Technical Data Sheet

QX-7™

FAST-EXPOSING, SBQ- DUAL CURE DIRECT EMULSION FOR GRAPHIC AND INDUSTRIAL PRINTING WITH SUPERIOR SOLVENT AND HUMIDITY RESISTANCE, EXCELLENT MECHANICAL DURABILITY, IDEAL FOR COMPUTER-TO-SCREEN LED AND LASER EXPOSURE UNITS

QX-7™ is a universal SBQ-dual cure emulsion with excellent resolution for industrial graphics and electronics printing (PCB and conductive traces), compatible with UV, virtually all solvent-based inks and some water-based graphic inks. **QX-7™** is formulated for sensitivity to UV and near-UV-visible blue light, by means of UV LED- and laser-based computer-to-screen exposure. It can be also exposed with traditional metal halide light sources. **QX-7™** features very fast exposure speed, while offering wide exposure latitude. It provides non-tacky surfaces, high humidity resistance and offers superb wet strength. **QX-7™** features excellent resolution and edge definition. **QX-7™** is resistant to virtually all solvents used in industrial and PCB applications. Due to innovative colorants used **QX-7™** stencils are resistant to color fading and stencil discoloration upon water and solvent application. During printing **QX-7™** exhibits excellent mechanical and chemical durability. By using specially optimized sensitizers **QX-7™** facilitates excellent exposure light penetration, ensures thorough curing and offers very easy reclamation with stencils leaving no latent haze on the mesh after decoating. Solids: 38%. Viscosity: 6000 - 7000 cps (25° C.) Shelf life: one year.

INSTRUCTIONS

Step 1: PREPARE THE FABRIC

Used or surface treated fabric need only be degreased using **Screen Degreaser Liquid No. 3**, dilute **Screen Degreaser Concentrate No. 33**, or **Magic Mesh Prep**. (Mechanical abrasion is an option for new fabric that is not surface treated. It increases the surface area of fabric for a better mechanical bond of the stencil, increasing printing run length. Abrading and degreasing can be combined in one step with **Ulanogel 23**.) Rinse thoroughly. Use **Magic Mesh Prep** to promote a uniform emulsion coating. (**Magic Mesh Prep** also acts as a degreaser and an antistatic treatment.)

Step 2: COATING THE SCREEN

QX-7™ is fully pre-sensitized. No sensitizer need be added**. QX-7™** should be handled only under yellow safe light conditions.
Since most direct exposure computer-to-screen systems provide fairly low per pixel illumination, computer-to-screen emulsions, including **QX-7™**, should be coated thinly with low EOM (Method 1, below) on white mesh. As **QX-7™** features very good exposure light penetration, 2/2 wet-on-wet coating (Method 2) with a 2mm edged coating trough is feasible as well.
Method 1: Apply one coat of emulsion on the printing side, then one coat on the squeegee side. Dry the screen thoroughly.
Method 2: Apply two coats on the printing side, then two coats on the squeegee side, wet-on-wet. After each coating, rotate the screen 180°. Dry the screen horizontally, printing side down.
Method 3: Follow Method 2 (above). Then, after drying the screen, apply two additional coats on the printing side, wet-on-wet.

Step 3: DRY THE SCREEN

Dry multicoated screens (Methods 2 or 3) horizontally, printing side down, at room temperature in a dirt- and dust-free area. If using a commercial dryer, dry the screen with warm, filtered air, up to 104° F. (40° C.). Use a humidifier in the drying area.

Step 4: DETERMINE THE OPTIMAL EXPOSURE TIME

With computer-to-screen exposure units, use pre-programed step exposure procedures to determine the optimal exposure time. For conventional exposure units, use Ulano **ExpoCheck**—carried through to actual printing—to determine the optimum exposure time. Optimum exposure is indicated:

- The squeegee side emulsion is hard and not slimy.
- Examine larger details of stencil with repeated image under magnification. Choose the exposure step with best mesh bridging.

Underexposure causes poor adhesion and poor image reproduction. Overexposure reduces resolution. Please contact Ulano, if you have further questions regarding exposure time.
For additional resistance to water-based inks, it is recommended that QX-7 stencils are post-exposed for 3X of an optimal exposure.

Step 5: EXPOSE THE STENCIL

Expose the stencil using the optimal exposure time as determined above.

Ulano Corporation, 110 Third Avenue, Brooklyn, NY 11217, USA. phone: +1 718 237 4700; fax: +1 718 802 1119
Singapore Correspondence Address, 16 New Industrial Road #05-07, Singapore 536204 phone: +65 6451 7505; fax: +65 6451 7505
<www.ulano.com>

Step 6: WASHOUT
Most CTS-equipped shops use in-line washout equipment, so pressure and washout cycles can be preset. If automatic washout equipment is used, make sure last cycle is done with fresh water.
For manual washout: after exposure, wet both sides of the screen with a gentle spray of cold water. Then spray forcefully from the printing side until the image areas clear. Rinse both sides of the screen with a gentle spray until no soft emulsion is left on the squeegee side, and no foam or bubbles remain. Vacuum off or blot excess water from the printing side with newsprint (unprinted newspaper stock).

Step 7: BLOCKOUT AND TOUCHUP
Option 1: Before drying and exposing the coated screen, use excess emulsion from the coating step to cover the blockout area.
Option 2: For non-water-based inks, after exposure and washout, dry the screen. Apply **Screen Filler No. 60** or **Extra Heavy Blockout No. 10**.
Touchup Option 1: Use excess emulsion and re-expose the screen.
Touchup Option 2: For non-water-based inks, use **Screen Filler No. 60** or **Extra Heavy Blockout No. 10** thinned with water.

Step 8: STENCIL REMOVAL
Use the washup solvent recommended by the ink manufacturer, or the least aggressive ink diluent necessary to remove all ink remaining in the screen. Use **Screen Degreaser Liquid No. 3** to help remove ink and solvent residues that might impair the action of the stencil remover. Brush **Stencil Remover Liquid No. 4** or **Stencil Remover Paste No. 5** on both sides of the screen. Do not let the stencil remover dry on the screen. Wash the screen with a forceful spray of water. For the automatic reclaiming units use **# 42 Stencil Remover Concentrate**. Use **Haze Remover Paste No. 78** or **Walk Away Haze Remover** to remove ink and haze residues, if any.

BASE EXPOSURE TABLE: For 305 threads/in. (120/cm.) white polyester or nylon at 40 in. (100 cm.) exposure distance.

LIGHT SOURCE	COATING METHOD		
	1	2	3
Metal Halide			
1000 watts	22 sec.	60 sec.	82 sec.
2000 watts	11 sec.	30 sec.	41 sec.
3000 watts	7 sec.	20 sec.	26 sec.
4000 watts	5 sec.	15 sec.	20 sec.
5000 watts	4 sec	12 sec.	16 sec.
Mercury Vapor			
125 watts	228 sec.	660 sec.	840 sec.
1000 watts	29 sec.	82 sec.	105 sec.
2000 watts	14 sec.	41 sec.	51 sec.
4000 watts	7 sec.	20 sec.	26 sec.
Fluorescent Tubes*			
40 watts	72 sec.	180 sec.	300 sec.

*Base exposure times are for unfiltered black light, or super diazo blue tubes at 4 – 6 in. (10 – 15 cm.) exposure distance.
For plant-light, filtered black light, and "daylight" fluorescent tubes, use at least double the exposure time.

EXPOSURE VARIABLES

Multiply the above base exposure times by all factors and variables that apply.

Fabric

Metal fabric	2.0-4.0
Dyed fabric	1.5-2.0
Finer than 330T/in (130T/cm)	0.7-0.9
Coarser than 250T/in (100T/cm)	1.1-2.0
High heat and humidity	1.3-1.8

DISTANCE FACTORS

20 inches /50 cm.	0.25	44 inches /110 cm.	1.21
24 inches /60 cm.	0.36	48 inches /120 cm.	1.44
28 inches /70 cm.	0.49	52 inches /130 cm.	1.69
32 inches /80 cm.	0.64	56 inches /140 cm.	1.95
36 inches /90 cm.	0.81	60 inches /150 cm.	2.25
40 inches /100 cm.	1.00	72 inches /180 cm.	3.20

Ulano Corporation, 110 Third Avenue, Brooklyn, NY 11217, USA. phone: +718 237-4700; fax: +718 802-1119
Singapore Correspondence Address, 16 New Industrial Road #05-07, Singapore 536204. phone: +65 6451 7505; fax: +65 6451 7507
<www.ulano.com>