



# Application Bulletin

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## UV Photodocumentation User Tips

Visible light photographs can be made of fluorescing samples on ultraviolet transilluminators. To do this, UVP's Photodocumentation Systems provide all the tools necessary for photographing gels. Each system includes: a DS-34 camera, ultraviolet transilluminator, darkroom hood, Filter 22, Gel-Cutter, and UV blocking spectacles. The DS-34 Polaroid camera must be equipped with a UV blocking filter. The best filter for this is a Filter 22. It not only blocks the UV, but also does not fluoresce in the presence of any of the UV wavelengths, and stops the blue visible light emanating from the transilluminator. This filter mounts into any one of the three hoods available from UVP. Other filters are available to mount into hoods are to be used with other types of gels such as silver stained and coomassie blue stained gels and autoradiographs. Transilluminators are available with the choice of working surfaces ranging from 10x10cm to 20x40cm. UVP also offerd two different sizes of White Light Transilluminators. Black and white film 667 is recommended as it is a high-speed, sensitive film for photodocumentation.

Please consult the Polaroid camera manual to determine the proper exposure and f-stop setting for your particular type of gel. Following these directions will give a well balanced exposure for DNA bands in an electrophoresis gel on a midrange (302nm) wavelength transilluminator. Exposure settings will vary for different sample materials on the longwave (365nm) wavelength transilluminators. With optimized camera settings on the UV Photodocumentation System, DNA concentrations of 1 ng can be seen on the photograph (concentrations as low as 10 ng can be visibly seen). A low f-stop number is recommended when photographing gels with the Photodocumentation System because of the low light level present. The DS-34 f-stop range is from f-4.5 to f-32. The f-32 setting allows a minimum amount of light to enter.

When using transilluminators for photodocumentation or other research, it is recommended that the unit be turned on only for the amount time required to do the job. This is especially true when working with DNA gels stained with ethidium bromide or acrydine orange. The reason for this is that these stains contribute to photoniccking in the presence of UV even at less energetic wavelengths. In addition, the stains bleach out (fade in fluorescent intensity) as the total exposure to UV increases. Procedures for photodocumentation are as follows:

1. Position the camera and hood assembly over the transilluminator and adjust the camera aperture and shutter speed. Set camera/hood assembly aside.
2. Place the sample on the transilluminator.
3. Caution: It is important to protect the eyes and face by wearing UV blocking eye or facewear whenever harmful midrange or shortwave ultraviolet radiation is used. Turn on the transilluminator to verify location of the sample and then turn unit off.
4. Load the camera with appropriate film and recheck the settings.

5. Place the camera/hood assembly over the sample on the transilluminator.
6. Turn on the transilluminator and pull the trigger switch of the DS-34 Camera.
7. Turn off the transilluminator and remove the sample from the transilluminator surface.
8. Remove Polaroid photo further use.

Using the above procedures will yield the brightest images with a minimum of photobleaching or UV damage to the sample. In the event a shortwave (254nm) UV transilluminator is being used for DNA/RNA work, the above procedure will also reduce the effects of photonicking caused by the 254nm radiation. In applications where maximum care must be taken to avoid denaturing, the DNA bands should be removed during the first 10 minutes of continuous transilluminator operation. During this time, the filter temperature will remain below 40°C.

Refer to UVP's UV Photodocumentation Systems and Transilluminators brochures and manuals for additional product specifications and information.