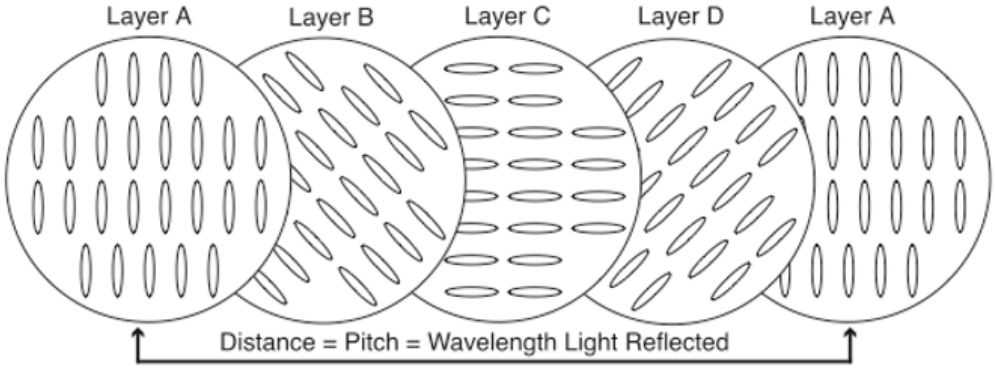
Liquid Crystals

Try It Out

Press your palm into the black film attached to the wood block and hold for 10 seconds. What do you see when you remove your hand? Try pressing the film against your *forearm* for 10 seconds. What do you see now?



What's Going On?

The long, straight molecules of a liquid crystal align themselves into orderly flat planes. Many of these planes are stacked up so that molecules in each plane are oriented at a slight angle from those in the plane below it. But eventally, two layers *do* have the same orientation. The distance between these two aligned layers is called the pitch. When white light is directed at this stack of molecules, the wavelength of light equal to this pitch distance is reflected back. At higher temperatures the molecules move faster and the layers twist more. This causes the pitch to become shorter, reflecting different colors of light. Each liquid crystal has only a small range of temperature where the organization is such that light is reflected back.

Source: teachersource.com

Why Does It Matter?

The most common application in our lives is in screens. Liquid crystals make many TV and phone screens work by letting the correct colors of light appear when an electric current is applied or removed.

Wonder While You Walk...

Liquid crystals in this example reflect visible light. What other forms of light do you know of? Can you think up a use for liquid crystals for these?