TECHNICAL INFORMATION BULLETIN

Additive and Subtractive Printing on Motion Picture Film

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Color printing requires controlling the color components of a light source to achieve correctly balanced prints.

Additive Printing

Modern additive printers use a set of standard dichroic mirrors to separate or combine the light from a tungsten-halogen bulb into its red, green and blue components. The mirrors have a multilayer coating of dielectric material that reflects a specific wavelength region while transmitting other regions. Adjustments are made to the mirrors to achieve the desired color balance on the final print.

Subtractive Printing

A subtractive printer uses a white light source to produce properly balanced prints. Combinations of color filters control the amounts of red, green and blue light.

Printing that requires a lot of scene-to-scene color corrections is very difficult on a subtractive printer because a new color-correcting filter pack must be physically inserted between the light source and the printing aperture for every correction.

Overall light changes (intensity changes) are made by using a variable aperture or a neutral density filter.