

MICHEL-LÉVY BIREFRINGENCE CHART

$$r = 1000t \times B$$

where r = retardation in nm
 t = thickness in μm
 B = birefringence, $n_2 - n_1$

Example 1: An unknown cylindrical fiber, 15 μm in diameter, shows a yellow interference color corresponding to 900 nm retardation.

$$900 = 1000 (15) \times \text{birefringence}$$

$$\text{birefringence} = 0.06 = \text{Nylon}$$

Example 2: What interference colors would be observed on a sample of "through 325 mesh" quartz?
 The birefringence of quartz is 0.009; assume the thickness will range from 0 to 40 μm .

$$\text{retardation} = 1000 (40) \times 0.009$$

$$\text{retardation} = 0-360 \text{ nm}$$

interference colors = black, gray, white, yellow

