



Dirasol Pre-sensitised Emulsions

125 - 132

These pre-sensitised photostencil emulsions offer distinct production advantages without compromising quality and performance. Dirasol 125 is specifically formulated for plastisol and water-based inks used by textile printers and requires very short exposure times. Dirasol 132 has the same production advantages but is designed for graphic and industrial printing.

Main Characteristics		
Dirasol >	125	132
Ink Resistance	Plastisol and water-based	Solvent-based, conventional UV, and water-based UV
Colour	Blue	Blue
Definition	Good	Excellent
Resolution	Good	Excellent
Decoatability	Excellent	Excellent
Solids Content (sensitised)	35%	38%
Dry coating weight	58g/m ² †	38g/m ² ‡
Stencil Build (microns)	25†	4‡
Sensitised viscosity at 25° (mPas)	4500	6000
Approx. shelf-life (22°C)	24 months	12 month
Approx. coated screen life (22°C)	6 months	3 month
Typical through-cure exposure speed using 5kw metal halide lamp at 1.2m.	8-12 secs/16-24 secs†	42 secs‡

†2+2 coats on 62.64 white mesh. †1+2 coats on 150.34 dyed orange mesh.

Properties

Dirasol 125

One pot system, ultra-fast exposure speed, easy decoatability, outstanding resistance to plastisol and water-based textile inks.

Dirasol 132

Outstanding resolution and definition. Highly resistant to solvent based and conventional UV inks. Good resistance to high humidity conditions.

Instructions for Use

Safelighting

Dirasol photopolymer emulsions are pre-sensitised, and therefore sensitive to light at all times. All handling of Dirasol emulsions should be carried out in light which is low in blue and ultra-violet content. A photographic safelight is not essential but yellow or weak tungsten illumination is. A useful form of light for the workroom is provided by gold fluorescent tubes. Daylight should be excluded or filtered by a yellow lacquer coating or film applied over windows. Coated screens should be stored in total darkness.

Preparing the Screen

Degrease the mesh in automatic screen cleaning machines using Xtend Prep 300 Sprayable Degreasing Concentrate or by hand with Prep 102 Degreasing and Emulsifying Concentrate. When degreasing by hand using Prep 102, wet the screen and apply 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 few minutes and rinse with cold water to remove all traces of Prep. Allow the mesh to dry before coating.

Fujifilm Coating Troughs

Fujifilm 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. Fujifilm 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 the mesh. Fujifilm 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, followed by a second coat to the squeegee side. If a higher build is required, extra coats should be applied to the squeegee side of the screen. NB: For Textile applications (i.e. Dirasol 125), a single coat applied simultaneously to both sides of the screen should be sufficient.

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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 or 2 coats, wet-on-wet, to the print side of the screen followed by 1 or 2 coats applied, wet-on-wet, 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. A warm air fan or well ventilated heated cupboard (up to 40°C) may be used but 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 Dirasol screens may be stored in the dark at cool room temperatures for not longer than the time quoted in 'Main Characteristics', page 1.

Exposure

Correct exposure is most important to obtain optimum resolution, definition and stencil life. For this reason it must be determined by the use of the 'step and repeat' test exposure method, which is achieved by masking off sections of the image for a range of different exposure times. When using an exposure calculator, as there is no diazo colour change, the correct exposure is the first step at which no emulsion is washed from the squeegee side of the screen. For a durable stencil, the ideal time is the maximum exposure to achieve optimum resolution. If necessary repeat with smaller time intervals to determine exposure more accurately. The following times (seconds) can be used as the basis of an initial test exposure:

Lamp Type at 120cm	50 Amp Open Carbon Arc	Metal Halide				
		1000W	2000W	3000W	5000W	6000W
125	50-75	21-42	14-28	12-20	8-12	5-10
132	510-570	250-290	165-195	80-100	45-65	40-50

Exposure values achieved with the following screens:

125	62.64 white (2+2 Coats).
132	150.34 orange (1+2 Coats).

An HPR 125W Mercury Vapour Lamp achieved the same exposure values as a 1000W Metal Halide Lamp.

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.

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.

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 1-2 minutes 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 sensitised Dirasol emulsion or screen filler. After spotting, the screen is ready for printing. NB: If using water-based inks, the screen should be re-exposed to harden the emulsion used for spotting.

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 wiper soaked with an Xtend Screen Cleaner. Rinse the screen with water and then apply diluted 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.

SZP65 Diazo Sensitiser for Dirasol 125

The durability of Dirasol 125 can be improved by the addition of diazo sensitiser. This will improve resistance to discharge ink systems and improve durability when used in conjunction with textile belt printing machines. The correct quantity for 5 litres of Dirasol 125 is available under the product code of SZP65/14 and should be added as follows:

1. To avoid inhalation of diazo powder, add water to half fill the container and shake to dissolve.
2. Add the liquid to 5 litres of Dirasol 125 and stir thoroughly. NB: Shelf-life will be reduced to 1 week. Exposure times will increase approximately by a factor of 10. Screens may be more difficult to decoat.

Standard Packing

Dirasol 125

DJL27/10 Double Pack - 10 (2 x 5) ltr. emulsion.
DJL27/6 Mini Jumbo Pack - 6 (6 x 1) ltr. emulsion.

Dirasol 132

EM132/10 Double Pack - 10(2 x 5) ltr. emulsion.
EM132/6 Mini Jumbo Pack - 6(6 x 1) ltr. emulsion.

Storage

Store in original containers with the lid firmly sealed, at the coolest possible room temperature and in no case below 5°C or above 35°C. The emulsions will then remain stable for twelve months.

Dirasol Pre-sensitised Emulsions

Fujifilm Speciality Ink Systems 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 photopolymer emulsions:

- Are formulated to be free from any chemicals toxic to health, carcinogenic, mutagenic, or reprotoxic according to Directive 67/548/EC.
- Have a flashpoint greater than 55°C and are therefore not classified as dangerous substance" under the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

Diazo Powder:

- Is formulated to be free from any toxic, carcinogenic, mutagenic or reprotoxic chemicals.

Comprehensive information on the safety and handling of Dirasol emulsions and diazo powder is given in the appropriate Safety Data Sheets.

Environmental Data

Dirasol photopolymer emulsions:

- Do not contain ozone-depleting chemicals as described in the Montreal Convention.
- Are moderately biodegradable as determined by the OECD 301D Closed Bottle Test.
- Are free of any volatile solvent and can therefore be considered to have less impact on the environment when compared with solvent-based products.
- Are free from phthalate plasticisers.
- Have a pH of 4-5

Diazo Powder:

- Does not contain volatile organic solvents, or ozone damaging materials.
- Does not have any carcinogenic, mutagenic or reprotoxic properties.

Problems and Solutions

Faults	Probable Cause and Remedies
1. Image does not wash out.	<ul style="list-style-type: none"> a. Accidental exposure - Check emulsion and coated screen have not been exposed to a light source or daylight. b. Screen dried with excessive heat - Dry screen at even temperature not exceeding 40°C. Avoid hot spots. c. Maximum storage life of sensitised emulsion or coated screen has been exceeded.
2. Only part of image washes out.	<ul style="list-style-type: none"> a. Uneven coating on screen - Ensure screen is taut and coating trough is undamaged. b. Montage positives comprised of films of different clarity - Use same type film for image area. c. Exposure time excessive for detail areas of design - Use dyed mesh or reduce exposure. d. Uneven contact - Check vacuum frame for contact between positive and screen. e. Over-exposure - Reduce exposure time. f. Inadequate positive opacity - check density and adjust.
3. Apparently open areas of stencil will not print.	<ul style="list-style-type: none"> a. Uneven coating - Ensure screen is taut and coating trough is undamaged. b. Inadequate exposure resulting in squeegee side of stencil running down screen, causing blocking during development or hardening.
4. Exposed stencil washing away from screen or premature stencil breakdown.	<ul style="list-style-type: none"> a. Inadequate exposure - Dyed, multifilament and stainless steel meshes or multiple coatings all require longer exposure. A brown stained mesh after reclaiming the screen indicates under-exposure. b. Mesh improperly prepared and degreased. c. Excessive water pressure being used in development. d. Incorrect coating technique - Coat both sides of mesh. e. Emulsion not properly dried - Ensure moisture can escape when drying.
5. Image has excessive sawtooth.	<ul style="list-style-type: none"> a. Screen developed with excessive water pressure - Pre-soak screen and use gentle spray. b. Light scatter - Use dyed mesh. c. Insufficient contact - Ensure even contact between positives and screen. d. Mesh too coarse for design. e. Insufficient build of emulsion - Coat squeegee side last. f. Inadequate exposure - Increase exposure.
6. Fish Eyes	<ul style="list-style-type: none"> a. Screen improperly prepared - Thoroughly degrease with recommended preparation chemical. 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. c. Environmental contaminants - Ensure clean working area and limit dust contamination.
7. Pinholes in screen.	<ul style="list-style-type: none"> a. Dirty glass or positive during exposure. b. Coating too fast - Slow down to allow mesh aperture to fully fill without aeration. c. Under-exposure - Increase exposure times to avoid weak stencil.

The information and recommendations contained in this Product Information sheet, as well as technical advice otherwise given by representatives of Fujifilm Speciality Ink Systems Limited and its associated companies, 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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