**Question:** What Materials Glow Under a Black or Ultraviolet Light?

**Answer:** There are a lot of everyday materials that fluoresce, or glow, when placed under a black light. A black light gives off highly energetic ultraviolet light. You can't see this part of the spectrum, which is how 'black lights' got their name. Fluorescent substances absorb the ultraviolet light and then re-emit it almost instantaneously. Some energy gets lost in the process, so the emitted light has a longer wavelength than the absorbed radiation, which makes this light visible and causes the material to appear to 'glow'.

Fluorescent molecules tend to have rigid structures and delocalized electrons. Examples of common materials that contain fluorescent molecules include:

* [**White Paper**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Glowing-Paper-Airplane.htm)  
  White paper is treated with fluorescent compounds to help it appear brighter and therefore whiter. Sometimes forgery of historical documents can be detected by placing them under a black light to see whether or not they fluoresce. White paper made post-1950 contains fluorescent chemicals while older paper doesn't.
* [**Petroleum Jelly**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Glowing-Petroleum-Jelly.htm)  
  Petroleum jelly, such as Vaseline, glows a bright blue color under a fluorescent light.
* **Club Soda or** [**Tonic Water**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Tonic-Water-Glow.htm)  
  The bitter flavoring of tonic water is due to the presence of [quinine](http://chemistry.about.com/od/factsstructures/ig/Chemical-Structures---Q/Quinine.htm), which glows blue-white when placed under a black light.
* **Body Fluids**  
  Many body fluids contain fluorescent molecules. Forensic scientists use ultraviolet lights at crime scenes to find blood, [urine](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Urine-Fluorescence.htm), or semen (all fluorescent).
* **Vitamins**  
  Vitamin A and the B vitamins thiamine, niacin, and riboflavin are strongly fluorescent. Try crushing a vitamin B-12 tablet and dissolving it in vinegar. The solution will glow bright yellow under under a black light.
* **Chlorophyll**  
  Chlorophyll makes plants green, but it fluoresces a blood red color. Grind some spinach or swiss chard in a small amount of alcohol (e.g., vodka or everclear) and pour it through a coffee filter to get chlorophyll extract (you keep the part that stays on the filter, not the liquid). You can see the red glow using a black light or even a strong fluorescent bulb, such as an overhead projector lamp, which (you guessed it) gives off ultraviolet light.
* **Antifreeze**  
  Manufacturers purposely include fluorescent additives in antifreeze fluid so that black lights can be used to find antifreeze splashes to help invesitagors reconstruct automobile accident scenes.
* [**Laundry Detergents**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Glowing-Laundry-Detergent.htm)  
  Some of the whiteners in detergent work by making your clothing a bit fluorescent. Even though clothing is rinsed after washing, residues on white clothing cause it to glow bluish-white under a black light. Blueing agents and softening agents often contain fluorescent dyes, too. The presence of these molecules sometimes causes white clothing to appear blue in photographs.
* **Tooth Whiteners**  
  Whiteners and some enamels contain compounds that glow blue to keep teeth from appearing yellow.
* **Postage Stamps**  
  Stamps are printed with inks that contain fluorescent dyes. However, the US stamps that I checked (printed 2008) did not glow.
* [**Jellyfish**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Jellyfish-Bioluminescence.htm)  
  If you have a jellyfish handy, see what it looks like under a black light in a darkened room. Some of the proteins within a jellyfish are intensely fluorescent.
* **Some** [**Minerals**](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Fluorescent-Minerals.-1c3.htm) **and Gems**  
  Fluorescent rocks include fluorite, calcite, gypsum, ruby, talc, opal, agate, quartz, and [amber](http://chemistry.about.com/od/photogalleries/ig/Glowing-Things/Amber-Fluorescence.htm). Minerals and gemstones are most commonly made fluorescent or phosphorescent due to the presence of impurities. The Hope Diamond, which is blue, phosphoresces red for several seconds after exposure to shortwave ultraviolet light.

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