UNION INKS

Product Information

UNI-TEX SCREEN INKS
80-00 SERIES

TIL NO: 801

PROPERTIES

80-00 series of water based coloured inks are specifically formulated with resinated polymers for screen printing applications on knitted and stretchable fabrics. This allows the printers to have a very soft, rubbery feel, glossy finish and excellent opacity even on dark fabrics. These eco inks are:

- PVC Free
- Tin and Phthalate Free
- APEO Free

Characteristics of 80-00 series:

- The mixing of 21 basic colours is capable to produce most of the Pantone shades.
- Ink consistency in long print runs of up to 5000 – 10000 can be achieved similar to those of PVC Plastisol based inks.
- It gives thinner ink film and these results in lower ink consumption, soft, iron able and non-cracking of printed garments even after 20 – 50 washes.
- Excellent wash fastness (4 – 5) Water temperature 45 degree C.
- Excellent crock fastness (Dry 4 – 5 and wet 3 – 4).
- User friendly as they limit the exposure of workers to organic solvent vapours during cleaning and washing of the screens.

PRODUCT RANGE

The basic ink shades are:

S/No.	Ink Code	Description
1.	80-W100	Base White
2.	80-W101	Top White
3.	80-W102	Mixing White
4.	80-K100	Black
5.	80-UA100	Ultramarine Blue
6.	80-B100	Blue G/S
7.	80-B101	Blue R/S
8.	80-S100	Scarlet
9.	80-R100	Red
10.	80-Y100	Yellow
11.	80-G100	Green
12.	80-V100	Violet

13.	80-FB100	Fluo. Blue
14.	80-FM100	Fluo. Magenta
15.	80-FO100	Fluo. Orange
16.	80-FP100	Fluo. Pink
17.	80-FR100	Fluo. Red
18.	80-FY100	Fluo. Lemon Yellow
19.	80-FY101	Fluo. Saturn Yellow
20.	80-FG100	Fluo. Green
21.	80-FV100	Fluo. Violet

80-W100 Base White: High opacity grade for faster drying and mesh recommended for printing is 32 – 54 threads / cm mesh (80 – 140 mesh / inch)

80-W101 Top White: High opacity grade with similar drying to coloured inks and mesh recommended for printing is 62 – 120 threads / cm (160 – 300 mesh / inch).

80-W102 Mixing White: Medium opacity grade for super stretch fabrics (Lycra).

AUXILIARIES

80-D100 Clear Base is for dilution of inks without losing solid and printability.

80-D101 Puff Base is to be used along with 80-D100 Clear Base to prepare the printing paste to give 3D embroidery type effect. Puff base improve elasticity, washability and abrasion resistance.

80-D102 Glitter Base is resin based product designed to prepare glitter paste for glitter / pearl / gold / black printing on automatic and semi-automatic machines.

80-MA100 Matting agent is a formulated product designed to produce matt effect when used with 80-00 series inks.

80-T200 Thickener is an acid based associative cross-linked acrylic co-polymer emulsion thickener. When diluted in water and neutralized with base, all the particles swell greatly and develop high viscosity gel.

80-ST200 Softener is a softener designed for water based pigment printing.

FEATURES AND BENEFITS

- Full range of colours and viscosity: Availability of dark shades and thickener to adjust viscosity.
- Glossy Finish: Attractive prints.
- Rubbery Feel: Good fabric stretch without print breakage.
- Soft Feel: Does not impart body and harshness to the prints.
- Good dry and wet rub fastness: Better durability of print to rubbing.
- Good wash fastness: Same look and feel even after repeated washing.
- Excellent inter-coat adhesion: Good fastness for multi coloured printing.
- High heat resistance: Retains brightness and tone of the prints even at high temperatures.
- Excellent re-emulsification: no chocking or drying on the screens.
- Excellent thixotropic and viscosity properties for easy flow. Give high film build in 2-4 strokes, thus reducing labour costs.
- Excellent compatibility with other 80-00 series coloured inks and base.

Notes

- No mixing of pigment emulsion particularly with Whites other than 80-00 series,
- PVC inks are banned in many of the western countries and 80-00 series inks are the water based PVC free inks which have the performance equivalent to plastisol inks.
- 80-00 series have a better feel and stretch ability equivalents to PVC based plastisol inks due to its special polymer chemistry.
- 80-00 series are capable of generating dry and wet crock fastness of minimum 3-4 of better in all deep shades and have excellent wash fastness.
- The spatulas, screens, stirrers, containers, squeegees, etc., that are used for plastisol inks needs to be avoided to prevent contamination and rejection of garments on eco issues. If possible the printing section of plastisol and water based should be segregated complately.
- All the chemicals used in screen making other than inks, etc., (like emulsions, thinners, etc.,) should also be PVC free,
- Fusing paper should also be checked for its eco friendliness as this can also lead to contamination with compounds like Tin, etc.,

CONTROL PARAMETERS

1. FABRIC QUALITY

    - Hairiness: This should be eliminated as far as possible in pre-treatment. Otherwise hot pressing may be done to suppress the producing fibres. This basically a spinning problem for which proper quality standards for yarn is essential.

2. DYEING

    - While printing on P/C blends, thermo migration can occur if low sublimation disperse dyes are used, Hence printing on dark dyed background should be done only after checking quality of dyes used etc., (high sublimation dyes above 190^0 C are recommended.
    - Fixation of reactive dyes can be a problem with particularly cheaper mono-valent dyes. Poor fixation and washing can lead to loose reactive dye on the surface, which can give the reactive dye migration in the film. The printer is expected to check bleeding of reactive dyed fabric in hot water wash test at 60^0 C.

3. FINISHING

    - If hydrophobic finish is given to fabric with silicon softeners etc., then this will affect printing and hence should be avoided.
    - Dyeing and other chemicals which also form part of the printed portion should also be meeting eco standards.

4. OTHERS

    - The ink should be “touch dry” after flash station. The time and temperature must be adjusted accordingly. For 80-W100, slight adjustment in automatic machines needs to be done in hardware for faster drying for which one may contact the machinery manufacturer. (Airflow during flash would improve drying time).
    - Time and temperature conditions will be decided by:
        i. Relative humidity in atmosphere
        ii. Temperature in oven
        iii. Conveyor Belt speed
        iv. Size of the prints
        v. Thickness of the ink film.

Practically 170-180^0 C oven temperature for 75-90 seconds is good drying and curing conditions. To ensure correct curing settings always wash 3 times under standard condition immediately after curing and confirm wash fastness. Typically in 24 hours after curing, complete stabilization of printed film is achieved.

- For scarlet and red colours, the wash fastness should be checked below 50^0 C only as these colours have a bleeding problem as the pigments used by us in these coloured inks formulations are the best available keeping the eco standards in mind.
- The screens used for printing should be preferable made of polyester, as they have a longer life with water based inks as compared to Nylon screens. Also th screen frames should be made of aluminium to avoid chances of contamination due to rust. The tension of screen should be in range of 15-25 N/cm. Higher than 40 N/cm and lower than 5 N/cm are unacceptable.

PROBLEMS & REMEDIES

- Gloss – we provide matting agent separately
- Feel – one may add softener in small dosage of 1 – 3%.
- Cracking on highly stretch fabric: This can be controlled by proper thickness of the printed ink film and to some extend by adding Clear Base,
- Curing: For a given print design it is recommended that every time after curing is done, it should be checked by immediately subjecting it to 2 home launderings (at 50 degree C in 40 rpm for 30 min). In case washing fastness is poor, you may increase drying time or temperature depending on equipment settings.

APPLICATIONS

- Squeegee: For good printing quality, it is essential to use 3 layer type squeegee with shore hardness 70/90/70.
- 80-00 series inks have been specifically designed for excellent re-emulsification for machine printing for knits and lycra containing stretchable fabrics. Most of the water based system gives chocking of screens and have poor re-emulsification characteristics.
- 80-00 series enable the machine printer to generate photo-prints by using up to 300 threads/inch mesh with constant throughput. Normal working procedures should be followed. Wet on wet printing is possible after creating white based on dark background.
- Intermittent of 30 – 60 minutes for tea break or lunch break are possible with 80-00 series. The printer after resuming the work can clear the screen with 3 – 4 strokes and resume the normal printing.
- To prevent drying on the screens, ensure sufficient inks to keep screen flooded because of evaporation of water.
- 80-00 series have excellent flow characteristics and if needed the viscosity can be increased by adding specialty Thickener 0.2 – 1.0%. This allows the printer to have control on the transfer characteristics which helps to achieve the required deposition of the inks on the base fabric. Most of the screens have different meshes and different designs requiring slight adjustments in viscosity, which typically is not easy to achieve with plastisol inks. 80-00 series inks allow the printer to adjust viscosity easily by adding water or any compatible binder to reduce viscosity as needed.
- 80-00 series Fluorescent colours are designed to ensure brightness of primary colours substantially at 4-5% level of mixing. To print fluorescent colours on dark fabrics, ensure that a white base coat before printing fluorescent.
- The high viscosity inks allow the printer to get high build prints using 80-120 threads/inch mesh screens. These colours are capable of giving excellent film build.

Typical curing times are:

Temperature	Time

Flash	170 – 180^0 C	2 – 6 seconds
Curing	160 – 170^0 C	75 – 80 seconds
Fusing (10 PSI)	170^0 C	4 seconds 2 times

STORAGE

Products will remain stable for 6 – 12 months if store in a cool place and in closed containers.

Being water based inks, evaporation of water can lead to destabilization of final ink formulation. After opening the container, one must add small quantity (50-100 grams) of water and seal it tightly to avoid water loss from surface and avoid drying on the ink surface.

ON THE SCREEN

- Push the ink to one corner of the screen, spray some water and cover with plastic container to prevent atmospheric contact.
- Spray small quantity of water during hot months during the day to prevent over drying and to compensate for moisture loss.

WARNING

80 Series Inks would generally contain the formaldehyde level between 7 – 10 ppm. One can add & formulate the fluorescent series by limiting the formaldehyde concentration as per the RSL compliance limit.

80 Series Fluo Color would generally contain the formaldehyde level >75 ppm.