Textile Screen Inks

PIONEER ULTRA YC

PVC/Phthalate free plastisol ink

Features

- PVC/Phthalate free
- Oeko-Tex® Standard 100 Compliance
- Approved by Soil Association Certification to Global Textile Standard (GOTS) for use in organic textile processing.
- Heavy metal free
- Good Opacity
- Excellent Wet-on-wet printability
- No Ink build up.
- Good wash fastness
- Suitable for Machine & manual printing

TEST INKS ON SUBSTRATES BEFORE PRODUCTION RUN

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PVC resins and Phthalate plasticisers have been under pressure from environmental pressure groups to be eliminated,following claims that they pose a threat to human health and to the environment. Both are widely used in the manufacture of plastic products that are part of everyday life, and they have been used for the manufacture of plastisol inks for many years. Pressure groups have raised the issues with sportswear
companies and high street retailers who in turn have sought to reduce the use of these raw materials in their products.

Pioneer Ultra YC is a range of maximum opacity, plastisol inks designed for printing most natural and synthetic fabrics. Pioneer Ultra YC inks are formulated to be PVC/Phthalate Free. The Texopaque Series also includes Classic TP/OP, a conventional plastisol and Advantage ON,a phthalate free plastisol (see Advantage ON product information sheet for details).

Curing Information

It is essential that the entire thickness of the ink film has time to reach the full cure temperature of 155C to 165C or resistance properties, such as wash & rub fastness, will not be achieved.
Evaluate your cure schedule by testing the print at the wash schedule that it will ultimately be expected to pass. It is recommended that cure temperature is confirmed with the use of thermal testing strips.

Factors such as ink film thickness and colour, drying equipment and fabric all influence the cure schedule needed. In most cases the oven temperature will need to be set higher than 155C for the ink to reach full cure in a time of 2-3 minutes so that during continuous production run the cure temperature minimum 155C will reach on the garment and the print should be allowed to be cured for 2-3 minutes.

Flash Curing

Under optimum conditions, dwell times of less than 5 seconds can be readily achieved. YC757 Pioneer Flash Cure White should be used, Many factors affect the dwell time required for flash curing. These include the type and wavelength of the equipment used and the distance between the curing unit and the print. Additional factors such as fabric and ink colour, film weight and coverage are also crucial.
Optimum Flash Time & Temperature can be adjusted as per the job requirement

Fastness

Pioneer Ultra YC has good wash fastness to ISO Test No's 1(40 C), 2 (50 C) and 3 (60 C) Prints may be ironed from the back of the fabric at a cool setting, with a cloth over the printed area. Prints will not resist dry-cleaning and garments should be marked to this effect.

SPECIAL NOTE

It is essential that all the jobs are proofed prior to production to ensure wash fastness properties are acceptable.
For better wash fastness and crock test it is recommended to add 20% to 30% of YC 381 or YC-433 in YC-162, YC-124, YC-134, YC-203, YC-206, YC-210 as these colours have high pigment loading this will give good stretchability and wash fastness to the jobs that contain solid patches where coarse mesh/high ink deposits are used.

The selection of YC 433 or YC-381 for mixing into above indicated colours to improve wash fastness and crock tests has to be studied by the customer to meet the job specification before production run.

Print Tack before and after fusing

If tack is observed in solid patch printing by YC inks then the printer must use YC 433 as Over print base for all types of jobs (except small text printing jobs generally done for Tagless printing Application) and moreover the use of YC433 will also enhance / improves the wash & rub resistance properties of the print. It is essential that all jobs should be proofed at a sampling stage with using YC 433 as a over print base prior to production run to ensure all the properties including colour of the print are acceptable / meet the job specifications.

IMPORTANT

Stir well before every use. Users should satisfy themselves that Pioneer Ultra YC is compatible with specific textiles and that rub, stretchability and other resistance properties are acceptable before commencing production runs.
Please read the section 'Important Information for using Pioneer Ultra YC'.

Applications

Most knitted and woven fabrics typically used for T-shirts, Sweat Shirts, Sports and Fashion Wear, Badges, Hats and Caps, Travel Bags, Footwear.

Fabrics

Suitable on most common natural and synthetic fibres, for e.g,Cotton and Cotton/Polyester blends. Many grades of synthetics.

Curing

The ink film must reach 150ºC. See further details on curing in the 'Tips on using Pioneer Ultra' section.

Thinning

Supplied press-ready. High initial gel will break down after stirring/mixing. Up to 5% YC591 Thinner may be added if necessary.

Wash Up

Wash up with SS639 Screen Wash Universal.
Monofilament 34-100

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Stencil
Most direct stencil materials are suitable.
Recommended: Dirasol SuperTex or Dirasol 125

Coverage & Mesh
12-16m2/ltr. No 43 monofilament.

Intermixing & compatibility with other inks
Pioneer Ultra YC colours can be mixed for immediate use with other plastisols, but only where PVC/phthalate content in the finished product is permissible.

Heat Stability
The combination of raw materials used in Pioneer Ultra YC is not as stable or tolerant of elevated temperatures (>35°C) during long transportation over sea, long storage. The ink may appear thick over time (often referred to as a false gel) this false gel can normally be broken down by hand mixing with spatula for 5 minutes.

Inks that have been used on press in very hot conditions, such as multiple flash cure prints, should not be returned to the container containing fresh ink.
†
Avoid prolonged mechanical shaking as it can generate high levels of heat.

For better storage stability, it is recommended to store the Pioneer Ultra YC inks in air-conditioned room below 25ºC, with relative humidity 50 to 65%.

Pioneer Ultra YC, a PVC and phthalate free plastisol is developed to meet the demand for more environmentally friendly print jobs.While Pioneer Ultra YC is technically a true plastisol, because of it's different chemical make up from a traditional plastisol, it will not always give the same printed results as conventional plastisols. The following information will enable optimum results to be obtained with Pioneer Ultra YC.

To give guidance, the table below compares some of the basic characteristics of Pioneer Ultra YC with and without YC433EW

	Pioneer Ultra YC	YC with 433	TP/OP	ON
Heat Stability	3	3	4	4
Wet on Wet Printing	3	3	4	4
Wet Rub	3	4	4	4
Dry Rub	2	3	3	3
Wash Fastness	3	4	4	4
Print Handle	3	3	4	4
Elasticity	2	2	3	3
Cure Temperture	155ºC	155ºC	140ºC	140ºC

Key: 4 =Excellent, 3 = Very Good, 2 = Good

Colour Matches
It should be noted that the combination of high wash temperatures and strong detergents can cause colour changes in some colour matches, particularly when very small additions of a base colour are added. For example, pastel shades can change colour as the trace additions of base colours are affected in harsh wash cycles. For this reason, it is essential that all formulations are proofed prior to production to ensure wash fastness properties are acceptable.

It is very much essential to use OVER PRINT BASE YC433 on all prints as this will enhance wash and rub resistance, while during proofing stage and production run

Wet on Wet Printing/Flash Curing
Pioneer Ultra YC standard colours can be printed wet-on-wet with results close to that obtained with plastisols like Classic TP/OP or Advantage ON.
Printers should expect more build up during multi-colour printing.YC inks are very fast flash curing, although their heat sensitivity means that high ambient temperatures or excessive heat from multiple flash-cure units can cause the inks to start to cure in the screen.

Fluorescent and metallic colours are not recommended for wet-on-wet printing.

Wet/Dry Rub
Wet rub & dry rub fastness of YC prints is very good.
The Grey Scale grade will vary from colour to colour, but the dry rub can be improved further by either mixing 10%-30% of YC381 Pioneer Ultra Extender Base into the colours or by overprinting with a layer of Yc433. Mixing the extender base in the colours will generally improve the print by half a grade whereas the overprint will achieve acceptable grades. For the overprint use mesh counts from 77-90T.

Note: High street stores and garment/sportswear manufacturers will generally have their own levels for acceptable rub fastness. Printers must carry out their own tests to satisfy themselves that the rub levels will meet fully with their end users requirements.

Print Handle
Printing through fine meshes such as 77 to 90 will help to improve the handle of a print, as less ink is deposited onto the garment. The addition of up to 30% of YC381 base will also help to soften the feel of the finished print. The ratio of Extender base will depend on the end users requirements and what they perceive as acceptable handle. Start at 10% and add accordingly.

Note: There will be loss of colour strength / opacity with high additions of extender base.

Elasticity

The elasticity of Pioneer Ultra YC is lower but very close to conventional plastisol.
To enhance elasticity of the final print, a clear under base (YC381 Pioneer Ultra Transparent Base) can be printed through a 43-61 mesh. Print 2 layers to ensure a smooth finish for the flash white and colours.
It is also essential to use YC433 as over print base to achieve wash and rub resistance properties. Use of YC433 will not change the elasticity of the print.

Fibrillation

Fibrillation occurs when fibers from the garment break through the ink film during a wash cycle to give a faded appearance. While fibrillation has the look of poor wash fastness it is not caused by the loss of ink; it occurs even with fully cured prints. There are several methods like below to minimise fibrillation.
1) Increased ink film weight
2) Use of YC 381 as a base coat.
3) Use of flash-cure white as a base coat.
4) Use of Flash Cure White.

As demand for low handle/low film weight prints increases, so does the likelihood of fibrillation. The complex relationship of ink, print and fabric reinforces the need to wash test-prints to customer requirements prior to production

Transfer Printing

YC inks can be used for transfer printing along with YC-397 as an Adhesive and XMI378 Transfer powder.
For tagless transfers YC colours should be catalysed by 3% YC-444.
Mesh for colours: 77T to 90T
Mesh for Adhesive YC-397 : 29T to 43T
Each colour should be cured and then next colour should be printed. YC-397 after printing should be sprayed with XMI378 powder. curing temperature for colours and Adhesive is given below.

Curing temperature

YC colours: 130ºC to 140 ºC for 70 seconds to 80 seconds.
Adhesive: YC-397 and XM-378: 160ºC to 170 ºC for 70 seconds to 80 seconds.

Fusing:

Temperature: 170ºC to 175 ºC for 70 seconds to 80 seconds.
Pressure: 4bar/ 60 psi
Time: 10 seconds.

Squeegee

Squeegee requirements will vary according to each design.To get the best results from Pioneer Ultra YC, we recommend triple durometer squeegees, as they are able to shear the ink more effectively than conventional squeegees. For the flash white we recommend a 75/95/75 green squeegee, as this will provide a good base white to print on. For the colours use 65/95/65 squeegee or 75/95/75 dependant on the level of detail required.

Important: The Pioneer Ultra range has been developed using non-phthalate plasticisers and non-PVC resins.
However in addition users must be aware of potential sources of contamination such as squeegees, flood coaters, screens and curing equipment, which may all contribute trace amounts of phthalate and PVC from previous use with other plastisols.

Chemical Analysis

The Pioneer Ultra YC range is formulated to be free from PVC and Phthalates and also all other raw materials used in this product range are formulated NOT to contain these substances.
Realistically, the only source of PVC contamination is a PVC resin, which is not used at all in these products. Every batch of YC is tested for the presence of phthalates and these products are made in a isolated and dedicated location using dedicated equipments where no PVC and phthalate contamination is likely. It is therefore, expected that the YC range of products will be free of any PVC or Phthalate contamination.

Oko-Tex Standard 100; EN71-3: 1995 Toy Safety Standard and Nike RSL :

Pioneer Ultra YC is tested at International testing houses for PVC, Phthalates, Azo-dyes, Heavy Metals, Organo tin compounds such as TBT /DBT, Formaldehydes and results comply to meet the standards required by Oko-Tex Standard 100; EN71-3: 1995 Toy Safety Standard and Nike RSL.
However, confirmation of compliance to above Standards by International testing houses for each batch of YC range of products is logistically and commercial unviable. Hence, we are unable to issue test certificates for each batch from the International testing houses. Hence, final confirmation of the printed item's compliance to the job requirement remains the responsibility of the Printer.

Important Note on PVC test method:

The test method which best identifies the presence of PVC is solvent extraction followed by FTIR spectroscopic analysis. Extraction using THF/CAN is the only reliable method: other solvent extraction methods can give erroneous results. The Beilstein flame test is not advised as it may falsely show a greenish flame for some colours thereby misleadingly indicating the presence of PVC. This is due to the nature of the pigment used, which may contain chlorine. The Beilstein test is only for chlorine. It can therefore only show if PVC is not present, by a negative result being obtained. A positive result will show that chlorine is present, but not where it comes from. It could then be confused with presence of PVC where none exists.

Hence, we strongly recommended that testing for the presence of PVC is done only at a lab which uses the THF /ACN+ FTIR method for PVC analysis, such as Bureau Veritas International testing house.

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Colour Range

Seritone & Line Colours

YC-001	(S)	Black
YC-021	(S)	White
YC-042	(S)	Seritone Yellow (Green Shade)/Light Chrome
YC-043	(S)	Seritone Yellow (Red Shade)/Mid Chrome
YC-162	(S)	Seritone Orange/Light Red
YC-134	(S)	Seritone Red (Yellow Shade)/Red
YC-124	(S)	Seritone Red (Blue Shade)/Deep Red
YC-203	(S)	Seritone Blue/Mid Blue
YC-206	(S)	Seritone Blue (Red Shade)/Deep Blue
YC-165	(S)	Seritone Magenta
YC-166	(S)	Seritone Violet
YC-210		Blue
YC-285	(S)	Seritone Green/Deep Green
YC-381	(S)	Extender Base
YC-757		Pioneer Flash Cure White
YC-037		Athletic White

Trichrmatic Colours

YC-058	Trichromatoic Yellow
YC-215	Trichromatic Cyan
YC-135	Trichromatic Magenta
YC-004	Trichromatic Black

Fluorescent Colours

YC-077	Fluorescent Yellow
YC-119	Fluorescent Orange
YC-179	Fluorescent Red
YC-180	Fluorescent Magenta
YC-294	Fluorescent Green

Speciality Inks

YC-475	Metallic Gold
YC-476	Metallic Silver
YC-417	Expanding Base
YC-397	Transparent Base
YC-433	Over Print Transparent Base
YC-410	Grey colour Dye Blocking Base

YC-410 Grey Dye Blocking Base:

Some Fabrics which are blended like 60:40 cotton polyester blend; will tend to bleed the dye from the fabric on to the prints. Dye bleed is more observed when light colours are printed. YC-410 is a grey blocking base which should be used as an undercoat and the colours should be printed on the top of the YC-410 Grey dye blocking base which will then block the dye migrating from the fabric to reach the surface of the print.

Thinner

YC591	Pioneer Ultra YC Thinner

All colours available in 1kg, 5kg & 20 Kgs containers.

Ancillary Products

During printing, fabrics have to be held on the table by means of a pressure sensitive adhesive to obtain good definition of print. Flash Fix and T-Fix Spray Adhesives are recommended for this purpose. (See relevant product information sheets).

Storage

- Keep inks cool place, away from direct sunlight.
- Keep lids tightly closed when not in use
- Any unused ink should not be returned to the can, must be stored separately.
- Shelf life is 12 months from the date of manufacturing.
- Stir well before use.

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Safety and Handling

Pioneer Ultra YC:

- Is formulated free from phthalate plasticisers. and PVC.
- Is formulated to be free from any chemicals toxic to health, carcinogenic, mutagenic or reprotoxic.
- Is formulated free from lead and other heavy metals and is tested to comply to the EN71-3: 1995 Toy Safety Standard.
- Should be stored in an air-conditioned room at below 25C. Storage temperatures above 35ºC will reduce the shelf life of the product. See section on Heat Stability Page 2

Environmental Information

Pioneer Ultra YC:

- Does not contain ozone-depleting chemicals as described in the Montreal Convention.
- Is formulated free from aromatic hydrocarbons, which are known to have an adverse effect on the environment.
- Is free of any volatile solvent and is therefore beneficial to the environment when compared to solvent-based products.
- Is formulated free from PVC containing resins.

Important Note:

The information and recommendations contained in this product information sheet as well as technical advice otherwise given by representative of our company, whether verbally or in writing, are based on our present knowledge and experience. Such information/ technical advice is given in good faith, but without warranty, in view of the many factors that may affect processes or applications 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 the products will meet fully the particular requirements of the labels/ brands/ agencies of their clients and also that no proprietary rights and existing laws and legislation are violated.

Our advice does not relieve processors from the responsibility of carrying out their own tests and experiments, nor does it imply any legally binding assurance in respect of properties or suitability for a specific purpose or of the legal status of the listed products.

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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