

# Annexure D

## Clear Sky Equations

### D.1 : ASHRAE CLEAR SKY MODEL [Source: Sukhatme and Nayak, 2008]

$$I_G = I_B + I_D$$

$$I_B = I_{BN} * (\cos z)$$

$$I_{BN} = A * \exp [-B/\cos z]$$

$$I_D = C * I_{BN}$$

Here A, B and C are constants, derived for each month. [Proposed by Iqbal, 1983]

**Table D.1 :** Values of the Constants A, B and C used for Predicting Hourly Solar Radiation on Clear Sky Days

	A (W/m <sup>2</sup> )	B	C
January 21	1202	0.141	0.103
February 21	1187	0.142	0.104
March 21	1164	0.149	0.109
April 21	1130	0.164	0.120
May 21	1106	0.177	0.130
June 21	1092	0.185	0.137
July 21	1093	0.186	0.138
August 21	1107	0.182	0.134
September 21	1136	0.165	0.121
October 21	1136	0.152	0.111
November 21	1190	0.144	0.106
December 21	1204	0.141	1.103

Note: This model is proposed for calculating hourly average values, but for sub-hourly intervals also the model performs well (only accurate solar zenith is required) for clear sky day radiation estimation.