

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*

For Clear Atmospheres and 18 Deg Declination, North (August 1)

For 75 F Indoor Temperature

Note: For total instantaneous heat gain add these values to values in Table 20, or Table 20 adjusted by Table 23 factors.

SUN TIME	DRY-BULB DEG F	NORTH LATITUDE DEGREES	INSTANTANEOUS HEAT GAIN IN BTU PER (HR) (SQ FT)							
			N	NE	E	SE	S	SW	W	NW
5 a.m.	74	30	-1	-1	-1	-1	-1	-1	-1	-1
6	74		3	2	2	3	0	0	0	0
7	75		5	17	17 ^a	13	1	1	1	1
8	77		6	25	29 ^a	22	2	2	2	2
9	80		4	28	37	28	3	4	3	3
10	83		6	20	39	31	6	6	5	5
11	87		8	14	31	28	10	7	7	7
12	90		10	10	16	20	14	9	10	9
1 p.m.	93		12	11	15	12	17	18	12	10
2	94		13	12	17	13	18	32	31	14
3	95		13	13	18	14	16	41	44	27
4	94		13	13	17	14	15	45	48	39
5	93	40	17	12	15	13	13	43	45 ^a	40
6	91		16	11	9	12	11	34	36 ^a	31
7	87		12	8	9	8	8	17	14 ^a	14
8	85		6	6	5	6	6	8	7	6
9	83		5	5	4	5	5	5	5	5
5 a.m.	74		-1	-1	-1	-1	-1	-1	-1	-1
6	74		2	5	6 ^a	5	0	0	0	0
7	75		3	17	19 ^a	15	1	1	1	1
8	77		2	23	28 ^a	23	2	2	2	2
9	80		2	22	35	29	7	3	4	3
10	83		4	14	38	34	14	5	6	5
11	87		6	8	31	34	21	7	8	7
12	90		8	10	18	28	25	11	10	9
1 p.m.	93		10	12	16	16	28	27	14	11
2	94		11	12	17	13	27	39	30	13
3	95	50	13	13	18	13	23	46	43	19
4	94		13	13	17	13	18	47	46	32
5	93		13	12	15	12	15	45	44 ^a	37
6	91		15	11	13	11	13	37	37 ^a	31
7	87		13	9	10	9	10	21	23 ^a	17
8	85		9	6	6	6	6	9	9	6
9	83		6	5	4	5	4	5	6	5
5 a.m.	74		-1	-1	-1	-1	-1	-1	-1	-1
6	74		5	9	10 ^a	7	0	0	0	0
7	75		3	18	21 ^a	15	1	1	1	1
8	77		2	22	29 ^a	23	2	2	2	2
9	80		3	17	35	29	8	3	3	3
10	83		5	8	38	34	17	4	5	5
11	87		7	7	33	37	24	6	7	7
12	90		9	9	19	35	30	19	9	9
1 p.m.	93		11	11	15	25	33	33	13	11
2	94		13	12	17	14	34	41	33	12
3	95	50	13	13	18	13	30	45	43	14
4	94		13	13	17	13	22	46	46	26
5	93		12	12	16	12	14	45	44 ^a	24
6	91		13	11	14	11	12	38	38 ^a	31
7	87		14	9	9	9	9	25	26 ^a	21
8	85		7	6	6	6	6	12	12	8
9	83		5	5	5	5	5	5	5	5

* 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.

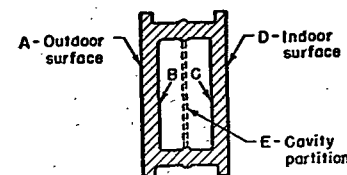
for common window glass for the same hour, orientation and latitude. The coefficient of Y in Table 18 is 0.25, while the Y value is found from Table 19 for a south-west wall at 2:00 p.m. and 40 deg north latitude. The correction for design dry-bulb temperature is found from Table 24 to be 1.0 Btu per (hr)(sq ft) per degree difference from 95 F design temperature. The total instantaneous heat gain is, from Equation 7a,

$$q = 0.87 \times 148 + 1.0 \times 24 + 0.25 \times 27 + 1.0 (98 - 95) \\ = 162.7 \text{ Btu per (hr)(sq ft)}$$

Design Tables for Glass Block Walls

Tables 20 and 21 give design values of instantaneous rates of heat gain for sunlit walls of Type I pattern 8-in. hollow glass block for a solar declination of 18 deg (see Table 22 for description of block patterns). These tables are based upon the solar intensity values for a clear atmosphere as given in Table 5. For solar energy transmittance data the reader is referred to reference 18. Table 20 presents values of transmitted direct

TABLE 22—DESCRIPTION OF GLASS BLOCK PATTERNS



Elevation Section of Hollow Glass Block to Indicate Location of Surface Patterns

Type I—Smooth Face	Type IV—Light Diffusing
A, D: Smooth	A, D: Close pitch deep horizontal corrugations
B: Wide vertical ribs or flutes	B, C: Vertical light diffusing prisms
C: Wide horizontal ribs or flutes	E: None
E: None	
Type II—Semi-Light Diffusing	Type IVA—Light Diffusing
A, D: Narrow vertical ribs or flutes	Same as IV except corrugations vertical
B, C: Etched or stippled	Type V—Light Directing
E: None	A, D: Close pitch deep vertical corrugations
	B, C: Horizontal light directing prisms
Type III—Light Diffusing	E: None
A, D: Narrow vertical ribs or flutes	
B, C: Etched or stippled	
E: Glass fiber screen	

and diffuse solar radiation, while Table 21 gives values of instantaneous rates of heat gain by convection and radiation from the wall. The latter values are for an indoor temperature of 75 F and a 95 F maximum dry-bulb temperature, as indicated in the table, and are based upon experimentally-determined values of solar energy absorption and temperature difference between the two faces. Because the exact dependence of the latter on weather conditions has not been determined, the values of convection and radiation gain cannot be regarded as exact for the assumed design conditions. Indoor and outdoor convection and radiation heat transfer data are the same as those used for common window glass. Table 24 gives corrections to be applied for other design temperatures.

To obtain transmitted direct and diffuse solar radiation for other types of 8-in. block, the Table 20 values are multiplied by the approximate per-