



Viewing Colour

Matthew Boulton College

VIEWING COLOUR

The colour of an object depends on the light source, the wavelengths of light the object reflects and the viewer's perception of the object. Different light sources impact on what we see.

Sometimes colours appear to change when viewed under different lighting conditions. For example the shirt in a shop with fluorescent lighting can look different when viewed at home under incandescent light (conventional light bulb). The greenness of the lighting in the shop and the redness of the lighting at home can cause the object to reflect different amounts of light back to the viewer and therefore cause the sensation of a different colour. Maybe that is why black is always in fashion!

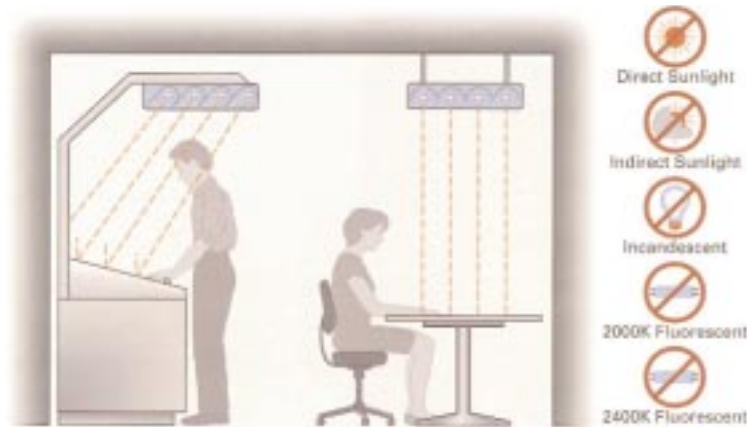
Accurate visual evaluation is a critical part of any colour workflow. Even a well-trained eye can be overwhelmed with variables, such as viewing conditions, that contribute to image colour. Because of these factors, industry standards have been established to aid colour evaluation. For printers the American National Standard Institute (ANSI) and the International Standards Organisation (ISO) have specified that standard viewing conditions for colour comparison and evaluation are a 5000 degree Kelvin light source, designated as D50 by some lamp manufacturers with a neutral grey surround. This is an accurate simulation of daylight and provides a well balanced output of red, green and blue light.

The lighting conditions under which reflective art or transparencies are viewed have a great effect on the appearance of colours. For example, natural daylight is too variable, incandescent light emphasises orange-red tones, 'universal white' fluorescent light has too much yellow and red and 'tri-band' fluorescent light has too much blue. Ideally originals should be viewed in 5000 degree Kelvin white light a standard set by the graphic arts and print industry to create a consistent viewing environment for colour. This 5000 degree Kelvin light can be achieved with fluorescent lamps manufactured with a precise blend of phosphors.

Light with a colour temperature of 6500 degree Kelvin is specified for colour uniformity evaluations. These are when two reproductions from the same process are compared. The main use of this lighting is comparison of sheets from the press run. This light source is bluer than 5000 degree Kelvin, making the comparison of the yellow easier.

The ideal environment for looking at coloured originals and sheets from the press are viewing booths, they are a self contained viewing area. They are especially useful if there is poor lighting or if windows allow daylight to affect the light in the room (the strength of daylight changes during the day).

Lighting Conditions



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Viewing Print Whilst Printing On A Web Offset Press

Quality can be viewed on a web offset press without taking copies from the press. There are 2 basic web viewing devices

- Stroboscope Viewers
- Synchoscope (Mirror Viewers)

Stroboscope Viewer

The stroboscope viewer uses a flashing light source of high intensity lasting a few micro seconds. The interval between flashes must relate to the print repeat. If the flashing rate of the stroboscope equals the image speed passing by the viewing point it will make the image appear stationary. Quality can be checked very quickly and adjustments made.

Synchoscope

This is based on a drum with a number of mirrors. The drum is rotated to match web speed and the image is viewed via second fixed mirror. Most mirrors have a drift facility which allows the drum to rotate slightly faster or slower than the web speed, so that the whole image can be scanned gradually.

Although this method views the web indirectly it does have some advantages over the stroboscope viewer. Slower running speeds are possible because the mirrors move relative to the web instead of trying to freeze movement completely. Also a magnifying eye-piece can be used to examine the image more critically.

QUESTIONS ON VIEWING COLOUR

- (1) What happens to colours which are viewed under different lighting conditions?
- (2) Name the unit which is used to measure light?
- (3) Give the temperature for lighting which is an accurate simulation of daylight?
- (4) Why should booths be used for viewing coloured originals or sheets from the press?
- (5) On a web offset press name a method of viewing the print quality whilst the press is running?