

T1300418 TFP Polarizer Wedge Deviation
1/25/11

index of refraction

$$n := 1.458$$

incident angle, deg

$$\theta_i := 56$$

wedge angle, deg

$$\theta_w := 0.5$$

thickness, in

$$t := 0.5$$

first refraction angle, rad

$$\theta_1 := \text{asin}\left(\frac{1}{n} \cdot \sin\left(\theta_i \cdot \frac{\pi}{180}\right)\right) = 0.60482$$

first refraction angle, deg

$$\theta_{1\text{deg}} := \theta_1 \cdot \frac{180}{\pi} = 34.654$$

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second refraction angle, rad

$$\theta_2 := \theta_1 + \theta_w \cdot \frac{\pi}{180} = 0.614$$

output angle, rad

$$\theta_o := \text{asin}(n \cdot \sin(\theta_2)) = 0.996$$

length inside wedge, in

$$h := \frac{t}{\cos(\theta_1)} = 0.608$$

beam offset, in

$$\Delta := h \cdot \sin\left(\theta_i \cdot \frac{\pi}{180} - \theta_1\right) = 0.221$$

beam offset, mm

$$\Delta_{\text{mm}} := \Delta \cdot 25.4 = 5.62$$

deviation angle, deg

$$\theta_{\Delta} := \theta_o \cdot \frac{180}{\pi} - \theta_i - \theta_w = 0.584$$