λ is the mean free path

σ is the cross section

ρ is the density of targets

(In water $\rho \sim 6 \times 10^{23} cm^{-3}$)

For 1 GeV neutrino interactions $\sigma \sim 10^{-38}$ and

$$\lambda = \frac{1}{10^{-38} \cdot 6 \times 10^{23}} \approx 10^{12} \, meters!$$

In ordinary matter neutrinos just penetrate through with very rare interactions.