

Magic Color Beads and UV Light

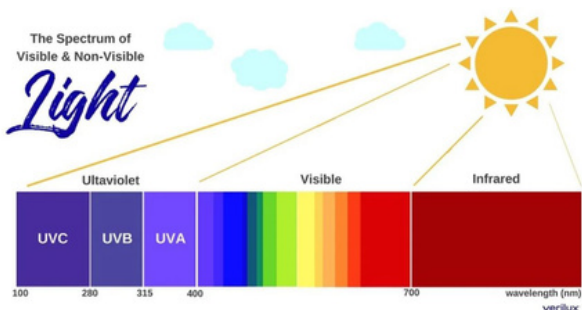
Inside this package you will find ten white plastic beads. These are special plastic beads that contain a chemical substance or pigment that changes color when exposed to ultraviolet (UV) light.

When exposed to UV light, the beads will become red, orange, yellow, blue, or purple. If the beads are removed from UV light, they will slowly return to their white color. The beads can change between white and colors thousands of times.

So where do we find UV light? The sun gives off light we can see (visible light) and some that we cannot see (ultraviolet and infrared). Just as there are different colors or wavelengths in the visible spectrum (red, yellow, green, blue), there are different wavelengths of UV light.

Long wave UV-A has wavelengths from 400-315nm and is what is emitted from a "black light" we use to make posters glow (fluorescence). It is also needed by our bodies to synthesize vitamin D. Shorter wavelengths known as UV B (315-280nm) are the major cause of sunburn. The pigment in these beads reacts to wavelengths from 360 to 300nm. (See the chart below.)

Now that we know these beads react to UV light, let's test where we find UV light and the ability of different materials to block out the UV light. You now have your own UV light detectors!



Experiment

Place five beads in the opaque brown plastic bag included in this package. Leave the other five beads in the clear bag and expose both bags to the sunlight. What happens?

Try placing the beads in other containers you find at home or school, including metal, paper, plastic, glass, clear, opaque, and colored.

Place some beads in direct sunlight and others in the shade. Where is the UV light the strongest?

Coat the beads with different SPF sunscreens (keep two beads without) then expose them to sunlight. How do they compare?

Cover some beads with a pair of sunglasses. Try different sunglasses. What happens?

Expose the beads to different kinds of light sources: fluorescent, incandescent, colored, LED, black light, etc. Do the beads respond to any of these artificial lights?



To access the video demonstration and additional teaching materials, scan the QR code below!



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