

what is the critical angle for a material of refractive index square root 2

### Solution

We are given:

$$n_1 = \sqrt{2}$$

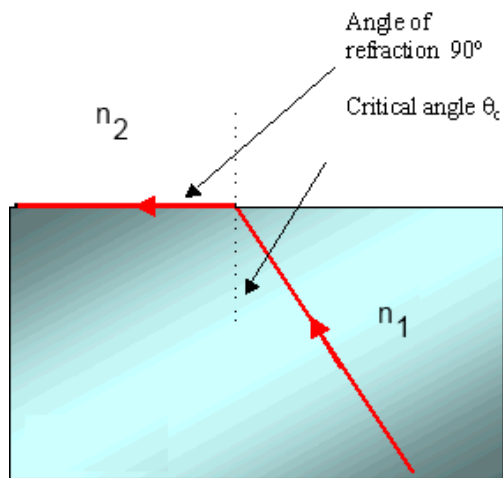
For detailed information about critical angle see

[http://en.wikipedia.org/wiki/Critical\\_angle\\_\(optics\)#Critical\\_angle](http://en.wikipedia.org/wiki/Critical_angle_(optics)#Critical_angle)

Assume given material –air boundary;

For air:

$$n_2 = n_{air} = 1$$



Thus:

$$\theta_{critical} = \arcsin\left(\frac{n_2}{n_1}\right) = \arcsin\left(\frac{1}{\sqrt{2}}\right) = 45^\circ = \frac{\pi}{4} \text{ rad}$$

Answer:  $45^\circ$