



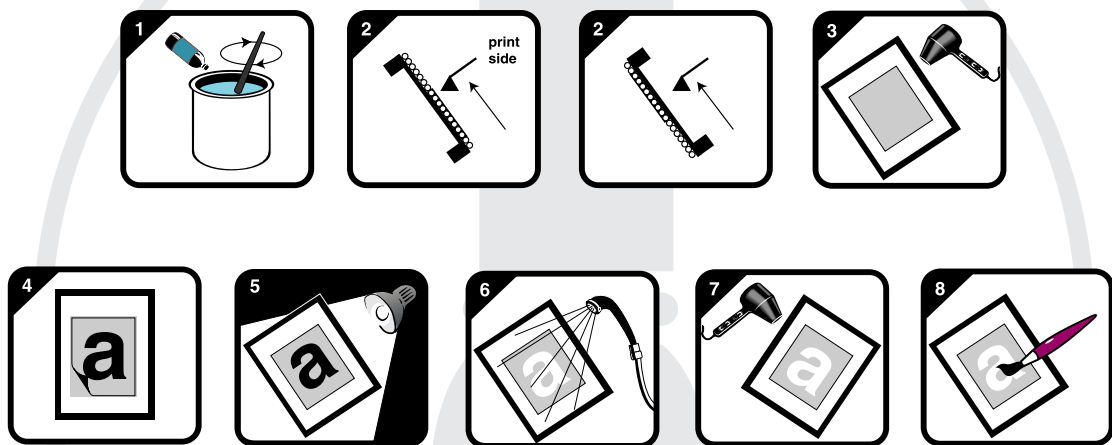
## Dual Cure Emulsion U021

page 1/5

### PROPERTIES

Dual Cure Emulsion U021 is a diazo sensitised dual cure emulsion combining excellent print quality and durability with wide processing latitude. U021 has a blue colour for easy spotting out on coloured or white mesh. It has a tack free surface with good tape resistance and is easily decoatable.

### Illustration of Direct Photostencil Making Process



### Outline of Process

1. Sensitize the emulsion. (As seen in picture 1)
2. Coat the prepared screen with the emulsion. (As seen in picture 2)
3. Dry the coated screen. (As seen in picture 3)
4. Apply the positive film to the screen. (As seen in picture 4)
5. Expose the screen for the correct time. (As seen in picture 5)
6. Rinse with water. (As seen in picture 6)
7. Dry the stencil. (As seen in picture 7)
8. Spot out any pinholes. (As seen in picture 8)

### INSTRUCTIONS FOR USE

#### Safelighting

Dual Cure Emulsion 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.

## Sensitizing

Dual Cure Emulsion is supplied as a two-pack system consisting of the following:

Part A – Emulsion

Part B – Diazo Sensitizer powder

These two parts should be mixed as follows:

1. Empty the contents of the foil sachet into the bottle provided.
2. Add water until the bottle is approximately  $\frac{2}{3}$  full.
3. Replace the cap and shake the bottle well until the contents have dissolved.

For customers who like to use the emulsion at higher or lower viscosity, the sensitizer can be added directly to the emulsion or dissolved in a full sensitizer bottle of water depending on individual preferences.

When adding the sensitizer powder directly to the emulsion care must be taken to ensure the product is thoroughly mixed.

## Preparing the Screen

When degreasing the screen use DEGREASER P-6419. 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. New screens should be abraded with SCREENPREP (SPR034) before use for optimum stencil durability.

## 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 Dual Cure Emulsion, 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 Dual Cure Emulsion 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 Diazol Plus Ultra 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 as follows:

Place a CHAIYABOON EXPOSURE CALCULATOR (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.

**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 colour 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 120 Y Screen Mesh with both Sides Coated twice with Sensitized Emulsion		
Light Source	Distance	Length of Exposure Time (Seconds)
125W HPR Mercury Vapour Lamp	50 cm	350 - 370
50 Amp Open Carbon Arc	120 cm	700 - 740
1000W Metal Halide	120 cm	350 - 370
2000W Metal Halide	120 cm	165 - 195
3000W Metal Halide	120 cm	110 - 135
5000W Metal Halide	120 cm	60 - 80
6000W Metal Halide	120 cm	50 - 65

**Comments:** the exposure values quoted are the time needed for full curing and therefore complete hardening of the sensitized emulsion on 120 Yellow screen mesh, coated twice on both sides. For multifilament, stainless steel mesh and heavily coated stencils, longer exposure is required.

### Developing and Final Drying

Place the screen in a washout booth and gently spray both sides with cold or warm water (not over 40°C/105°F). 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 a suitable filler.

### Reclaiming the Screen

Remove ink residues by applying Screensolve (SS0038) and then rinse the screen with water. Apply Screenstrip (SST002) or Screenstrip Liquid (SST004) 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.

### Ghost Image Removal

Stains on the mesh can be removed by using either a combination of Screensolve (SSO038) and Screenpaste (SPA053) or by using Screenclean (SSC001). Please refer to the appropriate product information sheet for correct use.

## STANDARD PACKING

Dual Cure Emulsion is available in the following pack sizes:

U021	Dual Cure Emulsion	1 kg
U021/5	Dual Cure Emulsion	5 kg
US021	Sensitizer for	U021
US021/5	Sensitizer for	U021/5

## STORAGE

Unsensitized U021 should be stored in as cool a temperature as possible not below 0°C/32°F or over 35°C/95°F U021 be stored for 36 months under this conditions.

Diazo sensitiser should be stored under similar conditions and can be stored for 12 months. Ideally , sensitiser should be stored in a refrigerator at 4-6°C for optimum shelf life.

Sensitized U021 should be stored under similar conditions has a shelf life of 4 weeks.

Screens coated in advance will last for approximately 4 weeks if stored at 20°C 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

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

### Dual Cure 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

Please consult the information on **the Safety and Handling of Dual Cure Emulsion** in the Chaiyaboon Material Safety Data Sheet.

## ENVIRONMENTAL INFORMATION

### Dual Cure Emulsion:

- 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 moderately biodegradable as determined by the OECD 301D Closed Bottle Test.
- Does not have any volatile solvents and is therefore less harmful to the environment when compared with solvent-based products.

## TECHNICAL SERVICE AND INFORMATION

For further information or other relevant data, please do not hesitate to contact us. Chaiyaboon Brothers Company (CBC) has a team of well-trained personnel who are ready to give help and advise regarding product information and application.

**PROBLEMS AND SOLUTIONS**

PROBLEMS	PROBABLE CAUSES	PREVENTIVE OR CORRECTIVE ACTIONS
<p><b>1. Image does not wash out at all.</b></p>	<p>a) Accidental exposure, for example sunlight or artificial light.                      b) All parts or certain parts of the screen dried with excessive heat.                      c) Sensitized emulsion exceeding maximum storage life.</p>	<ul style="list-style-type: none"> <li>• Ensure emulsion or coated screen is not exposed to daylight or artificial light source.</li> <li>• Dry the screen at no more than 40°C.</li> <li>• Use freshly sensitized emulsion.</li> </ul>
<p><b>2. Only part of the image washes out</b></p>	<p>a) Uneven coating on screen                      b) Montage positives made of films with different clarity                      c) Overexposure time for detail areas                      d) Uneven Contact</p>	<ul style="list-style-type: none"> <li>• Ensure that the screen is taut and coating trough is undamaged.</li> <li>• Ensure that the same type of film is used for image area.</li> <li>• Use dyed mesh or reduce exposure time.</li> <li>• Check vacuum frame for contact between positive and screen.</li> </ul>
<p><b>3. Open areas of stencil do not print</b></p>	<p>a) Uneven coating on screen                      b) Screen Blockage caused by underexposure. Emulsion runs down squeegee side of screen, causing blocking in the development or hardening stage.</p>	<ul style="list-style-type: none"> <li>• Ensure that the screen is taut and coating trough is undamaged.</li> <li>• Increase exposure time.</li> </ul>
<p><b>4. Exposed stencil washes away from screen or premature stencil breakdown</b></p>	<p>a) Underexposure                      b) Under-sensitized emulsion                      c) Mesh improperly prepared and degreased                      d) Excessive water pressure used during development                      e) Incorrect coating technique.</p>	<ul style="list-style-type: none"> <li>• Increase exposure time.</li> <li>• Ensure that the sensitizer is completely dissolved and thoroughly mixed with the emulsion.</li> <li>• Thoroughly degrease and prepare the screen with Degreaser or Screenprep before emulsion coating.</li> <li>• Ensure that the screen is fully soaked before it is gently sprayed.</li> <li>• Coat both sides of mesh.</li> </ul>
<p><b>5. Image has excessive sawtooth</b></p>	<p>a) Screen developed with excessive water pressure.                      b) Insufficient contact between positive and screen.                      c) Mesh too coarse for design.                      d) Insufficient build of emulsion.                      e) Underexposure.</p>	<ul style="list-style-type: none"> <li>• Ensure that the screen is fully soaked before it is gently sprayed.</li> <li>• Ensure that even contact is obtained between positive and screen.</li> <li>• Use mesh with higher mesh counts.</li> <li>• Increase the number of coats on the squeegee side.</li> <li>• Increase exposure time.</li> </ul>
<p><b>6. Fisheyes and Pinholes</b></p>	<p>a) Screen improperly prepared.                      b) Blemishes on emulsion coating.                      c) Environmental contaminants.                      d) Air bubbles in emulsion.                      e) Dirty glass or positive during exposure during exposure.                      f) Coating too fast                      g) Insufficient exposure</p>	<ul style="list-style-type: none"> <li>• Thoroughly degrease and prepare the screen with Degreaser and Screenprep before emulsion coating.</li> <li>• Ensure that coating trough edge is clean and no dried emulsion has accumulated in the trough.</li> <li>• Ensure that working area is clean and dust is limited.</li> <li>• Allow time for the mixed emulsion to de-gas.</li> <li>• Ensure that glass and positive are clean</li> <li>• Slow down to let mesh aperture fill fully without aeration.</li> <li>• Increase exposure time.</li> </ul>

*The information and recommendations contained in this Product information sheet, as well as technical advice otherwise given by representatives of our Company, whether verbally or in writing, are based on our present knowledge and believed to be accurate. However, no guarantee regarding their accuracy is given as we cannot cover or anticipate every possible application of our products because manufacturing methods, printing stocks and other materials vary. For the same reason our products are sold without warranty and or condition that users shall make their own tests to satisfy themselves that they will meet fully their particular requirements. Our policy of continuous product improvement might make some of the information contained in this Product information sheet out of date and users are requested to ensure that they follow current recommendations.*