TABLE 18. INSTANTANEOUS RATES OF HEAT GAIN DUE TO SOLAR AND SKY RADIATION FOR SINGLE SHEETS OF UNSHADED COMMON WINDOW GLASS[a, b]

Computed for Solar Declination of 18 Deg—August 1

Note: *To determine the total instantaneous rate of heat gain add the term 1.04 (t_o-t_i) to the values shown in the table (see Equation 10).*

Sun Time	Solar Altitude β Deg	Instantaneous Rate of Heat Gain, Btu per Hour for Each Square Foot of Unshaded Glass								
		N	NE	E	SE	S	SW	W	NW	Horizontal
25 Deg North Latitude										
6 a.m.	7.5	19	77	84	40	3	3	3	3	12
7	20.5	26	146	173	98	10	10	10	10	68
8	34.0	18	148	193	121	13	13	13	13	143
9	47.5	15	118	172	120	16	15	15	15	205
10	61.5	16	67	124	95	22	16	16	16	252
11	74.5	16	25	57	57	25	16	16	16	282
12	83.0	16	16	16	25	28	25	16	16	293
1 p.m.	74.5	16	16	16	16	25	57	57	25	282
2	61.5	16	16	16	16	22	95	124	67	252
3	47.5	15	15	15	15	16	120	173	118	205
4	34.0	18	13	13	13	13	121	193	148	142
5	20.5	26	10	10	10	10	98	173	146	68
6	7.5	19	3	3	3	3	40	84	77	12
30 Deg North Latitude										
6 a.m.	9.0	22	88	97	47	4	4	4	4	15
7	21.5	23	146	176	105	11	11	11	11	74
8	34.5	16	140	194	130	14	14	14	14	144
9	47.5	15	104	171	133	20	15	15	15	205
10	60.0	16	53	128	112	33	16	16	16	248
11	72.0	16	19	56	74	42	16	16	16	277
12	78.0	16	16	16	34	45	34	16	16	288
1 p.m.	72.0	16	16	16	16	42	74	56	19	277
2	60.0	16	16	16	16	33	112	126	53	248
3	47.5	15	15	15	15	20	133	171	104	205
4	34.5	16	14	14	14	14	130	194	140	144
5	21.5	23	11	11	11	11	105	176	146	74
6	9.0	22	4	4	4	4	47	97	88	15
35 Deg North Latitude										
6 a.m.	10.0	21	97	109	53	4	4	4	4	19
7	22.5	19	143	179	110	11	11	11	11	79
8	34.5	14	133	194	140	15	14	14	14	144
9	46.5	15	90	170	144	28	15	15	15	200
10	58.5	16	38	126	128	47	16	16	16	243
11	68.5	16	16	56	91	62	17	16	16	269
12	73.0	16	16	16	45	68	45	16	16	279
1 p.m.	68.5	16	16	16	17	62	91	56	16	269
2	58.5	16	16	16	16	47	128	126	38	243
3	46.5	15	15	15	15	28	144	170	90	200
4	34.5	14	14	14	14	15	140	194	133	144
5	22.5	19	11	11	11	11	110	179	143	79
6	10.0	21	4	4	4	4	53	109	97	19
40 Deg North Latitude										
5 a.m.	1.5	7	18	17	6	1	1	1	1	2
6	11.5	23	106	120	62	5	5	5	5	24
7	23.0	15	141	181	118	11	11	11	11	82
8	34.5	14	122	194	147	19	14	14	14	145
9	45.5	15	76	172	156	42	15	15	15	196
10	56.0	16	30	125	144	66	16	16	16	235
11	64.5	16	16	53	110	85	22	16	16	261
12	68.0	16	16	16	62	94	62	16	16	269
1 p.m.	64.5	16	16	16	22	85	110	52	16	261
2	56.0	16	16	16	16	66	144	125	30	235
3	45.5	15	15	15	15	42	156	172	76	196
4	34.5	14	14	14	14	19	147	194	122	145
5	23.0	15	11	11	11	11	118	181	141	82
6	11.5	23	5	5	5	5	62	120	106	24
7	1.5	7	1	1	1	1	6	17	18	2

TABLE 18. INSTANTANEOUS RATES OF HEAT GAIN DUE TO SOLAR AND SKY RADIATION FOR SINGLE SHEETS OF UNSHADED COMMON WINDOW GLASS[a, b] (CONCLUDED)

Sun Time	Solar Altitude β Deg	Instantaneous Rate of Heat Gain, Btu per Hour for Each Square Foot of Unshaded Glass								
		N	NE	E	SE	S	SW	W	NW	Horizontal
45 Deg North Latitude										
5 a.m.	2.0	9	23	23	8	1	1	1	1	2
6	12.5	22	111	129	68	6	6	6	6	28
7	23.0	13	135	182	121	11	11	11	11	82
8	33.5	14	116	192	153	24	14	14	14	141
9	44.0	15	63	168	166	55	15	15	15	189
10	53.0	16	22	123	154	88	16	16	16	225
11	60.0	16	16	56	127	113	30	16	16	249
12	63.0	16	16	16	76	119	78	16	16	256
1 p.m.	60.0	16	16	16	30	113	127	56	16	249
2	53.0	16	16	16	16	88	154	123	22	225
3	44.0	15	15	15	15	55	166	168	63	189
4	33.5	14	14	14	14	24	153	192	116	141
5	23.0	13	11	11	11	11	121	182	135	82
6	12.5	22	6	6	6	6	68	129	111	28
7	2.0	9	1	1	1	1	8	23	23	2
50 Deg North Latitude										
5 a.m.	4.5	18	48	48	17	2	2	2	2	5
6	13.5	22	119	139	75	6	6	6	6	32
7	23.5	11	131	183	127	11	11	11	11	84
8	33.0	13	103	190	161	30	13	13	13	138
9	42.0	14	51	165	173	69	14	14	14	179
10	50.0	16	19	122	166	109	16	16	16	214
11	56.0	16	16	55	138	133	41	16	16	235
12	58.0	16	16	16	92	140	92	16	16	242
1 p.m.	56.0	16	16	16	41	133	138	55	16	235
2	50.0	16	16	16	16	109	166	122	19	214
3	42.0	14	14	14	14	69	173	165	51	179
4	33.0	13	13	13	13	30	161	190	103	138
5	23.5	11	11	11	11	11	127	183	131	84
6	13.5	22	6	6	6	6	75	139	119	32
7	4.5	18	2	2	2	2	17	48	48	5

[a] Table compiled from solar radiation transmission data developed by A.S.H.V.E. Research Laboratory[3] and direct intensity values developed by Moon,[4] recently enlarged and revised by the A.S.H.V.E. Research Laboratory.

[b] For relatively clear atmosphere at sea level. For hazy atmosphere, values may be reduced 10 per cent. Above sea level, add one per cent per 1000 ft elevation.

inclusive, and for all exposures from 10:00 a.m. to 2:00 p.m. inclusive. For Southern exposures at 8:00 a.m. or at 4:00 p.m., the error may be ±15 per cent. At noon this method gives accurate results; the error becomes progressively larger as the time differs from noon.

In regard to *glass blocks*, data on the overall unit conductances for heat transfer by convection and conduction are given in Table 18, Chapter 9; These will serve also for cooling load calculations for shaded or north-

TABLE 19. RATIO OF INSTANTANEOUS RATE OF HEAT GAIN THROUGH SINGLE THICKNESS OF HEAT ABSORBING SUNLIT GLASS TO HEAT GAIN FOR COMMON GLASS AS GIVEN IN TABLE 18

Transmissivity[a]	Approximate Ratio	Transmissivity[a]	Approximate Ratio	Transmissivity[a]	Approximate Ratio
0.90	1.02	0.70	0.85	0.40	0.60
0.87	1.0	0.60	0.76	0.30	0.52
0.80	0.93	0.50	0.68	0.20	0.45

[a] For direct solar radiation at normal incidence.