



Silk Screen Inks

Products Information

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Polyzol HB5

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PROPERTIES

Polyzol HB5 is a one pot emulsion system, easy to coat and to be applied instantly. This light blue, dual cure emulsion is designed for the production of PCB solder masks or for applications where very high builds are required.

INSTRUCTIONS FOR USE

Safe lighting

Polyzol HB5 should be handled in a room with low ultraviolet light. Special safelight is not essential, but yellow or weak illumination is desirable. When used in the general workroom, it is recommended that gold fluorescent tubes be used and daylight be excluded or filtered by a yellow lacquer coating or film applied over the windows.

To check whether the light in the workroom is suitable for the handling of sensitized emulsions, coat the screen with the emulsion and then dry. Cover half of the screen with black paper and leave the screen inside the room for at least 20 minutes before rinsing with water. If there is no emulsion stain left on either side of the screen the light in the workroom is suitable.

Preparing the Screen

When degreasing the screen use DEGREASER. Wet the screen with water and apply DEGREASER with a sponge or brush in a light circular motion to ensure that both sides of the screen are thoroughly treated. Leave the screen to stand for a few minutes and then rinse with cold water to remove all traces of DEGREASER. Allow the mesh to dry before coating.

Coating

Manual

Set the screen on edge slightly inclined away from the operator and then follow this procedure:

1. Apply one or two coats of Polyzol HB5, wet on wet, to the print side of the screen.
2. Apply one or two coats of this emulsion, wet on wet, to the squeegee side of the screen.
3. If a higher build of Polyzol HB5 is required extra coats should be applied, wet on wet, to the squeegee side.
4. Ensure that a suitable coating trough is used to deposit an accurate and consistent coating of emulsion.

Automatic

When using an automatic coating machine, a simultaneous single coat on each side of the screen is recommended. If higher builds are required, extra coats should be applied to the squeegee side of the screen.

Drying

The wet screen must be dried in darkness or subdued yellow light, ideally in a horizontal position, squeegee side up. Warm air or a well-ventilated heated cupboard (up to 40°C/105°F) may be used, however, special care should be taken not to blow the dust onto the drying screen. Ensure the screen is thoroughly dry before exposure for maximum print durability.

Positioning the Positive Film

1. Position the positive, emulsion side in contact with the Polyzol HB5 coating on the print side of the dry screen, securing it with small pieces of clear tape.
2. Place the complete screen into vacuum frame (VF11012) and ensure perfect contact before exposure.

Exposure

Correct exposure is the most important factor in obtaining optimum resolution, definition and stencil life. To set the correct exposure time with an unfamiliar emulsion or light source the use of an exposure test scale is recommended. This can be done in two ways as follows:

1. Place a (EXPFILM) on the print side of the emulsion and then expose for a suitable time depending on the type of mesh; the distance between the screen and the light source; and the light intensity (the ideal test exposure would be double the correct exposure). After exposure, develop the stencil so that the appropriate exposure values can be determined. The correct exposure is the longest exposure that can be given whilst still obtaining optimum stencil resolution.

2. Place a strip of fine detail positive film over a coated screen and use a black paper mask to give it a series of stepped exposures. The exposure time is doubled from one step to the next. The correct exposure is the longest exposure given while still obtaining optimum stencil resolution after development.

Comments: The exposure time depends on a number of factors including, the type of light source, the mesh Count, the emulsion thickness, the detail required and the color of the screen mesh as well as the transparency of the positive film and the glass clarity of the vacuum frame.

Table of Exposure Guide

Using 62-64 White Screen Mesh with both sides coated twice with emulsion.		
Light Source	Distance	Length of Exposure Time (Seconds)
3000W Metal Halide	120 cm	40 - 60

Comments: the exposure values quoted are the time needed for full curing and therefore complete hardening of the sensitized emulsion on 62-64 White screen mesh, coated twice on both sides. For multifilament, stainless steel, colored mesh and heavily coated stencils, longer exposure is required. Very high coating weights will have a significant effect on the exposure time-see table below.

Table of Comparison between Thickness and Exposure Time for HB5

Coating	Exposure time	Average thickness of emulsion (microns)
		Polyester 24-120 W
2P + 2S,Scrape	50 seconds	80
2P+2S,Scrape,2S	100 seconds	160
2P+2S,Scrape,4S	150 seconds	230
2P+2S,Scrape,6S	200 seconds	300

* Exposed using 3000W Metal Halide light source at 120 cm.

P - Print side

S - Squeegee side

Scrape - Scrape emulsion from print side with trough to remove air bubbles.

Developing and Final Drying

Place the screen in a washout booth and gently spray both sides with cold or warm water (not over 40oC/105oF). After one or two minutes, increase the spray pressure slightly. Continue developing until all parts of the image appear clean and sharp. With thick or heavily coated stencils, leave to stand wet for a few minutes before starting spray development. After spray development is completed, dry the screen with the aid of a warm air fan or drying cabinet.

Spotting

Place the screen in front of a white or yellow light source and check for pinholes or blemishes. These are usually caused by dust specks or spots on the positive film or vacuum frame glass. Spot out with suitable filler.

Reclaiming the Screen

Remove ink residues by applying Screensolve (SS0038) and then rinse the screen with water. Apply Screenstrip2 thoroughly to both sides of the stencil. Leave for a few minutes and use a strong water jet or high-pressure water gun to remove the stencil.

Screenstrip

Powder	SSP-150
Screenstrip Gel	SSG-155
Screenstrip Liquid	SST-004

STORAGE

Polyzol HB5 should be kept in a cool location - not below 0oC/32oF or over 35oC/95oF and in a sealed container. Polyzol HB5 can be stored for up to 4 years. Screens coated in advance will last for approximately 4 weeks if stored at 20oC and in complete darkness. With longer storage of pre-coated screen, the emulsion can absorb moisture from the environment. It is therefore advisable to dry again prior to exposing.

SAFETY AND HANDLING

Polyzol HB5 Emulsion should be used with care. Wear suitable PPE, for example, appropriate gloves and safety glasses.

Polyzol HBD55 Emulsion:

- Is free from any toxic, carcinogenic, mutagenic and reprotoxic chemicals
- Does not have a flashpoint and is, therefore, exempt from the Highly Flammable Liquid Regulations

ENVIRONMENTAL INFORMATION

Polyzol HB5:

- Does not contain heavy metals.
- Is formulated free from ozone depleting chemicals as described in the Montreal Convention.
- Is free from aromatic hydrocarbons, known to have an adverse effect on the environment.
- Is biodegradable as determined by the OECD 301D Closed Bottle Test.
- Has a pH of 4-5.
- Does not have any volatile solvents and is therefore less harmful to the environment when compared with solvent-based products.