

Stencil Making Process

Step 1: Prepare & Degrease Mesh

Proper mesh preparation is an easy way to save screen printers money, and reduce the number of screens that need to be remade. Degreasing mesh and ensuring limited contaminants is a staple of best practices in screen printing.

Step 2: Prepare PLUS Emulsion or Capillex Film & Coat

Starting with a degreased screen, prepare PLUS emulsion according to the instructions for the particular emulsion chosen, be it a dual-cure, SBQ, or SBQ hybrid.

Dual Cure Emulsions

Dual cure emulsions require adding diazo sensitizer to the emulsion. After carefully cutting the top off the diazo packet, pour all of diazo sensitizer to the emulsion, and mix until the emulsion is a uniform color, making sure to get the sides of the pail. Leave the emulsion for 2+ hours to de-gas, the process by which the air bubbles introduced during mixing stage rise to the surface and separate from the emulsion. This is done in the pail before pouring the emulsion into your coating trough. Pour the mixture slowly to prevent bubbles and spills, then coat the mesh, being sure to apply the final coat to the squeegee side to ensure the emulsion gasket is created on the print side of the screen.

SBQ/Photopolymer Emulsions

SBQ emulsions, like the Plus 9000 HB, Plus CTS L, and Plus 1 SR, come as a 1-pot solution and do not require diazo sensitizer. Out of the pail, slowly pour these emulsions into your coating trough and apply to your mesh prior to rapid exposure under your exposure unit.

SBQ Hybrid/TRIPLE Cure Emulsions

SBQ hybrids can be used like SBQs, but have the option to add diazo to improve water resistance. Apply diazo to the Plus LAVA or Plus AQUA like you would for a dual cure emulsion, and the diazo will increase the existing water resistance of the emulsion to provide longer runs and better reliability with water based ink.

Capillex Film

Capillex film is easy to use and requires minimal training to create reliable results that provide the highest performing stencils in the marketplace. It comes in custom cut sheets or rolls. If needed cut your Capillex film to size using scissors on a clean surface (static will attract dust from surface if unclean). If its a large sheet, roll it up around a PVC tube to make it easier to apply evenly to your screen. If its small use a sheet of glass to help apply over the edge of a table. Start out with a degreased screen and apply the Capillex film to it using the method that makes the most sense for your sheet size. Squeegee off excess water and move to drying area.

Step 3: Drying Stencil

Dry stencil before exposure to remove water from the emulsion mixture. Drying stencils is critical to exposure performance because in a wet stencil, the diazo will choose to cross link with the water instead of the emulsion, and the result will be an insufficient stencil hardness. Ideal conditions are a dust free, light safe room with warm air flow and 35% -45% humidity for a minimum of 1-2hrs (double if printing with water-based inks).

Step 4: Exposing Stencil

Calculating exposure timing is more important than the type of exposure unit you use. Vacuum pressure/seal, exposure distance from the lamp, and type of exposure lamp are all factors to take into account. In addition each emulsion has a different ideal exposure time, just because one exposure time worked on your last emulsion does not mean it will work for another emulsion.

For instance, the Plus Aqua emulsion exposes 8 times faster than its dual cure emulsion counterparts. Alkemi recommends using a real exposure calculator, not something downloadable from the internet, to calculate the exposure needs of your emulsion.

Step 5: Washout and Dry Stencil

Washout your freshly exposed emulsion or Capillex capillary film to remove unexposed emulsion from your screen in your washout booth. Focus most of your washout on the print side of the screen to get the cleanest lines, then spray the squeegee side as a final washout. Following washout, be sure to dry the stencil thoroughly before moving to press.

Step 6: Block Out (Finishing)

Block out is an optional step in the screen printing process, and is used to fill any pinholes caused by contaminants or improper degreasing, mesh space not covered by emulsion, or any other imperfections or gaps that need to be filled.

On Press Ink Cleaning

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On press ink cleaning is usually desired when ink begins to harden within the stencil, or after a screen printer takes a break and comes back to the press to finish a job. On press cleaners, or press washes, come in a variety of options based on application. Faster evaporating press washes typically work faster, but because of the chemicals released into the air are typically less health-conscious. A slower acting press wash will be a safer alternative, but won't work quite as

quickly. If your application uses vinyl ink and or need additional muscle, the Press Wash HF will be a huge asset to you.

Post Print Cleaning

Step 1: Ink Removal

Removing ink is the first step in cleaning screens following a screen printing job. Ink acts as a natural barrier between stencil removers and the stencil itself, so failure to remove the ink first will result in poor reclaim from stencil removal cleaning chemicals. Remove ink using one of the below Alkemi Green Screen cleaning chemicals prior to stencil removal for best results.

For use in a dip tank, options like Aquastrip 21 act as a two-in-one ink and stencil remover because both chemicals act on the screen to remove the ink, then stencil in one step.

Step 2: Stencil Removal / Reclaim

Mesh is expensive, so reuse of mesh is critical to screen printer profitability. Removing stencils safely and quickly is paramount, so after removing the ink it is important to apply a good stencil remover during the final washout process. Alkemi offers screen printers a dip tank solution with the Aquastrip 21, or a concentrated stencil remover that is diluted with water and applied with a chemically resistant brush to quickly get the job done. Benefits of the concentrated stencil remover are that it saves screen printers money on shipping by reducing weight, and benefits the environment by eliminating the need for excess packaging that would otherwise end up in the landfill.

Step 3: Haze Removal

POP!! Oh no, another popped screen due to a harsh haze remover.

Alkemi solved this common screen printer problem with the Haze Remover HV and the Haze Remover Liquid, so no more screens get damaged during haze removal. After emulsion stains, diazo stains, and ink stains leave their fingerprints on the mesh, screen printers need to remove it to return the mesh to like-new condition.

Traditional haze removers, like the Alkemi Haze Hunter, are fast acting haze removers that eliminate these tough stains, but need to be monitored closely to avoid damage to the mesh. Haze Remover HV is a new breed of haze remover in that you can leave it on overnight, not just 5-10 minutes, and it will crystalize on the mesh to remove stains without risk of damaging screens. Apply Haze Remover HV at the end of the day, then rinse off in the morning, and say goodbye to damaging screens during haze removal.