Table 15. . . . Heat Absorbed in Glass. Values of Y to be Used with Factors in Table 14 and Table 16 in the Determination of Instantaneous Rates of Heat Gain Due to Convection and Radiation for Various Types of Single Glass and Combinations of Two Sheets of Glass Spaced at ¼ In.

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

Sun Time	Latitude	Values of Y in Btu per (hr) (sq ft)[a]								
		N	NE	E	SE	S	SW	W	NW	Horiz.
5 a.m.		0	0	1	0	0	0	0	0	0
6		4	16	18	9	1	1	1	1	3
7		2	24	30	20	2	2	2	2	11
8		2	22	33	25	2	2	2	2	21
9		2	16	30	29	8	3	3	3	32
10		3	5	25	27	14	3	3	3	37
11	40	3	3	12	21	18	3	3	3	42
12	Degrees	3	3	3	15	19	12	3	3	45
1 p.m.	North	3	3	3	3	19	22	10	3	44
2		3	3	3	3	16	27	24	4	41
3		3	3	3	3	10	30	31	15	35
4		3	3	3	3	4	29	36	23	26
5		2	2	2	2	2	23	34	27	17
6		4	1	1	1	1	14	24	21	6
7		0	0	0	0	0	2	3	3	1

Sun Time	Latitude	SE	S	SW	Sun Time	Latitude	SE	S	SW
5 a.m.		0	0	0	5 a.m.		2	0	0
6		7	1	1	6		13	1	1
7		18	2	2	7		22	2	2
8		22	2	2	8		28	3	2
9		24	3	3	9		30	13	3
10		22	5	3	10		31	20	3
11	30[b]	16	7	3	11	50[b]	27	25	5
12	Degrees	6	9	4	12	Degrees	20	27	17
1 p.m.	North	3	9	14	1 p.m.	North	9	25	26
		3	6	21	2		3	22	32
3		3	5	27	3		3	16	33
4		3	3	26	4		2	7	31
5		2	2	21	5		2	2	26
6		1	1	11	6		1	1	17
7		0	0	0	7		0	0	7

[a] Values of Y for 8 and 9 p.m. are zero.
[b] For N, NE, E, W, NW, and horizontal use 40 deg North Latitude values.

for 8-in. hollow glass block of Type I pattern. For glass blocks of Types II to V the corresponding instantaneous heat gain is found by multiplying the value found for Type I block from Table 19 by the appropriate factor from Table 20.

The instantaneous rate of heat gain due to *convection and radiation* for unshaded 8-in. hollow glass blocks of Types I to V are given in Table 21. The *convection and radiation* gain values for all blocks are so nearly the same that a single table suffices. Note, however, that corrections must be made for certain hours for east and west facing walls of some patterns.

Tables 22 and 23 give instantaneous heat gain values for two types of glass block design for use in skylights. The Type VI block is 10⅝ x 10⅝ in. and the Type VII block 12 x 12 in.

It should be noted that the data for Type VI glass block in Tables 22 and 23 are for panels as assembled. Since the manner of mounting this type of block is standard the ratio of glass area to *opaque* area is virtually constant from one skylight to another. The Type VII glass block may be mounted on a wide range of center-to-center distances. The *opaque* portion of the assembly should be given separate consideration independent of the glass block. See Reference 24 for more complete information.

These tables are based upon the solar intensity values for a clear atmosphere as given in Table 4. For solar energy transmittance data refer to References 21 and 24.

The values of convection and radiation gain are based on values of 80 F for indoor air temperature, a maximum outdoor air temperature of 95 F and upon experimentally determined values of solar energy and temperature difference between the two faces. Indoor and outdoor convection and radiation heat-transfer values are the same as those used for common window glass. Table 24 gives corrections to be applied for other design temperatures.

Example 9: Find the total instantaneous heat gain through an east wall of 8-in. hollow glass block of Type V pattern at 8 a.m. and 50-deg north latitude. The design temperatures are 80 F indoors and 95 F maximum outdoor dry-bulb, with a clear atmosphere.

Solution: The gain due to transmitted solar radiation is found from Table 19 for Type I pattern. The factor for Type V is found from Table 20. The convection and radiation gain is found from Table 21 (note the footnote).

Table 16. . . . Application Factors to Apply to Tables 13 and 15 to Obtain Instantaneous Rates of Heat Gain for Vertical Single Sheets of Rolled Figured Glass Having Normal Incidence Transmittances and Listed Thicknesses (Smooth Side Indoor, Figured Side Outdoor)

(See Table 17 for Factors to Apply to Table 12 Values)

Glass Pattern	Normal Incidence Transmittance	Thickness, Inches	Factor to Apply to Table 13
Hammered	0.75	7/32	1.0(X)[a] + 0.50(Y)[b, e]
Hammered, etched both sides	0.67	7/32	1.0(X) + 0.65(Y)[d]
Deep ribs on ⅛ in. centers	0.77 approx.	7/32	1.0(X) + 0.50(Y)[e]
Hammered heat absorbing	0.21	¼	1.0(X) + 1.15(Y)[f]
Hammered heat absorbing, etched both sides	0.14	¼	1.0(X) + 1.40(Y)

[a] X values are Table 13 values.
[b] Y values are Table 15 values.
[c] Use 0.40(Y) for east and west glass.
[d] Use 0.60(Y) for east and west glass.
[e] Use 0.35(Y) for east and west glass.
[f] Use 0.95(Y) for south glass.

Table 17 Instantaneous Rates of Heat Gain Due to Transmitted Direct and Diffuse Solar Radiation by Unshaded Rolled Figured Glass

Multiply the Table 12 Values by These Percentage Factors

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

Note: To obtain total instantaneous heat gain add adjusted Table 12 values to adjusted Table 13 values

Instantaneous Heat Gain Due to Transmitted Solar Radiation as a Percentage of Single Sheet of Common Window Glass

Sun Time	Hammered					Hammered and Etched				
AM → ↓	N, NW W, SW	NE	E	SE	S	N, NW W, SW	NE	E	SE	S
5 a.m. 7 p.m.	80	80	85	70	80	60	65	75	55	60
6 6	80	85	85	75	80	60	65	75	50	60
7 5	80	80	85	80	80	60	60	70	55	60
8 4	80	75	85	80	75	60	55	65	55	60
9 3	80	60	80	80	60	60	50	55	55	50
10 2	80	65	75	75	65	60	55	50	55	50
11 1	80	80	60	70	65[a]	60	60	50	50	50
12	80	80	80	60	65[a]	60	60	60	50	50

Sun Time	Ribs on ⅛ In. Centers					Hammered Heat Absorbing				
5 a.m. 7 p.m.	60	75	85	25	60	25	20	25	20	25
6 6	60	80	85	30	60	25	20	25	20	25
7 5	60	65	85	40	60	25	20	25	20	25
8 4	60	40	80	50	55	25	20	20	20	25
9 3	60	30	70	55	35	25	20	20	20	20
10 2	60	40	40	55	35	25	20	20	20	20
11 1	60	60	35	40	35[b]	25	25	20	20	20
12	60	60	60	35	45[b]	25	25	25	20	20
↑ PM →	N, NE E, SE	NW	W	SW	S	N, NE E, SE	NW	W	SW	S

Sun Time	Hammered and Etched Heat Absorbing				
AM → ↓	N, NW W, SW	NE	E	SE	S
5 a.m. 7 p.m.	20	15	15	10	20
6 6	20	15	15	10	20
7 5	20	10	15	10	20
8 4	20	10	15	10	20
9 3	20	10	10	10	10
10 2	20	15	10	10	10
11 1	20	20	10	10	10
12	20	20	20	10	10
↑ PM →	N, NE E, SE	NW	W	SW	S

[a] Decrease values 10 percent for 30 deg latitude; increase 15 percent for 50 deg latitude.
[b] Increase values 30 percent for 50 deg latitude.