What is the difference between film and paper positives?

The basic and most critical step involved in creating images with photoresist products is the generation of artwork. With more and more people doing their own in-house processing, questions are commonly asked about artwork. One of the most frequently asked questions is the difference between film positives and paper positives. Before discussing these differences, let us first examine what "photo resist" means.

Most photo resists are of a material which, when exposed to ultraviolet (UV) light, crosslinks and becomes water insoluble (water resistant). The areas not exposed to UV light remain soluble and wash out with water. After wash out, what remains is the image of the design, or logo to be blasted.

Good artwork is the foundation in any photo resist process. The black areas on the artwork correlate with what will be sandblasted. A good rule to remember is black equals blast. The density (darkness) of your artwork is important because the black areas of the photopositive will keep the areas of the photo resist film water soluble whereas those areas exposed to UV light "crosslink" or become water insoluble. If the black areas on your artwork are not dense enough, light will penetrate through those areas and partially expose the photo resist film. The exposed areas will become water resistant and will not wash out completely.

Film Positives

The best method for transferring your artwork to the photo resist film is using a film positive. There are two ways of obtaining a film positive; PhotoBrasive's AccuBlack™ inkjet film or making an orthochromatic film positive.

AccuBlack

With AccuBlack, film positives can be created in-house by outputting digital artwork onto the special AccuBlack inkjet film using an inkjet printer. By using AccuBlack, you to get the benefits of a true film positive - opaque blacks and crystal clears - without the need to buy expensive imaging equipment or outsourcing costly professional film positives. Excellent results can be achieved using an inexpensive, standard inkjet printer*. AccuBlack can be used for any type of artwork including line art and halftones. AccuBlack has a special coating which makes the film water resistant. This coating enables the ink to dry faster on the film, meaning that the positive is usable within seconds. It also prevents the image from marring in wet or humid conditions. Positives can easily be stored and reused at a later time. This media does not require any special processing, just output high quality digital artwork on an inkjet printer with sufficient print resolution.

***Please note** that the quality of the positive will be determined by items such as artwork quality, printer resolution, printer settings and the type of ink the printer uses. Keep in mind that the higher the printer resolution, the better the positive will be. Printers with dye based inks will typically yield denser positives. For more information on recommended printer settings, refer to the AccuArt Tech Sheet or contact PhotoBrasive Systems.

Orthochromatic

This is comprised of clear film which has been coated with an emulsion to form black, opaque images. This film is exposed in a large "process camera" and chemically developed in a diffusion transfer processor. It will copy black and white artwork exactly, and permits reduction and enlargement of the design. The primary benefits of using orthochromatic film positives are the capability to obtain excellent line resolution (down to 3 mil lines and halftones), superior opacity, and reusability. The downfalls of using orthochromatic film positives are the inability to generate them in-house without a large investment in processing and darkroom equipment, a longer turnaround time, and a higher expense compared to paper positives. If you are not equipped with your own camera and darkroom facilities, this service can be purchased through most commercial printers or image setting vendors.

NOTE: Transparencies are not film positives. Do not confuse a transparency printed by a inkjet printer, laser printer or copy machine with a real film positive. Transparencies are not recommended for the photo resist process since inks or powder toners do not cling to the acetate completely and do not print a dense enough image.

Paper positives

Paper positives can be created through a laser printer or high quality copy machine with a fresh toner cartridge. PhotoBrasive® Systems recommends two types of paper positive mediums: PositiveFX Drafting Film and UVII Vellum. Both offer excellent toner retention which assists in keeping the black areas dense enough to block UV light during exposure processing (due to the opacity of paper positives, an increased exposure time may be required). PositiveFX and UVII absorb the toner to create denser images critical for proper film development. Most laser printers have density settings that can be adjusted for even greater image density and improved photo resist processing results. PositiveFX, a 3 mil heat stable drafting film, is more dimensionally stable and allows for great toner retention and finer line resolution capabilities compared to UVII. UVII, a 17 lb. paper vellum, is more economical and offers good imaging results for lower volume production runs. UVII typically allows for a minimum of 15 mil (.015 inch) line resolution whereas PositiveFX achieves down to a 10 mil (.010 inch) line. Neither of these paper positives are recommended for halftone or other fine line imaging applications. By using either of these products you are able to obtain even more in-house control. Turnaround times and costs are reduced. This advantage allows you to serve your customer better and more competitively.