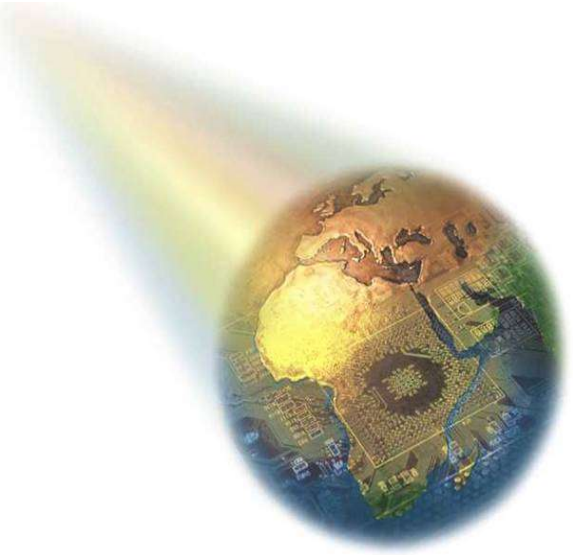

Coates Circuit Products

Technical Information

UK and Corporate Headquarters
Norton Hill, Midsomer Norton, Bath, BA3 4RT, England
Telephone: (44) 1761 414471 Fax: (44) 1761 416609.
www.coates.com

IMAGELINE™ XV750

DARK BLUE SCREEN

PRODUCT REFERENCE

Imageline™	XV750	Dark Blue Screen Etch Resist	CAWN1112

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ISO9001 **ISO14001**

imagination

1) DESCRIPTION

Imageline™ XV750 etch resist is a liquid photoimageable product which dries by evaporation to give a film that can be sensitised by exposure to UV wavelengths between 310 and 420nm. The unexposed material is developed in dilute alkaline solution with the remainder stable in both acid and alkali etchants and strippable in a strong caustic media.

This negatively-working etch resist offers the following advantages:

- Resolution capability up to and beyond 50µm (2mil).
- Single pack system offers long shelf life and good processing window.
- Acid or alkali etch resistant; also compatible with most electroplating media.
- Excellent adhesion and conformation to copper and other metal surfaces.

This Technical Information Leaflet (TIL) and the relevant Material Safety Data Sheet (MSDS) should be read carefully prior to using this product.

2) ENVIRONMENT

The choice of printing and exposure environment has been found to have a direct effect on fine line yield values. Every effort should be made to minimise the incidence of dust or fibres on the print room and exposure area.

It is therefore recommended that a Class 10,000 clean room be considered the minimum requirement for resolving features less than 100µm (4mil) at high yield.

Commercial, automated printing equipment may already contain some level of air filtration and the manufacturers or local Coates representatives can advise on its' suitability.

3) MIXING & THINNING

Imageline™ XV750 is supplied ready to use; however the addition of a small amount of (2% w/w maximum) of Imageline™ Thinner XZ101 will aid printing on more automated units.

N.B. The mixed resist should be stirred well before use.

4) PRE-CLEAN

Ensure that all copper surfaces are completely clean, tarnish free and dry prior to applying Imageline™. Mechanical pre-cleaning is recommended as follows: -

Brushing 280 - 400 grit silicon carbide brushes are recommended having a footprint on the copper of 8 - 15mm. (0.3 - 0.6 in). The water rinse and heater sections should be capable of thoroughly rinsing and drying the panels such that no water is left in the holes or between closely spaced conductors and that moisture or tarnish is not present on the freshly brushed panels.

It is important that each brush is regularly checked and dressed as necessary to ensure optimum efficiency during use.

Please note that Nylon brushes of 600 - 800 grit can also be used.

Pumice Pumice or Aluminium oxide slurry of between 12 - 18% is recommended with an optimum of 15%. The water rinse and heater sections must be capable of rinsing and drying the panels such that residual pumice particles are completely removed and that no water is left in the holes or between closely spaced conductors and that moisture or tarnish is not present on the freshly cleaned panels.

For panels that are badly oxidised and tarnished then a micro-etch prior to mechanical pre-cleaning is recommended. The micro-etch should be capable of removing any oxide or tarnish staining and of thoroughly rinsing and drying the panel before being mechanically cleaned.

A waterbreak free finish is usually indicative of a good cleaning process.

NOTE. It is recommended that all freshly cleaned panels are coated with Imageline™ XV750 as soon as possible after cleaning to reduce the possibility of contamination or re-oxidation. The actual maximum time between cleaning and coating will vary depending upon ambient temperature and humidity.

5) PRINTING

The Imageline™ XV750 series can be used with most types of vertical screen print units and horizontal screen print machines.

For use as an etch resist, Imageline™ XV750 can be applied using a 77 - 120T/cm. (195 - 305T/inch) polyester mesh. This will give a dry coat thickness of 8 - 10µm. (0.32 - 0.40 mil.).

For plating resist applications, polyester screen meshes in the range of 55 - 77T/cm. (140 - 195T/inch) are recommended to give a dry coat thickness of 10 - 20µm. (0.40 - 0.80 mil.).

For best results a 70 - 75 shore squeegee, angled at 10 - 15°, should be used.

All screens must be cleaned and thoroughly dried before use and free from residues of screen cleaner and any ink residues.

6) CLEANING

Screen printing equipment may be cleaned using Imageline™ Screen Thinner XZ101 or Coatazol Universal Screenwash 11-00.

7) PRE-DRY

Good drying of the printed film is important so ovens with good temperature profiles and extraction are necessary. Specific drying parameters (time and temperature) will be dependent upon the specific oven used as well as the thermal mass and quantity of the panels being dried.

Imageline™ XV750 has a wide process window, meaning tack dry temperature and times can be tailored to a specific process. The following data can be used as a guide:

Etch Resist	Side 1	5 - 10 minutes at 85 - 90°C (185 - 194°F)
	Side 2	15 - 20 minutes at 85 - 90°C (185 - 194°F)
Plating Resist	Side 1	5 - 10 minutes at 85 - 90°C (185 - 194°F)
	Side 2	20 - 25 minutes at 85 - 90°C (185 - 194°F)

For double sided, vertical screen printing equipment the expected drying parameters would be: -

Etch Resist	20 - 30 minutes at 85°C - 90°C (185°F - 194°F).
Plating Resist	25 - 35 minutes at 85°C - 90°C (185°F - 194°F).

Boards can be held in this condition in safe light areas for one month at least.

The Imageline™ XV750 series can also be dried in IR ovens. Specific times and temperatures will depend on the specific Infra red oven used. Please discuss with your Imageline™ partner the specific settings before use.

Allow an adequate gap between panels. Spacing of 25 - 40 mm (1 - 1.6 in.) is recommended to ensure sufficient air flow between panels.

8) EXPOSURE

Ensure artwork and exposure unit drawers are clean and dust free prior to exposure to minimise 'repeat' defects. Additionally, the coated substrate may be tacky rollered to reduce any incoming contamination.

Resist Spectral Sensitivity	310 - 420nm.
Exposure Energy Requirement	150 - 250mJ./cm².
Step Wedge	5 - 7 Solid (Stouffer 21 Step)

The correct exposure settings should be confirmed after the developer parameters have been fixed. The step values should be determined with the Stouffer wedge beneath the artwork.

The exposure energy data is quoted as a guide and should only be used for monitoring the lamp output.

It is recommended that the resist be exposed to a step of at least 6 for electrolytic plating applications.

There is no hold time requirement for Imageline™ XV750 before development, but if required exposed material can be held for up to 72 hours without adversely affecting stripping speed.

9) DEVELOPMENT

Spray develop with 1.0% anhydrous sodium or potassium carbonate solution at 30 - 40°C (100 - 104°F). Optimum 35° C (95°F).

Spray pressure should be 1 - 2 bar (15 - 30 PSI).

The dwell time in the developer chamber should be adjusted so that an unexposed board develops completely off within 75% of the chamber length. In practice this should result in dwell times of 45 - 60 seconds.

The panels should be well rinsed with fresh water immediately after development. It has been shown that a warm water rinse is particularly suited for sodium carbonate developers.

10) POST BAKE

A post bake step may be required to improve resistance to copper or tin / lead electroplating chemistries.

A post bake of 120°C (248°F) for 30 minutes is suggested.

11) ETCHING

The resist is suitable for most common etch solutions up to pH9. Its effectiveness in alkaline and highly oxidising etchants should be tested prior to running production materials.

It has been found that the lower thickness of Imageline™ XV750 Screen improves etching efficiency over dry films and therefore shorter dwell times may be expected.

12) PLATING

The following current densities have been used successfully with Imageline™ XV750: -

- Cu = 25ASF 30 minutes
- Ni = 25ASF 10 minutes
- Au = 25ASF 10 minutes

13) STRIPPING

Imageline™ XV750 can be stripped in 5% aqueous solutions of sodium or potassium hydroxide at 40 - 50°C (104 - 122°F). The resist strips as small flakes in this solution and can be removed by filtration.

Other commercially available strippers may be used if the substrate is known to be sensitive to aqueous caustic solutions.

13) STORAGE AND SHIPPING

When stored in sealed containers, in a cool place (20ºC / 68ºF), away from sources of direct heat and sunlight, Imageline™ XV750 has a shelf life of 18 months.

14) PACKING

Imageline™	XV750	Dark Blue Screen Etch Resist	1.00 kg.	CAWN1112
Imageline™	XZ101	Thinner	5.00 L.	CDSN4041
Coatazol	11-00	Universal Screenwash	5.00 L.	CDSN4000

15) DISCLAIMER

This information has been carefully compiled from experience gained in field conditions and extensive laboratory testing. However the products' performance and its' suitability for the customers' purpose depend on the particular conditions of use and the material being printed. We recommend that customers satisfy themselves that each product meets their requirements in all respects before commencing a production run. Since we cannot anticipate or control the conditions under which our products are used, it is impossible to guarantee their performance. All sales are also subject to our standard terms and conditions.

16) SUPPORT

Coates are an international company, and as such can offer technical, engineering and sales support to our customers worldwide. If you require more information regarding this product, or any of our extensive range of materials for PCB fabrication, please contact our local sales offices.