



## Dirasol Enduro Diazo Photopolymer Emulsion

**Dirasol Enduro is a high solids dual cure emulsion, specifically designed for use with mechanically and chemically aggressive inks, such as the highly abrasive glass frit used in the ceramic and glass printing industries. It can be used across a wide range of coarse and fine meshes, and has extremely good mechanical and chemical resistance. This ensures Dirasol Enduro has a long stencil life, particularly when used in combination with Sericure stencil hardener.**

### Safe Lighting

All handling of Dirasol emulsions should be carried out in light that is low in blue and ultra-violet content. A photographic safelight is not essential, but it is advisable to use yellow or weak tungsten illumination. Gold fluorescent tubes provide a useful form of light for the workroom. Daylight should be excluded or filtered by a yellow lacquer coating or film applied over the windows.

### Sensitising

Dirasol Enduro is supplied as a two pack system consisting of:

- Part A – coloured emulsion
- Part B – diazo sensitiser

which should be mixed as follows:

1. Add water to the sensitiser bottle to not less than 80% of its total capacity and shake until the sensitiser is fully dissolved.
2. Add the sensitiser solution to Part A and thoroughly stir in with a plastic or wooden stirring stick. Ideally the emulsion should be allowed to de-gas for one hour before use.

**If stored at room temperature, the sensitised emulsion should be used within a two-week period.**

### Preparing the Screen

Degrease the mesh in automatic machines using Xtend Prep 300 Sprayable Degreasing Concentrate or by hand with Prep 102 Degreasing and Emulsifying Concentrate. When degreasing by hand, wet the screen and apply Prep 102 with a sponge or brush and then rub the mesh with a light circular motion. Ensure that both sides of the screen are thoroughly treated. Leave to stand for a minute and rinse with cold water to remove all traces of Prep. Allow mesh to dry before coating.

### Sericol Coating Troughs

Sericol Coating Troughs are designed for accurate and consistent coating of direct photostencil emulsions. The troughs are composed of precision extruded aluminium channelling fitted with injection moulded end pieces. The channelling has a hard anodised finish, which effectively seals the surface. This makes cleaning easy and also protects from corrosion. The end pieces have a special shoulder, which ensures the coating edge is consistently at the optimum angle in relation to the screen. To help eliminate the beads formed at the extremities of conventional troughs, special slots have been incorporated into the end pieces. These features permit even relatively inexperienced operators to coat screens faster and more accurately. Sericol Coating Troughs have been designed to deposit medium coating thicknesses. It is therefore possible to coat a screen to a given stencil thickness with fewer strokes than would be required with a sharper or less precise edge. The amount of emulsion used to coat a given area of a screen is principally governed by the fineness of

### Main Characteristics

#### Ink resistance

Water-based, Solvent-based, Oil-based and Conventional UV.

#### Colour

Pale Blue

#### Definition

Very good

#### Resolution

Good

#### Solids content

46%

#### Sensitised viscosity at 25°C (Mpas)

5500

#### Particularly suitable for printing

Ceramic tiles and transfers  
Architectural and automotive glass  
Water-based textile inks  
Discharge inks for textile

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the mesh. Sericol Coating Troughs have sufficient capacity to cover approximately 1.5-2m in a single stroke, and are available in sixteen standard sizes. When ordering please specify the overall length required, measured from the outside edge of one end piece to the other.

## Coating

### Automatic Coating

Apply a simultaneous single coat to each side of the screen. If a higher build is required, a second simultaneous coat can be applied to each side of the screen or extra coats to the squeegee side of the screen.

### Hand Coating

Stand the screen on edge, slightly inclined away from the operator and process the screen as follows:

Depending on the stencil build required, Apply 1 coat to the print side of the screen followed by 1 or 2 coats, wet-on-wet, to the squeegee side of the screen. Depending on the stencil build required, more coats can be applied to the squeegee side to increase build.

## Drying

The freshly coated screen must be dried in darkness or subdued yellow light, ideally in a horizontal position, squeegee side up. A warm air fan or well-ventilated heated cupboard (up to 40°C) with relative humidity levels from 20 - 40% may be used. Care should be taken not to blow dust on to the drying screen. For maximum stencil durability, the screen must be thoroughly dry before exposure. Dried screens must be removed from the heat when dry and stored at cool room temperature. When handled in this way the maximum storage time of a screen at room temperature should be 2 days, but is best processed within 24 hours.

## Exposure

Correct exposure is most important to obtain optimum resolution, definition and stencil life. With an unfamiliar emulsion or light source, the use of an exposure test scale is recommended. This can be done by:

1. Using an exposure calculator.
2. Placing a strip of fine detail positive film over a coated screen and giving it a series of stepped exposures using a black paper mask. The exposure time is usually doubled from one step to the next. The correct exposure is the longest exposure that can be given whilst still obtaining optimum stencil resolution after washout. Over exposed areas result in loss of detail, whilst under-exposed areas may result in weak, thin stencils.

Position the positive, emulsion side in contact with the Dirasol coating, on the underside of the dry screen, securing it with clear tape. Then place the complete screen into the vacuum print-down frame and ensure perfect contact before exposing.

The following guides can be the basis of an initial test exposure.

### Suggested Exposure Guidelines

Mesh	Light Units	mJ/cm <sup>2</sup>
34.100*	1000	3000
62.64*	600	1800
77.55†	600	1800
90.48†	500	1500
120.40†	350	1000

Based on a 5kw metal halide lamp at a distance of 1m, using dyed mesh.

\*White mesh †Dyed mesh

Exposure values quoted are the times required to fully cure and therefore completely harden the sensitised emulsion. Using these through-cure exposure values prevents emulsion being washed away from the inside of the stencil during development and ensures stencils of optimum definition, durability and decoatability. Where the prime requirement is stencil resolution the exposure time may be reduced.

Multifilament, stainless steel, different coloured mesh and multi-coat stencils require longer exposure. White mesh requires a shorter exposure. The length of exposure time depends on the light source, the thickness of the Dirasol coating, the fineness of the mesh, and the transparency of the background of the positive.

Humidity levels above 55% should be avoided in the exposure area as emulsions will reabsorb moisture, leading to effective underexposure and premature stencil breakdown.

## Developing

Place the screen in a sink or automatic developing machine and gently spray both sides with cold or warm water (not above 40°C).

After 30-40 seconds, the spray pressure can be increased slightly. Continue developing until all parts of the image appear clean and sharp. With thick, heavily coated screens, leave to stand wet for a few minutes before commencing spray development.

## Final Drying and Spotting

Dry with the aid of a warm air fan. Any small blemishes or pinholes, usually caused by dust specks or spots on the positive, can be filled in by spotting with a brush containing screen filler or sensitised Dirasol emulsion. If using water-based inks, use a water resistant emulsion and post expose. After spotting the screen is ready for printing.

## Stencil Treatments

The durability of Dirasol Enduro can be improved for long run lengths, or for production of library stencils by using Sericure stencil hardening agent. See 'Xtend Screen Fillers and Stencil Treatments' Product Information Sheet for more details.

## Reclaiming the Screen

### Automatic Screen Cleaning Machines

Remove ink residues using an Xtend Screen Cleaner and decoat stencil using diluted Strip Liquid Concentrate.

### Manual Screen Cleaning

Remove ink residues using a wipe soaked with an Xtend Screen Cleaner. Rinse the screen with water and then apply diluted Xtend Strip Powder or Strip Liquid to both sides of the stencil. Leave for a few minutes. The stencil can then be easily removed with a strong water jet or high-pressure water gun.

## Standard Packing

### Dirasol Enduro

EADUR/18 Large Jumbo Pack – Emulsion and sensitiser to make 18 (4x4.5) litres

## Storage

Unsensitised Dirasol should be stored in as cool a temperature as possible, but not below 2°C or above 35°C. Sensitised Dirasol should be stored under similar conditions, in its original container with the lid sealed. The product will remain stable at 22°C for up to two weeks but this can be extended by keeping in a household type refrigerator. The storage time will be significantly reduced as the temperature increases above 22°C.

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## Problems and Solutions

Faults	Probable Cause and Remedies
1. Image does not wash out at all	<ul style="list-style-type: none"><li>a. Accidental exposure - Check emulsion and coated screen have not been exposed to light source or daylight.</li><li>b. Screen dried with excessive heat - Dry at temperature not exceeding 40°C. Avoid hot spots.</li><li>c. Maximum storage life of sensitised emulsion or coated screen exceeded.</li><li>d. Check positive for opacity.</li><li>e. Storage in high humidity conditions.</li></ul>
2. Only part of image washes out	<ul style="list-style-type: none"><li>a. Uneven coating on screen - Ensure screen is taut and coating trough is undamaged.</li><li>b. Montage positives comprised of films of different clarity - Use same type film for image area.</li><li>c. Exposure time excessive for detail areas of design - Use dyed mesh or reduce exposure.</li><li>d. Uneven contact - Check vacuum frame for contact between positives and screen.</li><li>e. Over exposure - Reduce exposure time</li></ul>
3. Apparent open areas of stencil will not print	<ul style="list-style-type: none"><li>a. Inadequate washing out - Remove excess water from stencils.</li><li>b. Inadequate exposure resulting in squeegee side of stencil running down screen causing blocking during development or hardening.</li></ul>
4. Exposed stencil washing away from screen or premature stencil breakdown	<ul style="list-style-type: none"><li>a. Inadequate exposure - Dyed, multifilament and stainless steel meshes or multiple coatings all require longer exposure. A brown stained mesh after reclaiming indicates under-exposure.</li><li>b. Screen insufficiently dry prior to exposure - Extend drying time or reduce ambient humidity levels.</li></ul>
5. Image has excessive sawtooth	<ul style="list-style-type: none"><li>a. Screen developed with excessive water pressure - Pre-soak screen and use gentle spray.</li><li>b. Light scatter - Used dyed mesh.</li><li>c. Insufficient contact - Ensure even contact between positive and screen.</li><li>d. Mesh too coarse for design.</li><li>e. Insufficient build of emulsion - Coat squeegee side last.</li><li>f. Inadequate exposure - Increase exposure.</li></ul>
6. Fish Eyes	<ul style="list-style-type: none"><li>a. Screen improperly prepared - Thoroughly degrease with recommended preparation chemical.</li><li>b. Blemishes on coating - Ensure coating trough edge is clean and no skin particles have formed on the surface from prolonged use of uncovered emulsion in the trough.</li><li>c. Environmental contaminants - Ensure clean working area and limit dust contamination.</li></ul>
7. Pinholes in screen	<ul style="list-style-type: none"><li>a. Dirty glass or positive during exposure.</li><li>b. Coating too fast - Slow down to allow mesh aperture to fully fill without aeration.</li><li>c. Air bubbles in emulsion - Allow time to degas after mixing with sensitiser.</li><li>d. Under-exposure - Increase exposure times to avoid weak stencil.</li></ul>

## Fujifilm Sericol UK Limited:

- Has certification to the International Environmental Standard, ISO 14001.
- Is committed to minimising the risk to users of our products, and also to minimising the impact of our activities on the environment, from formulation through to production and supply.
- Research & development team, work to an in house Health, Safety and Environmental policy, termed 'Design for Health, Safety and Environment', with the aim of proactively developing products with the least impact on health, safety and the environment.
- Regularly review and monitor our impacts and activities, setting objectives and targets as part of a continual improvement process.
- Is committed to reducing waste through better use of raw materials, energy, water, re-use and recycling.

## Safety and Handling

### Dirasol Enduro

- Has a flashpoint greater than 55°C and is therefore not classified as a 'dangerous substance' under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

Comprehensive information on the safety and handling of Dirasol emulsions and Diazo Sensitiser is given in the appropriate Sericol Safety Data Sheets, available upon request.

## Environmental Data

### Dirasol Enduro

- Does not contain ozone-depleting chemicals as described in the Montreal Convention.
- Is free of any volatile solvent and can therefore be considered to have less impact on the environment, when compared with solvent-based products.
- Is free from phthalate plasticisers.

*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 and because manufacturing methods, printing stocks and other materials vary. For the same reason our products are sold without warranty and on 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.*

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