

MAKING DECALS

STEPS REQUIRED

1. DESIGN
2. COLOR SEPARTIONS
3. SCREEN
4. EXPOSING
5. PRINTING COLORS
6. COVER COATNG
7. PACKING

DESIGN

A design has to be selected first that you want to reproduce in your ware. Once this is done then the litho work/color separation can begin.

COLOR SEPARATION

DESIGN -->IDENTIFY DIFFERENT COLOR --> SEPARATE THE DIFFEREENT COLORS --> LITHO (POSTIVE OF EACH COLOR SEPARTELY --> LAYOUT

The litho maker first has to identify all the different colors in the design. Each color has to be separated from the other. There may be colors that are to be printed on top of another color. All these have to be separated.

Now the litho maker makes a positive film of each of the colors to be printed. If it is a 10-color design there will be 10 positive films plus one for cover coating. Instructions must be given to make sure that the registration marks should be placed one on each of the four corners and if the size of layout is over 12" x 12" then one between these four on all sides. The marks must be fine enough but not too fine that they cannot be exposed and printed.

You can instruct the litho maker to make several images of the same design in one layout or images of several different designs in one layout if the colors are similar / compatible in the designs. This will enable you to print either several of the same design in one layout or several images in one layout or maybe you can have some of a few images. This will depend on the size of your layout and similarity of colors between designs.

It is recommended that the litho maker be instructed to make the positive films "EMULSION UP". This means that when exposing the films on the screen the

“SCRATCHABLE” side of the film is touching the emulsion on the screen while exposing.

Once you have a separate positive film of each color to be printed then you are ready for the next process.

If you have half-tone designs you will have to inform the litho maker the number of lines and the angles to use which should be compatible with your mesh. We recommend using 45 or 105 degree angles for half tones and 120 lines and subsequently exposed the same in 120T mesh.

SCREEN

Once you have the litho in hand you will have to decide what mesh on the screen is required. This will depend on the colors, half tone of color, thickness of line, etc.

For cover coating, it is recommended to use 32 HD or 24T ZBF or similar quality Polyester mesh. The litho of this should cover the full design plus at least 2-mm from all sides.

For normal printing for ceramic tableware, tiles, etc. it recommended using ZBF polyester mesh also. For specialized printing one may use Stainless steel mesh which is much more expensive and very careful handling is required.

Normally, for cadmium color 90T or 100T mesh is used, 100T or 120T for normal colors, 120T for half tone and fine lines and 130T and 140T for gold printing.

After the decisions are made one must stretch the mesh on a stretching machine on an aluminum frame and use glue Serifix from Sericol to glue the mesh on the frame. The tension on the mesh on the frames must be the same otherwise there will be problems in registration while printing. The instructions on the containers of the Serif mention details of application of the glue along with the drying time required.

Once your required mesh is fixed on the screen the mesh now has to be prepared to apply the coating. There is product called Seriprep which prepares the mesh for coating for applying direct photo emulsion or direct capillary films. Normally direct photo emulsion is used and direct capillary films are used for very fine work.

We recommend using direct photo emulsion from Sericol. The product Dirasol 22 is very good for full tones, half tones and fine lines but the product dirasol 902 is even better for all these purposes. Make your choice seeing the design's fineness.

The containers of the products give very clear instructions to apply the coating on the screens. We will recommend for small runs of up to 1000 or 2000 use two coats (wet on wet) on the printing side and one coat on the squeegee side in this

order. If the runs are over 2000 we recommend three coats on the printing side and two coats on the squeegee side. The coating process must be carried out in a dark room.

After the coating is applied, the drying process must begin immediately. A heat dryer which also comes with a exposing machine must be used and make sure you place the screen "Squeegee side up" in the dryer.

EXPOSING

Make sure that the coating is fully dry before you expose the screen. Place the screen on the exposing machine "Printing Side Up" and set your positive litho/films of one color from your set of lithos with the scratch able side of the films touching the coating as per your printing machine measurements. If your exposing machine is a vertical one then the litho must come between the screen with printing side touching the litho and the Exposure Lamp. It is very important that you have a vacuum in the exposing machine as this removes even the air from between the films and the screen so that the exposure can be without any interference from foreign particle.

The exposure time strictly depends on the type of exposure lamp you are using and also the distance between the screen and the exposure lamp. This information is given on the literature of the Sericol Dirasol 22 and 902.

Once you have exposed the litho on the screen you can develop the same with lukewarm water coming from a gentle spray gun (not a jet) and always keep the screen vertical while developing until the coating where the design was on the litho is washed out. Then you once again need to dry this out in a heat dryer.

Using Serial's Serifil you may fill in the pinholes, etc. and then dry the filler again on the screen before you are ready to print.

Then you may carry out the same process to prepare screen for the rest of the colors and cover coat but make sure that you use the same placement/measurement on the screen as you did for the first color and for all the other colors and cover coat as well. Now you are ready to print.

PRINTING COLORS

The printing must be done on a specially coated paper "Decalcomania Paper" or "Decal Paper" preferably 170 gsm for a fully automatic machine but this depends on the type of machine you are using and the number of colors you are printing.

The next process is to select the colors or combination of colors for printing. Normally ceramic and glass colors are inter mixable except for some cadmium and selenium colors which are inter mixable themselves but can only be mixed up to a certain percentage with the non-cadmium and selenium bearing colors. We recommend mixing no more than 30% of non-cadmium and selenium color in cadmium and selenium colors and vice versa.

The colors are normally in powder form and must be mixed with screen printing medium to make this printable. Normally the medium comes in liquid form but thixotropy (paste like) medium is used for high definition printing.

Normally the ratio of color to oil is between 10: 5 and 10:8 depending of the thickness of the colors and shade of the color required for a particular shade.

It is always recommended that test printing is done to match colors and ascertain oil ratio but production runs are carried out.

Once you start printing make sure that the registration marks are printing clearly.

After printing, the colors must dry in a dryer for at least one hour but you must make sure the dryer is an air dryer and NOT a heat dryer. Heat will change the size of the paper and your registration will not be accurate. The colors should be completely dry before you stack them up for printing next color.

COVER COAT PRINTING

Once all the colors have been printed cover coat has to be printed. A solution called FILM SOLUTION is used to cover coat the designs. This covers the design and is a media that carries the design out of the paper to be applied to the wares. When the paper is immersed in water, the water penetrates thru the back of the coated decalcomania paper and pushes the film solution with the design out from the paper. Normally this comes in a liquid form paste form. There are four different colors of this transparent, blue, pink, and yellow. It is advisable to use colored film solution so that it is clearly visible to the printer. It is recommended to 24T polyester mesh for large designs and 32 HD for smaller ones. Once this is printed one must dry this very thoroughly in the dryer.

PACKING

The sheets must remain separated until they are packed with waxed paper or very thin plastic/polythene paper between each sheet of printed/cover coated paper so that they do not stick together as the film solution is very sticky.

Always store the final packed product vertically and never horizontally so that minimum pressure is applied on the prints.