

CDF®/QT THICK-FILMS

PURE PHOTOPOLYMER (SBQ) CAPILLARY FILM SYSTEM FOR HIGH DENSITY PRINTING AND OTHER THICK INK-FILM APPLICATIONS

CDF/QT Thick-Films are pure photopolymer (SBQ) sensitized capillary films ranging in thickness from 100 to 400 microns. The thicker films are intended for high-density textile printing or other applications, such as peelable solder mask, that require thick ink deposits through coarse mesh. For best results, we recommend that **CDF/QT Thick-Films** be adhered with **QTX®** emulsion in the direct/indirect mode. **CDF/QT Thick-Films** should be used with non-aggressive solvent-based inks and mild washup solvents. Screen openers and aggressive solvents will make screen reclaiming more difficult.

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. Use **Microgrit No. 2** before degreasing. Abrading and degreasing can be combined in one step with **Ulanogel 23**.) Use **Magic Mesh Prep** or **CDF Mesh Prep No. 25** to promote a uniform wetting of the mesh. (**Magic Mesh Prep** also acts as both a degreaser and an antistatic treatment.) Rinse thoroughly.

Step 2: POSITION CDF/QT THICK-FILM AND THE SCREEN

Work under yellow safelighting to avoid pre-exposing **CDF/QT Thick-Film**. Position a piece **CDF/QT Thick-Film** emulsion (duller) side up on a "build-up board" (a board that is slightly smaller than the inside dimensions of the frame). Position a prepared screen that has been allowed to dry over the film, printing side down. On the squeegee side of the screen, place pieces of tape over opposite edges of the film.

Step 3: ADHERE CDF/QT THICK-FILM TO THE FABRIC

CDF/QT-100, and **-150** can be adhered with plain water or with **QTX** direct emulsion. If adhering with **QTX**, add 50% to the exposure time shown on the Base Exposure Table. **CDF/QT-200**, **-250**, and **-400** should be adhered only with **QTX** emulsion. Pour a bead of sensitized **QTX** across one piece of tape. Using a soft squeegee, "print" the **QTX** through the fabric to the film, across to the tape on the opposite side of the screen. Wait 30 seconds, then make a reverse "print stroke." Wait approximately one minute before lifting the frame for drying.

Step 4: DRY THE SCREEN; REMOVE THE BACKING SHEET

Dry the screen thoroughly at room temperature. Use a fan to speed drying. If possible, use a dehumidifier in the drying area. Under humid conditions, dry the screen in a commercial dryer with filtered air < 104° F. (40° C.). Immediately before exposure, remove the backing sheet.

Step 5: CALCULATE THE APPROXIMATE EXPOSURE

From the Base Exposure Table (on the reverse), identify the light source you are using. The exposure time shown is your Base Exposure Time. Multiply your Base Exposure Time by all relevant Exposure Variable Factors (reverse) to find your Approximate Exposure Time.

Step 6: DETERMINE THE OPTIMAL EXPOSURE TIME

Make a Step Wedge Test (instructions can be found on the Ulano Web site: <www.ulano.com>) or use the **Ulano Exposure Calculator Kit**—carried through to actual printing—to determine your optimum exposure time. Optimum exposure is indicated: ■ At that exposure time when the edges of the positive do not "resolve." ■ The squeegee side of the stencil is hard and not soft or slimy. ■ The print best duplicates the test positive *at the level of resolution that the job requires*. (Note that, since resolution is relative to stencil thickness, it is not possible to resolve a line finer than the overall thickness of the fabric and stencil.)

Step 7: WASHOUT:

For thinner **CDF/QT Thick-Films**, use a gentle spray of water on the squeegee side, then complete the washout from the printing side until the image area is clear. Rinse both sides until no soft emulsion is left and no foam or bubbles remain, finishing on the squeegee side with a gentle spray. Blot excess water from both sides of the screen with newsprint. Dry the screen. It is also possible to soak the screen in a tray of water to accelerate the process. A fully-exposed stencil will be robust enough to withstand washing and soaking.

For thicker **CDF/QT Thick-Films**, after exposure, put wet cloth or paper towels on both sides of the screen. Wait about 15 minutes, then wash out the stencil. The wet towels water-soften the unexposed (image) areas of the stencil, so they wash out more quickly. This technique shortens the amount of time spent at the washout sink.

Step 8: TOUCHUP AND BLOCKOUT

For blockout, use **Screen Filler No. 60** or **Extra Heavy Blockout No. 10** on the dry fabric. For touchups, use either **Screen Filler No. 60** or **Extra Heavy Blockout No. 10** thinned with water.

Step 10: RECLAIM THE SCREEN

Caution: Strong screen openers or ink washes may cause CDF/QT Thick-Films to lock into the mesh, making reclaiming very difficult. Degrease with **Screen Degreaser Liquid No. 3** to remove ink or solvent residues. Rinse with a powerful spray. Brush **Stencil Remover Liquid No. 4** or **Stencil Remover Paste No. 5** on both sides of the screen. Let the screen stand for no more than 5 minutes. Do not allow the stencil remover to dry on the screen, as this can result in a permanent stencil. Wash with a strong spray of water. Use **Walk Away Haze Remove or Haze Remover Paste No. 78** to remove ink residue, haze, or ghost images.

STORAGE: Unexposed screens can be stored in a dark, dry, cool environment for up to one month. Unused film can be stored in its tube for up to one year. High heat and humidity reduce shelf life.

BASE EXPOSURE TABLE for CDF/QT at 40 inches (100 cm.) exposure distance on white polyester or nylon.

Light Source		CDF/QT-100*	CDF/QT-150*	CDF/QT-200**	CDF/QT-250**	CDF/QT-400**
Carbon Arc:						
30 amps		180 sec.	240 sec.	500 sec.	10.5 min.	33 min.
110 amps		48 sec.	65 sec.	135 sec.	170 sec.	9 min.
Metal Halide:						
1000 watts		75 sec.	100 sec.	210 sec.	263 sec.	14 min.
2000 watts		38 sec.	50 sec.	105 sec.	132 sec.	7 min.
3000 watts		25 sec.	33 sec.	70 sec.	87 sec.	275 sec.
4000 watts		19 sec.	25 sec.	53 sec.	66 sec.	207 sec.
5000 watts		15 sec.	20 sec.	42 sec.	53 sec.	165 sec.
7000 watts		12 sec.	15 sec.	32 sec.	39 sec.	125 sec.
Pulsed Xenon:						
2000 watts		219 sec.	292 sec.	10 min.	13 min.	NR
5000 watts		88 sec.	117 sec.	245 sec.	306 sec.	16 min.
8000 watts		55 sec.	73 sec.	155 sec.	192 sec.	10 min.
Mercury Vapor						
1000 watts		99 sec.	132 sec.	276 sec.	347 sec.	18 min.
2000 watts		49 sec.	65 sec.	137 sec.	171 sec.	9 min.
4000 watts		25 sec.	33 sec.	71 sec.	87 sec.	275 sec.
Fluorescent Tubes#						
40 watts		218 sec.	292 sec.	10 min.	13 min.	NR

*Exposure times are shown for CDF/QT adhered with water; **exposure times are shown for CDF/QT adhered with QTX direct emulsion.

#Base Exposure Times at 4 inches (10 cm.) using unfiltered black light tubes. For "cool white" or "daylight" tubes, use at least double the exposure time.

EXPOSURE VARIABLES FACTORS: variables affecting exposure time

Mesh		Exposure Distance:		Exposure Distance:	
Stainless steel mesh	2.0-4.0	20"/50 cm	0.25	56"/140 cm	1.95
Dyed Mesh	1.5-2.0	24"/60 cm	0.36	60"/150 cm	2.25
Imaging		28"/70 cm	0.49	72"/180 cm	3.24
Fine line positive printing	0.80	32"/80 cm	0.64	84"/210 cm	4.41
Fine line reverse printing	1.20	36"/90 cm	0.81	100"/250 cm	6.25
Halftones, to 50 lines/in (20/cm)	0.90	40"/100 cm	1.00		
Halftones above 50 lines/in (20/cm)	0.80	44"/110 cm	1.21		
Adhering		48"/120 cm	1.44		
With QTX (Direct/Indirect Method)	1.5	52"/130 cm	1.69		
Taped-up Positives					
Tape-up or montage positives, per layer	1.10				

404dm, rev.1211

Ulano Corporation, 110 Third Avenue, Brooklyn, NY 11217 U.S.A. Tel: +718 237-4700; Fax: +718 802-1119

Ulano International Representative Office, Rütistrasse 17, CH-8952 Schlieren-Zurich, Switzerland. Tel: +41 44 755 44 77; Fax: + 41 44 773 16 06

Ulano Singapore Rep. Office, 16 New Industrial Rd.#05-07, Hudson TechnoCentre, Singapore 536204. Tel: +65 6451 7505; Fax: +65 6252 3414

<www.ulano.com>