RoscoLux Color Filter Information

Roscolux is comprised of two types of plastic. More than 65% of the line is made from co-extruded polycarbonate plastic. The remainder of the line is deep dyed polyester.
Sheets: 20" x 24" Rolls: 24" x 25'

HOW COLOR FILTERS WORK
Filters create color by subtracting certain wavelengths of color. Thus, a red filter absorbs blue and green, allowing only the red wavelengths to pass. The process is subtractive, not additive, so the light source must emit a full spectrum.

The Rosco swatchbook provides detailed information on the spectral energy curve of each filter. The curve describes the wavelengths of color transmitted through each filter. For example, Supergel 342 transmits approximately 40% of the violet and blue energy of the spectrum and 75% of the orange and red energy. It absorbs all energy in the yellow and green range.

Durability
The life of color filters depends on many variables: the color, the instrument and lamp used, the dimmer level a filter generally runs at, and the amount of time the light is running. For these reasons it is impossible to assign a "life" for each filter. However some basics knowledge and experience can help with estimates. Dark green and dark blue filters usually burn out the fastest because they absorb the most infrared energy. Absorbing the extra infrared energy causes the plastic to reach it's melting temperature faster. When darker filters are needed try choosing filters that transmit high amounts of the 700 nm range. You can find this information by looking at the Spectral Energy Distribution (S.E.D.) curve located in the swatchbook for each Supergel color filter. Filters than transmit high levels at 700 nm may also transmit high levels in the infrared range above 700 nm.(See the Supergel swatchbook for information on how to read S.E.D. curves.)

To prolong the life of a color filter, align your ellipsoidal lamp to a flat field focus. (Get rid of the hot spot.) You can increase the distance between the lamp and the filter by using a top hat or barn door. In extreme cases, try Rosco Heat Shield or Thermashield to prolong the life of your filters.

Never use a plastic filter directly in front of an open faced lamp. This will nearly always cause premature failure because the heat is trapped and it has nowhere to go except to the plastic filter. Always allow a suitable air gap.

HOW COLOR FILTERS ARE MANUFACTURED TODAY

Body-Coloured
In a body-colored color filter, like Supergel, the colorant is integrated within the plastic substrate. The process starts with powdered resin and dye being fed into an extruder. Under intense pressure and heat approaching 600ºF, the drive screw combines the melted resin and dye into a through-colored "honey". This colored mixture is extruded through a die which forms it into the colored core of a film 61cm wide. The excellent performance on a light of this engineered filter is a function of both the higher temperature resistance of the base polymer combined with the unique technology which seals the color core between clear layers. For the color to fade by dye sublimation, the dye molecules must migrate out of the body-colored internal layer through the clear sealing layers. As a result, body-colored filters are the most durable fade-resistant. Moreover, Rosco utilizes a select form of polycarbonate that is flame retardant to meet the most stringent International standards for fire safety.

Deep-Dyed
Deep-dyed color filters, like Roscolux, begin with a roll of clear polyester. The film is passed through a bath of heated solvent suffused with dye. The solvent causes the film to swell expanding the polymer

structure and allowing the dye molecules to penetrate the surface. The film is then washed and the polymer contracts to its normal form, trapping the dye molecules below the surface. Compared to surface coating, more extreme temperatures are required to cause the dye particles to sublimate through the surface. Deep-dyed filters are, therefore, more resistant to fading than surface coated.

Surface Coated

The easiest way to produce a color filter is to simply coat the color on top of a plastic film base. Most of Rosco's E-Colour+ range and Lee Filters® are manufactured using this process. Polyester film is widely used as a base material for coloring since it will accept coatings of properly applied solvent-based coloring lacquers. Other than air drying, no heat is involved in the process, so dyes used need not be heat-resistant. Surface coated polyester filters begin as a roll of clear film which is then "painted" with a dye solution on one or both sides. Of all three methods used for manufacturing color filters surface coating is the oldest technology and the product is most susceptible to fading from heat.

HOW TO READ AN S.E.D. CURVE

The spectral energy distribution curve of each Roscolux filter describes the wavelengths of color transmitted through the individual filters. For example, Roscolux #342 transmits approximately 40% of the violet and blue energy of the spectrum and 75% of the orange and red energy. It blocks all energy in the yellow and green range.

The "Trans." Percentage refers to overall light transmission that is allowed to pass through each individual filter.