



## TZ® Series

### DIAZO TEXTILE EMULSION FOR USE WITH WATER-BASED AND PLASTISOL INKS

The **TZ** series consists of the three emulsions **TZ**, **TZ/CL** and **TZ/HY-200B**. They produce tough stencils with total water resistance, as well as good resolution and edge definition. Screens made with **TZ-series** emulsions are easily reclaimed. **TZ** is light blue, **TZ/CL** has no color (for easier see-through registration; color additive supplied separately). **TZ/HY-200B** is a high-viscosity variant of **TZ/CL**, for better coating control with very coarse mesh. All three emulsions are recommended for textile printing. They are supplied with a high-quality diazo sensitizer in powder form.

#### **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 roughening 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. Roughening and degreasing can be combined in one step with **Ulanogel 23**.)

##### **Step 2: SENSITIZE THE EMULSION**

To sensitize TZ emulsion add water up to the shoulder level of the diazo bottle supplied with the emulsion. Shake the container well until the diazo powder is completely dissolved. Add the diazo solution to the emulsion and mix thoroughly using a suitable tool made of stainless steel, glass, or plastic until the emulsion is uniform in color. Close the container. Wait at least one hour for the emulsion to debubble. Write the date of sensitizing on the label.

##### **Step 3: COAT THE SCREEN**

**Method 1:** Apply one coat of emulsion to 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 thoroughly/

**Method 3:** Follow Method 2. Then, after drying the screen, apply two additional coats on the printing side, wet-on-wet. Dry the screen again. Method 3 optimizes the definition of printed edges.

##### **Step 4: DRY THE SCREEN**

Dry multicoated screens (Methods 2 or 3) thoroughly in a horizontal position, printing side down, at room temperature in a dirt- and dust-free area. Use a fan to accelerate the drying. Avoid high humidity. Under humid conditions, dry the coated screen with warm, filtered air, up to 104° F (40° C) in a commercial dryer. Use a dehumidifier in the drying area, if possible.

##### **Step 5: CALCULATE THE APPROXIMATE EXPOSURE TIME:**

From the Base Exposure Table below, select the type of light source you have and its wattage or amperage. The exposure times indicated are for 305/inch (120/cm.) white fabric at an exposure distance of 40 inches (=ca. 1 meter), using coating Methods 1, 2, or 3. The exposure time shown for your light source and coating method is your Base Exposure Time. Multiply your Base Exposure Time by all relevant Exposure Variable Factors (table, below) to find your Approximate Exposure Time.

##### **Step 6: DETERMINE THE OPTIMAL EXPOSURE TIME**

Make a Step Wedge Test (instructions can be found in the **Ulano Direct Emulsions 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 that exposure time when the emulsion first reaches its maximum color density and the edges of the positive do not "resolve." ■ The squeegee side emulsion is hard and not soft or slimy. ■ 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 the printing side forcefully until the image areas clear. Rinse both sides with 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 with newsprint (unprinted newspaper stock).

##### **Step 8: BLOCKOUT AND TOUCHUP**

**Blockout Option 1:** Before drying and exposure, use excess emulsion from the coating step to cover the blockout area.

**Blockout Option 2:** For non-water-base inks, after exposure and washout, dry the screen. Apply **Screen Filler No. 60** or **Extra Heavy Blockout No. 10**.

# Technical Data Sheet



## Step 9: RECLAIM THE SCREEN

Remove ink with the appropriate solvent. Rinse the screen with water. Degrease the screen with **Screen Degreaser Liquid No. 3** to remove ink 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 dry on the screen. Wash with a forceful spray of water. Use **Haze Remover Paste No. 78** or **Ghost Remover** and **Ghost Remover Activator** to remove ink and haze residues.

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

Light Source ----- TZ, TZ/CL ----- TZ/HY-200B -----

Carbon Arc	Coating Method 1	Coating Method 2	Coating Method 3		Coating Method 1	Coating Method 2	Coating Method 3
15 amps	6.5 min	19 min	24 min		7 min	21.5 min	27 min
30 amps	192 sec	9.5 min	13 min		216 sec	11 min	15 min
40 amps	144 sec	7 min	9.5 min		162 sec	8 min	11 min
60 amps	96 sec	288 sec	6.5 min		108 sec	324 sec	7 sec
110 amps	52 sec	160 sec	216 sec		59 sec	180 sec	243 sec
<b>Metal Halide</b>							
1000 watts	88 sec	248 sec	328 sec		99 sec	279 sec	6 min
2000 watts	44 sec	124 sec	164 sec		50 sec	140 sec	185 sec
3000 watts	29 sec	82 sec	104 sec		32 sec	92 sec	117 sec
4000 watts	21 sec	62 sec	82 sec		23 sec	70 sec	92 sec
5000 watts	16 sec	48 sec	62 sec		18 sec	54 sec	70 sec
<b>Pulsed Xenon</b>							
2000 watts	230 sec	11 min	12.5 min		259 sec	12.5 min	14 min
5000 watts	92 sec	268 sec	6 min		104 sec	302 sec	7 min
8000 watts	58 sec	168 sec	231 sec		65 sec	185 sec	259 sec
<b>Mercury Vapor</b>							
250 watts	7.5 min.	20 min	28 min		8.5 min	22.5 min	31.5 min
2000 watts	58 sec	164 sec	211 sec		65 sec	185 sec	237 sec
4000 watts	29 sec	82 sec	104 sec		32 sec	92 sec	117 sec
<b>Fluorescent Tubes*</b>							
FT 40 watts	288 sec	12 min	Not recommended		324 sec	13.5 min	Not recommended

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

## EXPOSURE VARIABLE FACTORS (Factors for Variables Affecting Base Time)

<b>Fabric:</b>			<b>Viscosity Adjustment:</b>	
Steel/metalized polyester	2.0 - 4.0		5% dilution	0.95
Dyed Fabric	1.5 - 2.0		10% dilution	0.9
305T white polyester or nylon	1.0		5% more viscous	1.1
Finer than 330T (130T/cm)	0.7 - 0.9			
Coarser than 250T (100T/cm)	1.1 - 2.0			
Multifilament PET	1.3 - 1.5		<b>High Heat and Humidity:</b>	
<b>Exposure Distance:</b>			Factor	1.3-1.8
20"/50cm	0.25	36"/90cm	0.81	
24"/60cm	0.36	40"/100cm	1.00	
28"/70cm	0.49	52"/130cm	1.21	
32"/80cm	0.64			
			<b>Taped-up Positives:</b>	
			Factor	1.2-1.3

**STORAGE:** Unsensitized emulsion can be stored for up to 1 year. Sensitized emulsion can be stored for 3 - 6 weeks at room temperature, and up to 3 months in a refrigerator. Store coated screens in cold, dry, completely dark area until exposure.