skylights		
		U
Single.....		1.13 ^{a, c}
Double.....		0.45 ^a
Triple.....		0.281 ^a
B. Solid Wood Doors ^{b, c}		
NOMINAL THICKNESS INCHES	ACTUAL THICKNESS INCHES	U
1	2 5/8	0.69
1 1/4	1 1/8	0.59
1 1/2	1 5/8	0.52
1 3/4	1 3/4	0.51
2	1 7/8	0.46
2 1/2	2 1/8	0.38
3	2 5/8	0.33

^aSee *Heating, Ventilating and Air Conditioning*, by Harding and Willard, revised edition, 1932.

^bComputed using $C = 1.15$ for wood; $f_i = 1.65$ and $f_o = 6.0$.

^cIt is sufficiently accurate to use the same coefficient of transmission for doors containing thin wood panels as that of single panes of glass, namely, 1.13 Btu per hour per square foot per degree difference between inside and outside air temperatures.

While most building materials have surfaces which show similar characteristics as far as the transmission of heat is concerned, it is a well-known fact that certain surfaces such as aluminum bronze, gold bronze, aluminum foil, or in fact any metallic, highly polished surface presents a greater resistance to heat transmission than the surface of the average building material.

The greater heat resistance of such metallic surfaces is due primarily to their higher reflectivity and consequent lower emissivity of radiant heat. The use of multiple layers of metallic surfaces, combined with air spaces of low resistance, provides a definite insulating effect. Factors² for air spaces bounded by aluminum foil are given in Table 2.

Coefficients of transmission of various types of wall, ceiling, floor and roof construction with aluminum insulation can be readily calculated. The present installation practice indicates that air spaces of 1/2 in. to 1 1/2 in. are preferred but manufacturers' recommendations should be closely followed in the application of aluminum foil insulation.

The majority of the conductivities and conductances of the building materials and insulations given in Table 2 were determined by the hot-plate method of testing³. Attention is called to the fact that conductivities per inch of thickness of materials or insulations do not afford a true basis for comparison, although they are frequently used for that purpose.

²Insulating Value of Bright Metallic Surfaces, by F. B. Rowley (A.S.H.V.E. Journal Section, *Heating, Piping and Air Conditioning*, June, 1934, p. 263).

³Standard Test Code for Heat Transmission through Walls (A.S.H.V.E. TRANSACTIONS, Vol. 34, 1928). See also Chapter 43.