

Brewster angle, θ_B

When an unpolarized planar electromagnetic wavefront impinges on a flat dielectric surface, there is a unique angle (θ_B), commonly referred to as Brewster angle, at which the reflected waves are all polarized into a single plane.

Note 1: Expression for Brewster angle: $\theta_B = \arctan (n_2 / n_1) = \arctan (\varepsilon_2 / \varepsilon_1)^{1/2}$ where n_2 and n_1 are the refractive indices of the receiving surface and the initial medium, respectively, and ε_2 and ε_1 are the relative static permittivities (formerly called dielectric constants).

Note 2: For a randomly polarized beam incident at Brewster angle, the electric fields of the reflected and refracted waves are perpendicular to each other.

Note 3: For a wave incident from air on water ($n = 1.333$), glass ($n = 1.515$) and diamond ($n = 2.417$) the Brewster angles are 53, 57, and 67.5 degrees, respectively.

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