



CDF® DIRECT-FILM SYSTEM

DIAZO SENSITIZED CAPILLARY FILMS; PHTHALATE-FREE (CDF-10, CDF-15, CDF-2/UV, CDF-3, CDF-4, CDF-5/VT, CDF-7)

CDF® Direct-Films range in emulsion layer thickness from 10 µm (CDF®-10) to 70µm (CDF®-7). They adhere with water; no chemicals or emulsions are necessary. For available film thicknesses and mesh counts appropriate for each, see the reverse side.

INSTRUCTIONS

Step 1: PREPARE THE FABRIC

Used or surface-treated fabric need only be degreased using **Screen Degreaser Liquid No. 3** or dilute **Screen Degreaser Concentrate No. 33**. (Mechanical abrasion is an option for new fabric that is not surface treated. It increases the surface area of fabric for a better wetting of the fabric, which improves adhesion, and a better mechanical bond of the stencil, which increases printing run length. Use **Microgrit No. 2** before degreasing. Abrading and degreasing can be combined in one step with **Ulanogel 23**.) Rinse thoroughly. Use **CDF Mesh Prep No. 25** to promote uniform water retention during adhering.

Step 2: ADHERE THE FILM TO THE SCREEN

Standard Method: Position **CDF Direct-Film** on a flat surface, emulsion side up. Place the printing side of a wet screen on top of film. Make a single squeegee stroke across the squeegee side. Wipe off any excess water. **"Roll-Down" Method:** Roll the cut-to-size film, emulsion side out, around a small plastic tube approximately 1 to 1 ½ inches (2 ½ - 4 cm.) in diameter. Soak the fabric from the squeegee side. Contact the edge of the roll to the fabric at the top end of the screen on the printing side. Unwind the roll, maintaining contact between the film and the fabric. Make one light squeegee stroke across the squeegee side to remove excess water.

Step 3: DRY THE SCREEN

Dry the screen at room temperature in a dirt- and dust-free area. Use a fan to speed drying. Avoid high humidity. Under humid conditions, dry the screen with warm, filtered air, up to 104°F. (38° C.) in a commercial dryer. Use a dehumidifier in the drying area, if possible.

Step 4: REMOVE THE BACKING SHEET

Immediately before exposure, remove the backing sheet.

Step 5: CALCULATE THE APPROXIMATE EXPOSURE TIME

Refer to the Base Exposure Table (below). Base Exposure Time X Exposure Variable Factors = Approximate Exposure Time

Step 6: DETERMINE THE OPTIMAL EXPOSURE TIME

Make a Step Wedge Test (instructions can be found in the **CDF Direct-Films Technical Data Booklet**) or use the **Ulano Exposure Calculator Kit**—carried through to actual printing—to determine your optimum exposure time. Optimum exposure is indicated: ■ At the exposure time when the emulsion first reaches its maximum color density and the edges of the positive do not "resolve." ■ There is no suggestion of softness or sliminess on the stencil. ■ The print best duplicates the test positive *at the level of resolution that the job requires*.

Step 7: WASHOUT

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 with a gentle spray until no soft emulsion is left on the squeegee side, and no foam or bubbles remain. Blot excess water from the printing side, including the inside of the frame, with unprinted newspaper stock. Dry the screen.

Step 8: BLOCKOUT & TOUCHUP

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

Step 9: RECLAIM THE SCREEN

Aggressive screen openers or ink washes may cause CDF Direct-Films to lock into the mesh, making reclaiming very difficult. We recommend removing plastisols with mineral (white) spirits, and all other inks with the solvents recommended by the ink manufacturer. Remove ink with the appropriate solvent. Rinse the screen with water. Degrease with **Screen Degreaser Liquid No. 3** to remove ink and solvent residues. Rinse with a forceful spray. Brush **Stencil Remover Liquid No. 4** or **Stencil Remover Paste No. 5** on both sides of the screen. Do not let the stencil remover stand for more than 5 minutes, and never allow it to dry on screen, as this can result in a permanent, unreclaimable stencil. Rinse off the stencil remover with a gentle spray of water, then follow with a forceful spray. Use **Haze Remover Paste No. 78** or **Ghost Remover** with **Ghost Remover Activator** to remove any ink haze and residues.



Technical Data Sheet

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

Light Source	CDF-10	CDF-15	CDF-2/UV	CDF-3	CDF-4	CDF5/VT	CDF-7
Carbon Arc:							
15 amps	277 sec.	496 sec.	641 sec.	972 sec.	1613 sec.	2259 sec.	3334 sec.
30 amps	138 sec.	248 sec.	321 sec.	486 sec.	806 sec.	1129 sec.	1667 sec.
40 amps	104 sec.	186 sec.	240 sec.	365 sec.	605 sec.	847 sec.	1251 sec.
60 amps	69 sec.	124 sec.	160 sec.	243 sec.	403 sec.	564 sec.	832 sec.
110 amps	38 sec.	68 sec.	87 sec.	133 sec.	220 sec.	308 sec.	455 sec.
Metal Halide:							
1000 watts	57 sec.	102 sec.	131 sec.	199 sec.	333 sec.	462 sec.	682sec
2000 watts	28 sec.	51 sec.	66 sec.	99 sec.	165 sec.	231 sec.	341sec
3000 watts	19 sec.	34 sec.	44 sec.	66 sec.	110 sec.	154 sec.	227 sec.
4000 watts	14 sec.	25 sec.	33 sec.	50 sec.	83 sec.	116 sec.	171 sec.
5000 watts	11 sec.	20 sec.	26 sec.	40 sec.	66 sec.	92 sec.	136 sec.
7000 watts	8 sec.	14 sec.	19 sec.	28 sec.	47 sec.	66 sec.	97 sec.
Pulsed Xenon:							
2000 watts	158 sec.	284 sec.	266 sec.	556 sec.	922 sec.	1291 sec.	1906 sec.
5000 watts	63 sec.	113 sec.	146 sec.	222 sec.	369 sec.	516 sec.	762 sec.
8000 watts	40 sec.	71 sec.	92 sec.	139 sec.	231 sec.	324 sec.	478 sec.
Mercury Vapor:							
125 watts	617 sec.	1105 sec.	1427 sec.	2164 sec.	3590 sec.	5028 sec.	7423 sec.
1000 watts	77 sec.	138 sec.	178 sec.	271 sec.	449 sec.	629 sec.	928 sec.
2000 watts	39 sec.	69 sec.	89 sec.	135 sec.	224 sec.	314 sec.	464 sec.
4000 watts	19 sec.	35 sec.	45 sec.	68 sec.	112 sec.	157 sec.	232 sec.
Fluorescent Tubes#*							
40 watts	170 sec.	305 sec.	395 sec.	597 sec.	990 sec.	1387 sec.	2047 sec.

*Base Exposure Times are given for 10 - 15 cm (4 - 6 inches) exposure distance for unfiltered black light tubes. For "cool white" or "daylight" tubes, double the exposure time, at least.

EXPOSURE VARIABLES FACTORS: variables affecting exposure time

Mesh:		Exposure Distance:		Exposure Distance:	
Stainless steel mesh	1.5-2.0	20"/50 cm	0.25	56"/140 cm	1.95
Dyed Mesh	1.3-1.5	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		
Direct/Indirect Method	1.3-1.5	52"/130 cm	1.69		
Taped-up Positives:					
Tape-up or montage positives, per layer	1.2-1.3				
High Humidity:	1.3-1.8				

Emulsion Thickness and Mesh Count Range – CDF Direct-Films

CDF®-10	10: thickness in μ m	165+ threads per cm. = 419+ threads per inch
CDF®-15	15: thickness in μ m	165+ threads per cm. = 419+ threads per inch
CDF®-2/UV	20: thickness in μ m	120-165 per cm. = 305-419 threads per inch
CDF®-3	30: thickness in μ m	90-165 per cm. = 230-419 threads per inch
CDF®-4	38: thickness in μ m	77-120 per cm. = 196-305 threads per inch
CDF®-5VT	50: thickness in μ m	43-77 per cm. = 110-196 threads per inch
CDF®-7	70: thickness in μ m	30-55 per cm. = 76-140 threads per inch

STORAGE: Unused rolls and sheets should be kept under cool conditions (not exceeding 24° C. or 75° F.) with relative humidity of 40 – 60%. Shelf life is 15 months from the date of manufacture. Storage outside the recommended conditions will result in reduced shelf life.

Screens with (unexposed) film adhered can be stored for up to two weeks in a cool, dark, dry area. Unexposed CDF screens stored under high humidity conditions deteriorate more quickly, and will need a longer exposure.

Technical Data Sheet



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