Table 20 . . . . Instantaneous Rates of Heat Gain Due to Transmitted Direct and Diffuse Solar Radiation by Unshaded Walls of 8-in. Hollow Glass Block of Types II, III, IV, IVA and V Patterns

Multiply the Table 19 Values for Type I by These Percentage Factors

For Clear Atmospheres and 18 Deg Declination, North (August 1) For 30, 40, and 50 Deg North Latitude

Note: To obtain total instantaneous heat gain add adjusted Table 19 values to the Table 21 values

Instantaneous Heat Gain Due to Transmitted Solar Radiation as a Percentage of Type I Pattern

Sun Time	Type II Pattern					Type III Pattern				
AM → ↓	N, NW, W, SW	NE	E	SE	S	N, NW, W, SW	NE	E	SE	S
5 a.m. 7 p.m.	100	100	100	100	100	70	70	70	70	70
6 6	100	95	95	90	100	70	65	65	70	70
7 5	100	90	90	90	100	70	65	60	65	70
8 4	100	95	90	90	100	70	65	60	65	70
9 3	100	95	85	90	90	70	65	65	70	65
10 2	100	95	95	95	95	70	70	70	75	65
11 1	100	100	95	95	100	70	70	70	80	75
12	100	100	100	100	100	70	70	70	75	90
↑ PM →	N, NE, E, SE	NW	W	SW	S	N, NE, E, SE	NW	W	SW	S

Sun Time	Type IV Pattern					Type IVA Pattern				
AM → ↓	N, NW, W, SW	NE	E	SE	S	N, NW, W, SW	NE	E	SE	S
5 a.m. 7 p.m.	55	45	35	75	55	55	45	35	30	55
6 6	55	45	35	80	55	55	35	35	30	55
7 5	55	45	35	60	55	55	35	40	35	55
8 4	55	45	30	40	55	55	45	45	45	55
9 3	55	50	25	30	60	55	50	65	65	50
10 2	55	55	35	30	50	55	55	85	90	60
11 1	55	55	45	35	40	55	55	70	105	95
12	55	55	55	50	45	55	55	55	100	115
↑ PM →	N, NE, E, SE	NW	W	SW	S	N, NE, E, SE	NW	W	SW	S

Sun Time	Type V Pattern				
AM → ↓	N, NW, W, SW	NE	E	SE	S
5 a.m. 7 p.m.	60	35	35	30	60
6 6	60	35	35	30	60
7 5	60	35	40	35	60
8 4	60	50	65	50	60
9 3	60	80	90	90	60
10 2	60	70	105	105	90[a]
11 1	60	60	80	110	105[a]
12	60	60	60	85	115[a]
↑ PM →	N, NE, E, SE	NW	W	SW	S

Designation of Block Type
II—Semi-Light Diffusing
III—Light Diffusing
IV—Light Diffusing
IVA—Light Diffusing
V—Light Directing

[a] Reduce by 20% for 30 deg N latitude only.

simultaneous occurrence of peak loads, is diversity. Typical of this is the case of a large department store where the air-handling equipment serving a certain space must be sufficient to handle the load created by the throngs of people attending sales in that space. Under such a condition the number of people in other spaces is usually normal or below. While this means that the air-handling equipment for certain departments must be large enough to cope with the situation, the refrigeration equipment need be only large enough to handle the average maximum. If a system employing zone recirculating fans and a single central fan and dehumidifier were used, the saving would be reflected in the capacity of the central fan and dehumidifier. Another example of this diversity is found in an office building having restaurants and stores of certain types in the first story and basement.

Table 21 . . . . Instantaneous Rates of Heat Gain by Convection and Radiation from Unshaded Walls of 8-in. Hollow Glass Block of Patterns Type I, II, III, IV, IVA and V[a]

For Clear Atmospheres and 18 Deg Declination, North (August 1) For 80 F Indoor Temperature

Note: For total instantaneous heat gain add these values to values in Table 17, or Table 19 adjusted by Table 20 factors

Sun Time	Dry-Bulb Fahr.	Latitude	Instantaneous Heat Gain in Btu per (hr) (sq ft)							
			N	NE	E	SE	S	SW	W	NW
5 a.m.	74		−3	−3	−3	−3	−3	−3	−3	−3
6	74		0	3	4[a]	3	−2	−2	−2	−2
7	75		1	15	17[a]	13	−1	−1	−1	−1
8	77		0	21	29[a]	21	1	0	0	0
9	80		0	20	33	27	5	1	2	1
10	83		2	12	36	32	12	3	3	3
11	87		4	6	29	32	19	5	6	5
12	90	40	6	8	16	26	23	9	8	7
1 p.m.	93	Degrees	8	10	14	14	26	25	12	9
2	94	North	9	10	15	11	25	37	28	11
3	95		11	11	16	11	21	44	41	17
4	94		11	11	15	11	16	45	44	30
5	93		11	10	13	10	13	43	42[a]	35
6	91		13	9	11	9	11	35	35[a]	29
7	87		11	7	8	7	8	19	21[a]	15
8	85		7	4	4	4	4	7	7	4
9	83		4	3	2	3	2	3	4	3

Sun Time	Dry-Bulb	Latitude	SE	S	SW	Latitude	SE	S	SW
5 a.m.	74		−3	−3	−3		−3	−3	−3
6	74		1	−2	−2		5	−2	−2
7	75		11	−1	−1		13	−1	−1
8	77		20	0	0		21	0	0
9	80		26	1	2		27	6	1
10	83		29	4	4		32	15	2
11	87		26	8	5		35	22	4
12	90	30[b]	18	12	7	50[b]	33	28	17
1 p.m.	93	Degrees	10	15	16	Degrees	23	31	31
2	94	North	11	16	30	North	12	32	39
3	95		12	14	39		11	28	43
4	94		12	13	43		11	20	44
5	93		11	11	41		10	12	43
6	91		10	9	32		9	10	36
7	87		6	6	15		7	7	23
8	85		4	4	6		4	4	10
9	83		3	3	3		3	3	3

[a] For types III, IV, IVA and V patterns and 30, 40 and 50 deg latitudes, multiply east wall values for 6, 7 and 8 a.m. by 1.40, and west wall values for 5, 6 and 7 p.m. by 1.25.

[b] For N, NE, E, W and NW use 40 deg North Latitude values.

At noon, when the restaurants and stores are crowded, the offices are below normal occupancy.

Heat lag should be carefully considered in the cooling load calculations. In certain types of buildings the effect of solar radiation is still apparent several hours after the sun has shifted from that exposure. In other types having a much lighter construction, the heat gain due to solar radiation decreases markedly with the passing of the sun. Some walls, warmed by the sun, may radiate heat long after the passing of the sun, thus requiring lower indoor temperatures to offset the radiant energy.

Buildings have considerable heat storage capacity which can often be utilized to great advantage, and which has provided an unexpected safety factor in many installations. If a space is kept below the design indoor temperature for some time, the interior walls, floors, furniture, and fixtures begin to assume the temperature of the space. Where the time is sufficient the entire mass, rather than merely its surface, may reach the room temperature. Thus, when a space has been precooled below the design maximum temperature for a period of time prior to the advent of the peak load, and the heat gain begins to increase to peak conditions, some of the increase is used in raising the temperature of the furniture, fixtures, etc., to the design conditions and the cooling load can be reduced accordingly. However, unless very accurate data with regard to the mass, surface, specific heat, etc., of the items within the space are available, due caution must be used in discounting the cooling load for this storage effect. In the absence of reliable data this allowance is often a matter of experience rather than calculation.