**Solar resources:**

Table 1: Solar resources

|  |  |  |
| --- | --- | --- |
| Solar intensity | Insolation |  |
| Solar spectrum | 0.38um-0.78um |  |
| Zenith angle |  |  |
| Air mass (A.M) | 1. at atmosphere   1 perpendicular at the earth  >1 the path is not perpendicular |  |
| Latitude of the site in degrees | L |  |
| Altitude angle () | + θZ = 90° |  |
| Solar Declination angle | δ (± 23.45)  March 21st (δ = 0)  June 21st (δ = 23.4)  September 21st (δ = 0)  December 21st (δ = -23.4) |  |
| Tilt angle (zenith angle ()) | = 90 - | Maximum annual average to be close to the latitude angle.  Maximum summer average to be less than the latitude angle.  Maximum winter average to be larger than the latitude angle. |
| Azimuth angle of the sun |  |  |
| Azimuth angle of the collector |  |  |
| Hour Angle (H) |  | The angle that the sun make when moving from one meridian to another |
|  |  |  |