

## **TECH NOTE: IR Lighting; (NIR – Near InfraRed) NIR – 740nm to 1400nm**

The properties of IR light can be useful in vision inspection for a variety of reasons.

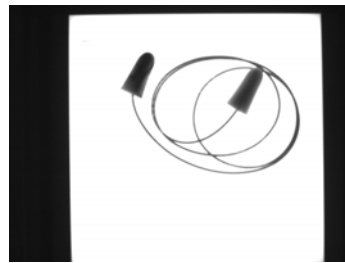
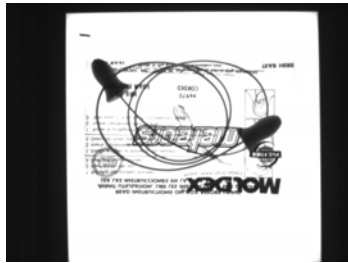
IR wavelengths of 850nm and 940nm (also called NIR – Near InfraRed) are commonly used in machine vision. 850nm and 940nm IR are available in large die/high output LED emitters.

### **Check the spectral response of your camera**

Certain cameras do not see IR as well as some other cameras. Recommend looking at the spectral response of the camera to make sure the camera imager is sensitive to IR emission.

### **IR penetrating materials**

IR light can be more effective at penetrating certain materials than visible wavelengths, such as white, blue, green and even red light. Infrared light's long wavelength often allows for less scattering from part surfaces and higher transmission rates through them. Higher transmission means it can pass through more materials making IR light ideal for inspecting package fill levels or ensuring against foreign matter.



IR used to see thru package and remove the print to see the ear protection.

### **IR to remove Color – diminish color**

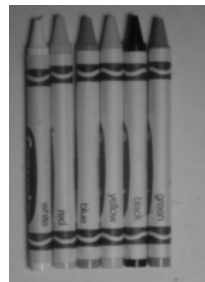
IR light is effective at neutralizing or reducing contrast differences based on color, primarily because reflection of IR light is based more on sample composition, rather than color differences. This property can be used when less contrast or the reduction on color is desired. Infrared light can be used to diminish the grayscale difference between colored objects.



**IR 850nm**



**WHITE**



IR 850nm



White

Note: IR removes the print

**Benefits of infrared light**

- Invisible to human eye >discreet and covert illumination
- Minimizes light pollution

**Disadvantages of IR-light**

- Not usable with color cameras