

Test ultraviolet (UV) blocker effectiveness using sun sensitive beads. Collect some objects from around the house to make a Sunprint with the included kit. Directions for the Sunprint kit are located on the back of the Sunprint envelope.

SUPPLIES

- ▶ Sun beads
- ▶ Chenille stems
- ▶ Sunglasses
- ▶ 1 package sunscreen 30 SPF
- ▶ Zip Top plastic bag
- ▶ Electromagnetic Spectrum card
- ▶ Design card and pencil
- ▶ Sunprint Kit (directions located on back of Sunprint kit or visit <https://www.sunprints.org/how-it-works/>)



INSTRUCTIONS

You need to be inside and away from sun for this part. Watch the video at www.cmosc.org/sun-science/

1. Place three (3) solar beads on one of the chenille stems and twist the ends of the wires together. Let's call this a bracelet.
2. Repeat step #1 two (2) more times so you have three (3) bracelets with three (3) beads each.
3. Place one bracelet in the plastic bag. Spread some sunblock across the plastic bag and let dry. You want to make sure the sunblock is spread on the bag where the bracelet is located.
4. Grab the sunglasses, the bracelet in the bag, and the other two (2) bracelets and move outside.
5. Place all three (3) bracelets in the sun.
 - One bracelet is your control and will be left in the direct sunlight. This is what you will compare with your other two (2) bracelets.
 - The bracelet you place in the bag should be protected by the sunscreen you placed on the bag.
 - The last bracelet should be placed behind one of the sunglass lenses. It should look shaded.
6. Use the design card to record the results of the experiment you will be doing on each bracelet- What did you observe? Did the UV protection (sunblock or sunglasses) work? Record the results.

OTHER IDEAS AND INQUIRIES

Sun beads contain a special chemical that changes color when exposed to the ultraviolet (UV) light of the sun. The sun produces light in many wavelengths, including invisible ultraviolet (UV) light. This invisible light can burn your skin, damage our eyes, and destroy our cells and even cause cancer. Most UV is blocked by the Earth's ozone layer and atmosphere. While the Earth's atmosphere provides significant protection, it is not complete protection from UV. Some UV still gets through and can be detected. Sunblock and some sunglasses provide UV protection, but it is still not 100%. Look at your beads. Did they detect some UV even with sunscreen or sunglasses blocking them?

Check out the electromagnetic radiation spectrum card and investigate the other forms of radiation.

VOCABULARY

Electromagnetic Waves (also called electromagnetic radiation): waves that contain an electric field and magnetic field and carry energy. These waves travel at the speed of light.

Electromagnetic Spectrum: the range of wavelengths or frequencies over which electromagnetic radiation extends. These include longer radio waves, visible light, and shorter x-rays, to name a few.

Visible Light: the part of the electromagnetic spectrum that is visible to the human eye. We call this light and see as colors.

UV light (Ultraviolet): part of the electromagnetic spectrum that is invisible to the human eye because the wavelengths are shorter.

Solar radiation: all the radiation (energy) from the sun. It includes visible light and UV light.

SPF (Sun Protection Factor): The number on the sunscreen indicates how much longer you can stay in the sun than without it. For example, with SPF 30, you can stay in the sun 30 times longer with the sunscreen than without it.



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