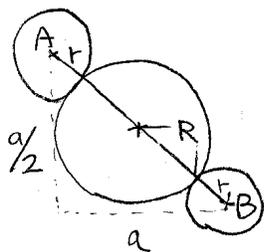


radius of the interstitial atoms = r :



$$R = \frac{\sqrt{3}a}{4}$$

$$2r + 2R = \sqrt{a^2 + \left(\frac{a}{2}\right)^2} = \frac{\sqrt{5}}{2}a$$

$$\therefore r = \frac{1}{2} \left(\frac{\sqrt{5}}{2}a - \frac{\sqrt{3}}{2}a \right)$$

$$= \frac{(\sqrt{5} - \sqrt{3})a}{4} \approx 0.126a$$

There are total 24 sites :

- $\left(\frac{a}{2}, \frac{a}{4}, 0\right)$, $\left(\frac{a}{2}, \frac{3a}{4}, 0\right)$, $\left(\frac{a}{4}, \frac{a}{2}, 0\right)$, $\left(\frac{3a}{4}, \frac{a}{2}, 0\right)$,
 $\left(\frac{a}{2}, \frac{a}{4}, a\right)$, $\left(\frac{a}{2}, \frac{3a}{4}, a\right)$, $\left(\frac{a}{4}, \frac{a}{2}, a\right)$, $\left(\frac{3a}{4}, \frac{a}{2}, a\right)$,
 $\left(\frac{a}{4}, 0, \frac{a}{2}\right)$, $\left(\frac{3a}{4}, 0, \frac{a}{2}\right)$, $\left(\frac{a}{2}, 0, \frac{a}{4}\right)$, $\left(\frac{a}{2}, 0, \frac{3a}{4}\right)$,
 $\left(\frac{a}{4}, a, \frac{a}{2}\right)$, $\left(\frac{3a}{4}, a, \frac{a}{2}\right)$, $\left(\frac{a}{2}, a, \frac{a}{4}\right)$, $\left(\frac{a}{2}, a, \frac{3a}{4}\right)$,
 $\left(0, \frac{a}{4}, \frac{a}{2}\right)$, $\left(0, \frac{a}{2}, \frac{a}{4}\right)$, $\left(0, \frac{3a}{4}, \frac{a}{2}\right)$, $\left(0, \frac{a}{2}, \frac{3a}{4}\right)$,
 $\left(a, \frac{a}{4}, \frac{a}{2}\right)$, $\left(a, \frac{a}{2}, \frac{a}{4}\right)$, $\left(a, \frac{3a}{4}, \frac{a}{2}\right)$, $\left(a, \frac{a}{2}, \frac{3a}{4}\right)$