

# SAATIgraf HSX4

Maximum Sharpness Dualcure Graphics Emulsion

## Applications

SAATIgraf HSX4 photo-emulsion is specifically developed to enable manufacture of high quality stencils to print functional materials used during fabrication of electronic devices.

## Characteristics

- Blue dual-cure emulsion
- Highly solvent resistant photoemulsion specially designed for the most demanding industrial printing applications
- Extremely high resolution and definition for optimum microreplication
- 37% solids content
- Optimal performance when EOM is <15 µm

## Features/Benefits

- Excellent resolution/definition combined with smooth sidewall geometry allows clean and faithful micro-replication of highly detailed structures and designs
- Sub-micron dual-cure technology provides optimal mesh bridging and product is designed for use with stainless steel or polyester mesh

## Directions for Use

Handle under yellow safelight or low wattage tungsten lights. Avoid exposure to daylight, quartz/halogen lamps, cool white fluorescent lamps or discharge lamps.

### Sensitizing & Mixing

Prepare Diazo as per instructions on the bottle.

Add the entire contents to the emulsion and mix thoroughly until a smooth consistency is obtained. Write the date of sensitizing on the label and then cover the sensitized emulsion and let stand for a few hours to enable air bubbles to escape. Store sensitized emulsion in cool conditions and use within one month for best results.

### Mesh Preparation & Degreasing

Degrease and abrade new mesh with SAATI Direct Prep 1 in order to optimize stencil adhesion; dry and store the screen in a dust free, dry environment prior to coating. For more applications, thoroughly degrease the mesh prior to use with SAATI Direct Prep 2.

### Coating

**By Hand:** Using a high quality scoop coater or coating trough, apply one or two coats to the substrate side of the screen, followed by

one or two coats on the squeegee side. For a thicker stencil, apply additional coats to the squeegee side prior to drying. For a higher quality stencil with a minimal increase in stencil thickness, apply one or two additional coats to the substrate side of the screen after the initial coats have dried.

**With Automatic Coating Machines:** For general purpose printing use 1+2 coating program, with one coat on substrate side and two coats on squeegee side of screen. For thicker stencils apply additional coats on squeegee side by changing machine program to 1+3, 1+4, etc. For a high quality stencil with controlled edge definition, but without excessive emulsion build up (EOM), use 1+1 and then dry screen before applying additional 'wet on dry coats' with 1+1 or 2+2 program, until desired Rz value is attained.

### Drying & Storage

Thoroughly dry the coated screen at a maximum temperature of 104°F (40°C) in a dust free, dark or yellow light area, with the substrate side facing down to optimize stencil quality. Coated screens should be stored in a dust free, dry, safelight environment.

### Exposing

**With Film Positive** – Ensure that all surfaces, emulsion, film and glass are free of dust to minimize pinholes. Contact the emulsion side of the positive with the substrate side of the screen and secure in position before placing the screen in a suitable vacuum frame. Many variables, such as lamp type and age, distance from lamp to screen, mesh type and coating thickness, can affect exposure time. To confirm correct exposure, adhere a SAATI 21-Step Sensitivity Guide to the perimeter of the emulsion outside of the art, but in an area that will be completely exposed. Develop the image with a strong & finely divided water spray applied equally to all areas of the emulsion, including the sensitivity guide. A correct exposure level is indicated by holding 7 solid steps on the sensitivity guide once developing is concluded.

**With Direct to Screen Ink or Wax Mask, or CTS Exposure** – Ensure that the emulsion surface is free of dust to minimize pinholes. To confirm correct exposure, adhere a SAATI 21-Step Sensitivity Guide to the perimeter of the emulsion, outside of the art but in an area of the emulsion that will be completely exposed. Develop the image with a strong & finely divided water spray applied equally to all areas of the emulsion, including the sensitivity guide. A correct exposure level is indicated by holding 6 solid steps on the sensitivity guide once developing is concluded.

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## Developing

Wet both sides of the screen with a strong, finely divided spray of water and continue washing out until all image areas are fully open. Rinse both sides of the screen and dry thoroughly before use. A properly exposed and developed screen will not leave residues on the squeegee side.

## Reclaiming

**Manual Process** – Remove all ink residues immediately after printing with either SAATI Remove IR11 or IR18. Remove stencil with SAATI Remove ER1 or ER2 (concentrates), or Remove ER5. For stains use a second application of SAATI Remove IR11 or IR18, and for stubborn ghost images, use SAATI Remove HR3 or HR9 followed by a pressure washing from bottom to top.

**Automatic Machine Process** – Remove all ink residues immediately after printing with either SAATI Remove IR11 or IR18. Remove stencil with SAATI Remove ER10, ER13, or ER25 (concentrates). For stains use a second application of Remove IR11 or IR18, and for stubborn ghost images, use SAATI Remove HR3 or HR9 followed by a pressure washing from bottom to top.

## Problem Solving

### Poor Coating Quality

- Properly clean, degrease and rinse the screen to remove all residues and traces of chemicals
- Properly and evenly tension the fabric
- Clean and ensure the scoop coater does not present any defect edge

### Poor Detail or Difficulty Washing Out Image

- Ensure emulsion and coated screens are handled in safelight conditions only
- Ensure a minimum vacuum of 0.66 bar (500 mmHg or 20 in Hg) on vacuum gauge for optimum contact of the positive

- Optimize exposure time and use only high quality film positives
- Do not store sensitized emulsion or coated screen at high temperatures

### Emulsion Falls Off, Extreme Pinholes or Severe Stencil Breakdown During Printing

- Ensure that damp screens are not being exposed
- Only expose screens when an even and consistent coating thickness has been confirmed
- Ensure that stencil has not been severely underexposed
- Ensure mixed emulsion is not too old, has been correctly sensitized and has not been stored at high temperature

### Difficulty Reclaiming Screens

- Not reclaimable once catalyzed
- Optimize exposure time and properly rinse the squeegee side of the screen during developing to remove all residual traces, especially when using higher mesh count dyed fabric

## Health & Safety

Before using, refer to appropriate Safety Data Sheets. Contact SAATI at [info.IT@saati.com](mailto:info.IT@saati.com) or [info.US@saati.com](mailto:info.US@saati.com) to request SDS.

## Storage

When sealed in the original container and stored in cool conditions, SAATI products will maintain their original properties for one year from the date of production.

## Packaging

Available in 0.9, 4.5 and 200 kilogram containers.

In North America, available in one quart and one, five and fifty US gallon containers.

Packaged with associated Diazo.

## Warranty And Limited Warranty

The directions, recommendations and specifications contained within this Technical Data Sheet are meant as a guide for the use of the product and shall not bind the company. Product specifications are subject to change without notice.

The following is made in lieu of all other express or implied warranties, including any implied warranty of merchantability or fitness for a particular purpose; All SAATI manufactured liquid products are warranted to be free of defects in materials and manufacture and to meet the specifications in SAATI Product Bulletin.

SAATI will replace or refund the price of any SAATI manufactured liquid product that does not meet this warranty within the applicable warranty period.

The remedies are exclusive. In no case shall SAATI be liable for any other direct or indirect damage or loss, including without limitation any incidental, special or consequential damages, or any material costs or labor charges incident to the removal or replacement of any mesh, screen, ink, substrate, finished graphic or other item.