

With the results of Physics

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index of refraction, n , is defined as the ratio of the speed of light in vacuum, c , to the speed of light in the medium, v .

$$n = \frac{c}{v}$$
 The refractive index of a medium is a function of the wavelength of light. For example, the refractive index of water is 1.33 for red light and 1.34 for violet light.

Group velocity is the velocity at which the envelope of a wave packet travels. It is given by $v_g = \frac{d\omega}{dk}$.

Phase velocity is the velocity at which the phase of a wave travels. It is given by $v_p = \frac{\omega}{k}$.