TABLE 2. CONDUCTIVITIES (k) AND CONDUCTANCES (C) OF BUILDING AND INSULATING MATERIALS—Continued

These constants are expressed in Btu per hour per square foot per degree Fahrenheit temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch thickness.

Material	Description	Density (Lb per Cu Ft)	Mean Temp (Deg Fahr)	Conductivity or Conductance (k)	Conductivity or Conductance (C)	Resistance Per Inch Thickness $(\frac{1}{k})$	Resistance For Thickness Listed $(\frac{1}{C})$	Authority
WOODS—(Continued)	Hard maple, 0 per cent moisture[a]	46.0	75	1.05	....	0.95	.....	(4)
	Maple	44.3	86	1.10	....	0.91	.....	(1)
	Maple, across grain	40.0	75	1.20	....	0.83	.....	(3)
	Norway pine, 0 per cent moisture[a]	32.0	75	0.74	....	1.35	.....	(4)
	Red cypress, 0 per cent moisture[a]	32.0	75	0.79	....	1.27	.....	(4)
	Red oak, 0 per cent moisture[a]	48.0	75	1.18	....	0.85	.....	(4)
	Short leaf yellow pine, 0 per cent moisture[a]	36.0	75	0.91	....	1.10	.....	(4)
	Soft elm, 0 per cent moisture[a]	34.0	75	0.88	....	1.14	.....	(4)
	Soft maple, 0 per cent moisture[a]	42.0	75	0.95	....	1.05	.....	(4)
	Sugar pine, 0 per cent moisture[a]	28.0	75	0.64	....	1.56	.....	(4)
	Virginia pine	34.3	86	0.96	....	1.04	.....	(1)
	West coast hemlock, 0 per cent moisture[a]	30.0	75	0.79	....	1.27	.....	(4)
	White pine	31.2	86	0.78	....	1.28	.....	(1)
	Yellow pine	.....	....	1.00	....	1.00	.....	(3)
	Sawdust, various	12.0	90	0.41	....	2.44	.....	(1)
	Shavings, various from planer	8.8	90	0.41	....	2.44	.....	(1)
	Shavings, from maple beech and birch (coarse)	13.2	90	0.36	....	2.78	.....	(1)
INSULATING MATERIALS Blanket and Bat Insulations	Chemically treated wood fibers held between layers of strong paper	3.62	70	0.25	....	4.00	.....	(3)
	Eel grass between strong paper	4.60	90	0.26	....	3.85	.....	(1)
	Eel grass between strong paper	3.40	90	0.25	....	4.00	.....	(1)
	Flax fibers between strong paper	4.90	90	0.28	....	3.57	.....	(1)
	Chemically treated hog hair between kraft paper	5.76	71	0.26	....	3.85	.....	(3)
	Chemically treated hog hair between kraft paper and asbestos paper	7.70	71	0.28	....	3.57	.....	(3)
	Hair felt between layers of paper	11.00	75	0.25	....	4.00	.....	(3)
	Kapok between burlap or paper	1.00	90	0.24	....	4.17	.....	(1)
	Stitched and creped expanding fibrous blanket	1.50	70	0.27	....	3.70	.....	(3)
	Paper and asbestos fiber with emulsified asphalt binder	4.2	94	0.28	....	3.57	.....	(1)
	Cotton insulating bat	0.875	72	0.24	....	4.17	.....	(3)
	Felted cattle hair	13.00	90	0.26	....	3.84	.....	(1)
	Felted cattle hair	11.00	90	0.26	....	3.84	.....	(1)
	Felted hair and asbestos	7.80	90	0.28	....	3.57	.....	(1)
	Ground paper between two layers, each $\frac{3}{8}$ in. thick made up of two layers of kraft paper (sample $\frac{3}{4}$ in. thick)	12.1	75	.....	0.40	.....	2.50	(4)
Reflective	See Table 1, Section C	.....	....	.....	....	.....	.....	
Insulating Board	Made from sugar cane fiber	13.5	70	0.33	....	3.03	.....	(3)
	Made from corn stalks	15.00	71	0.33	....	3.03	.....	(3)
	Made from exploded wood fibers	17.90	78	0.32	....	3.12	.....	(4)
	Made from hard wood fibers	15.20	70	0.32	....	3.12	.....	(3)
	Made from wood fiber	15.90	72	0.33	....	3.03	.....	(3)
	Made from wood fiber	15.00	70	0.33	....	3.03	.....	(3)
	Made from wood fiber	.....	52	0.33	....	3.03	.....	(6)
	Made from wood fiber	8.50	72	0.29	....	3.45	.....	(3)
	Made from wood fiber	15.20	....	0.33	....	3.03	.....	(3)
	Made from wood fiber	16.90	90	0.34	....	2.94	.....	(1)
	Made from licorice root	16.1	81	0.34	....	2.94	.....	(3)
	$\frac{1}{2}$ in. insulating boards without special finish[f] (eleven samples)	16.5 to 21.8	90	0.33 to 0.40	....	3.03 to 2.50	.....	(1)
	1 in. insulating board[a]	13.2	....	0.34	....	2.94	.....	(4)

See notes on Page 88.

TABLE 2. CONDUCTIVITIES (k) AND CONDUCTANCES (C) OF BUILDING AND INSULATING MATERIALS—Concluded

These constants are expressed in Btu per hour per square foot per degree Fahrenheit temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch thickness.

Material	Description	Density (Lb per Cu Ft)	Mean Temp (Deg Fahr)	Conductivity or Conductance (k)	Conductivity or Conductance (C)	Resistance Per Inch Thickness $(\frac{1}{k})$	Resistance For Thickness Listed $(\frac{1}{C})$	Authority
INSULATING MATERIALS —Continued Loose Fill Type	Made from ceiba fibers	1.90	75	0.23	....	4.35	.....	(3)
	Made from ceiba fibers	1.60	75	0.24	....	4.17	.....	(3)
	Cotton fibers							
	Short Staple Linters, Fireproofed	6.25	90	0.25	....	4.00	.....	(1)
	Short Staple Linters, Fireproofed	4.50	90	0.24	....	4.17	.....	(1)
	Short Staple Linters, Fireproofed	2.45	90	0.24	....	4.17	.....	(1)
	Short Staple Linters, Fireproofed	1.60	90	0.26	....	3.85	.....	(1)
	Short Staple Linters, Fireproofed	0.85	90	0.29	....	3.45	.....	(1)
	Short Staple Linters, Fireproofed	0.65	90	0.30	....	3.33	.....	(1)
	Fibrous material made from dolomite and silica	1.50	75	0.27	....	3.70	.....	(3)
	Fibrous material made from slag	9.40	103	0.27	....	3.70	.....	(1)
	Redwood bark	3.00	90	0.31	....	3.22	.....	(1)
	Redwood bark[a]	5.00	75	0.26	....	3.84	.....	(3)
	Glass wool fibers 0.0003 in. to 0.006 in. in diameter	1.50	75	0.27	....	3.70	.....	(3)
	Granular insulation made from combined silicate of lime and alumina	4.20	72	0.24	....	4.17	.....	(3)
	Expanded vermiculite	.....	....	0.48	....	2.08	.....	(1)
	Expanded vermiculite, particle size—$-3+14$	6.2	....	0.32	....	3.12	.....	(3)
	Regranulated cork about $\frac{1}{8}$ in. particles	8.10	90	0.31	....	3.22	.....	(1)
	Hand applied granular mineral wool 2 in. to 6 in. thick; horizontal position[b]. No covering	6.05 to 7.13	....	0.30 to 0.33	....	3.33 to 3.03	.....	(4)
	4 in. machine blown granular mineral wool, horizontal position[b]. No covering	5.74	....	0.30	....	3.33	.....	(4)
	Rock wool	10.0	90	0.27	....	3.70	.....	(1)
Slab Insulations	Corkboard, no added binder	14.0	90	0.34	....	2.94	.....	(1)
	Corkboard, no added binder	10.6	90	0.30	....	3.33[e]	.....	(1)
	Corkboard, no added binder	7.0	90	0.27	....	3.70	.....	(1)
	Corkboard, no added binder	5.4	90	0.25	....	4.00	.....	(1)
	Corkboard[a]	8.7	....	0.29	....	3.45	.....	(4)
	Corkboard, asphaltic binder	14.5	90	0.32	....	3.12	.....	(1)
	Chemically treated hog hair with film of asphalt	10.0	75	0.28	....	3.57	.....	(3)
	Sugar cane fiber insulation blocks encased in asphalt membrane	13.8	70	0.30	....	3.33	.....	(3)
	Made from 85 per cent magnesia and 15 per cent asbestos	19.3	86	0.51	....	1.96	.....	(1)
	Made from shredded wood and cement	24.2	72	0.46	....	2.17	.....	(3)
	Made from shredded wood and cement[a]	29.8	....	0.77	....	1.30	.....	(4)

See notes on Page 88.

In order to determine the benefit derived from the addition of insulation to a given wall, ceiling, floor, or roof construction, it is necessary to compare the over-all coefficient of heat transmission (U_1) of the insulated construction with the coefficient (U) of the construction without insulation. Attention is called to the necessity of applying the insulation in accordance with the manufacturer's specifications. Certain types of blanket insulations are designed to be installed between the studs of a frame building in such manner as to give two air spaces. In order to get the full value of such materials they should be so installed that each air space is approximately $\frac{3}{4}$ in. or more in thickness and the air spaces should be sealed at the top and bottom to prevent the circulation of air from one space to the other.

The engineer must carefully evaluate the economic considerations involved in the selection of an insulating material as adapted to various