# DIAZO PHOTO EMULSION METHOD:

The Photo Emulsion Method is one of the most exciting techniques of screen-printing, offering a wide range of possibilities. This method allows for fine line drawings, various lettering techniques and photographic half-tone

All methods of photographic screen-printing require three things:

- 1. A screen prepared with a light-sensitive Photo Emulsion coating.
- 2. A film positive, or printed transparency
- A light source that will enable you to transfer the opaque positive image to the light-sensitive coating on the prepared screen.

Note: With the photo emulsion method you must use Speedball's polyester screens and screen fabric.

## Mixing of the photo emulsion.

There are three key things to remember at this step.

### 1. Use gloves.

2. It is absolutely necessary to add water to the sensitizer and completely dissolve the paste into water. You should see a color change in the sensitizer after mixing with water.

3. Thoroughly mix this solution with the emulsion. The color will change and the light blue emulsion will now have a green tint. Refer to the Diazo System Process by following the mixing instructions given on both

(Always store the sensitized emulsion in a cool and dark place. Shelf life for the sensitized emulsion is 4 weeks at 90°F, 8 weeks at 70° F, and 4 months when refrigerated.)

# **2** Coating of the screen.

DARK ROOM IS NOT NEEDED FOR THIS STEP. Coat the screen by first adding the emulsion to the screen topside and spread it evenly and thinly across the screen with the squeegee. Use more solution where necessary, spreading evenly with the squeegee. Repeat this process on the backside of the screen, working to achieve an even continuous coating on both sides of the screen fabric. Return any of the excess solution to your mixing container. Do not allow excess solution to build-up, as extra solution will affect proper exposure.

# 3 Drying of the coated screen.

Screen Size

Tiempo de exposición

In an area AWAY FROM DIRECT LIGHT AND HEAT, set the screen to dry in a horizontal, bottom side down position. Elevating the four corners of the underside of the frame, allows the screen to dry thoroughly. If more than 300 prints are to be run, it is best to apply a second coating of the sensitized Photo Emulsion to the bottom of the screen after the first coat is dry. Remember, for best results, aim for a smooth, THIN coating of the solution. Once the coated screen is dry, it must remain in a darkened area until it is ready to be exposed. (Use a fan to greatly speed up the drying of the emulsion on the screen.)

Note that with Speedball's Diazo System, the maximum allowable time between application of the sensitized

emulsion to the screen and exposure of the screen is four weeks at room temperature, in a completely dark

# 4 Preparing your "positive" art to burn onto the screen.

A "positive" is any opaque image usually black, on transparent or translucent film. There are many ways you may choose to prepare the film. An excellent transparent film for this purpose is acetate.

Printed opaque art can be created on sheets of acetate with a photocopier, laser printer, and you can create your own artwork with Speedball's Super Black India Ink and an artist's brush or Speedball Drawing Pens or enamel paint pens. The graphics must be very opaque to light. Any art that allows light though will not create a clean image reproduction. Copy machines have the capability of reproducing very opaque prints on film or acetate and tracing paper. In order to satisfactorily produce a positive image using a copy machine, the following conditions must be met:

- You must have Black and White line art.
- Images should be in high contrast.

| 12"x18"

3. Transparency prints must be opaque.

Using a desktop computer, you can download many copyright-free images suitable for screen-printing. You can print that image directly onto a transparency material. To help guarantee a good exposure burn, you should layer 2 transparencies together. One very important note: Check that the film or acetate used on the photocopier or laser printer is rated for this type of usage.

| 16"x20"

| 18"x20"

# 5 Set-up of the Light source for the burning of the screen.

To set up your "light station" place the screen on top of a piece of black paper and center it 12 inches directly below a 150W clear incandescent bulb or a BBA No.1 Photoflood bulb. The BBA No.1 bulb is preferable, particularly for fine graphics because the exposure time is less. You can also use a light table with 20W florescent tubes. All light set-ups should be fitted with a shop reflector.

# 6 Exposure of the screen.

Before you remove the sensitized screen from the dark drying area, make sure everything you need to print with is on hand. You should have your light station lamp ready. The positive film transparency should be placed in contact with a dry coated screen by the following

1. Attach image to the screen with cellophane tape. 2. Lay a piece of clear glass, Lucite, or Plexiglas on top of the positives. This is the preferred method and it is necessary to use this technique if thin lines or lettering less than a 1/4 inch in height is to be printed. When you are sure all positives are in place and flat against the fabric, you are ready to expose the screen. Expose your screen based on your light source and the exposure equipment used.

# 7 Washout of the screen.

Now that the screen has been exposed, apply a forceful spray of lukewarm water to both sides of the screen. DO NOT USE HOT WATER. A spray nozzle on the end of a short hose in the work sink is preferable. Concentrate the spray on the light images on the topside of the screen. After a few minutes, these areas will become "open". Continue spraying until all unwanted emulsion is gone. Perform final spraying with cold water. Once you have completely washed the screen, let it dry thoroughly in a flat level position. Hold the dry frame up to a light and check for pinholes. These can be covered with Speedball® Screen Filler or pieces of masking tape stuck to the bottom of the screen. If Screen Filler is used, let the screen dry again. Now the screen is ready to print.

# MAKING THE PRINT FABRIC

Printing on fabric usually requires the screen frame to be detached from the base and used alone. Usually two people should work on the printing process – one holding the screen frame tightly against the fabric, and one doing the printing. On articles like T-shirts- a piece of foam board, cardboard or paper must be put inside each garment to act as a barrier against ink bleed. To improve the slipperiness of the ink, you may add Speedball Transparent Base. To slow drying or to prevent screen clogging, add Speedball Retarder Base. We recommend 1-2 tbs. to 8 oz. of ink. First tape off the screen. Spoon the ink across the one end of the screen and apply an even blanket of ink onto the print area. This FLOOD STROKE is an easy, smooth stroke with the squeegee at a slight angle away from you. Lift the squeegee over the ridge of the ink and make the PRINT STROKE by pulling towards yourself. Keep the squeegee at a 45°

angle with enough pressure to scrape the ink from the screen. Lift the screen, remove the print and put it to dry on your rack or line.

Then repeat the process. Sharp clear prints can be produced provided you maintain an adequate quantity of ink on the screen. For more detailed images maintain adequate and even pressure on the squeegee during print stroke. Wash-up of screens and tools must be done immediately after use. If the inks are allowed to dry on your screen or tools, the ink is difficult or impossible to

# **CLEAN UP: FABRIC INKS FROM SCREEN**

Wash IMMEDIATELY after the last print is pulled. Use warm water and a soft brush. Should ink dry in the screen, spray with a household window cleaner. Then rub with a lint-free cloth. When ink is removed, wash with a mix of warm water and dishwasher detergent using a soft brush. Then rinse again with warm water.

### HEAT SETTING: FABRIC PRINTING

Once the ink dries, you must heat set the ink into the fabric. Set a household iron at the highest dry heat setting (no steam). This setting should not scorch the fabric and with a cloth or paper between the iron and printed material, iron on each side of the print area for 3 – 5 minutes. This will Heat-Set the ink to withstand repeated washings.

It is IMPORTANT to PRE-TEST SAMPLES PRIOR TO ALL PRODUCTION RUNS. If inadequate wash fastness occurs, the print needs to be heat-set longer. When

prints are heat set properly they are permanent and will last as long as the fabric lasts without cracking or fading. Use only fabrics that can be subjected to temperatures of at least 275 - 375° F.

### CLEAN UP: PHOTO EMULSION FROM SCREEN

The following steps are used for the clean up of the Photo Emulsion in the screen when you are finished

PHOTO EMULSION SHOULD BE WASHED OUT OF YOUR SCREEN AS SOON AS YOUR PRINT RUN IS COMPLETED - UNLESS YOU WANT A PERMANENT SCREEN / STENCIL. CAUTION IS RECOMMENDED FOR THIS CLEANING PROCEDURE. WEAR RUBBER **GLOVES AND A SMOCK.** 

First be certain all the ink has been removed from the screen fabric. Next remove tape if used and apply Speedball Photo Emulsion Remover to both sides of the screen using a paintbrush. Scrub both sides of the screen with a dry nylon bristle brush. Keep the screen in a horizontal position for 3 minutes. Then scrub both sides of the screen again with a nylon bristle brush and flush with a hard spray of hot water. Once you have started removing Photo Emulsion it is essential not to let the screen dry until completely clean.

# 7 Easy Steps 7 Étapes faciles

7 Pasos fáciles

# DIAZO PHOTO EMULSION METHOD:

- 1) Mix the photo emulsion 2) Coat the screen
- 3) Dry the coated screen
- 4) Prepare "positive" art to burn onto the screen
- 5) Set-up of the Light source for screen burning
- 6) Expose the screen
- 7) Wash-out of the screen

# MÉTHODE D'ÉMULSION PHOTOGRAPHIQUE DIAZO :

- 1) Mélangez l'émulsion photographique 2) Posez une couche sur l'écran d'impression
- 3) Séchez l'écran avec sa couche
- 4) Préparez une image en « positif » pour brûler sur l'écran
- 5) Mettez en place la source de lumière pour brûler l'écran 6) Exposez l'écran
- 7) Lavage de l'écran

### MÉTODO DE FOTOEMULSIÓN DIAZO:

- 1) Mezcle la fotoemulsión
- 2) Cubra la serigrafía
- 3) Seque la malla que cubrió 4) Prepare un gráfico "positivo" para quemar sobre la malla
- 5) Instale la fuente de luz para quemar la malla
- 6) Exponga la malla
- 7) Enjuague la malla

### Taille de l'ecran 20,3 x 25,4cm 25,4 x 35,6cm 30,5 x 45,7cm 40,6 x 50,8cm 45,7 x 50,8 Tamaño de la pantalla 150-Watt - Clear Incandescent Bulb / 150-Watt - Ampoule incandescente claire / Lámpara incandescente transparente de 150 vatios Lamp Height SHOP REFLECTOR NOT RECOMMENDED IN THESE SCREEN SIZES DUE TO FOCUSED LIGHT IN CENTER OF SCREEN Hauteur de la lampe 45,7 cm RÉFLECTEUR D'ATELIER PAS RECOMMANDÉ DANS CES TAILLES D'ÉCRA Altura de la lámpara NIT DE LA LUMIÈRE CONCENTRÉE AU CENTRE DE L'ÉCRAN 7 mins. **Exposure Time** LECTOR DE USO COMERCIAL NO RECOMENDADO EN ESTOS TAMAI Temps d'exposition DE PANTALLA DEBIDO A LA LUZ ENFOCADA EN EL CENTRO DE LA PAN Tiempo de exposición BA n° 1 Photoflood / 250 watts – BBA n° 1 Photoflood 1.5 mins. | 1.5 mins. **Exposure Time** emps d'exposition 1,5 mins. 1,5 mins. Tiempo de exposición 16"x20" | 18"x20" 8"x10" 12"x18" Screen Size 10"x14" Taille de l'écran 40,6 x 50,8cm 45,7 x 50,8c 20,3 x 25,4cm 25,4 x 35,6cm 30,5 x 45,7cm Tamaño de la pantalla 150-Watt - Clear Incandescent Bulb / 150-Watt - Ampoule incandescente claire / Lámpara incandescente transparente de 150 vatios Hauteur de la lampe 45,7 cm 43,2 cm 38,1 cm 43,2 cm Altura de la lámpara 1 hr. 14 mins. 1 hr. 32 mins. 1 hr. 32 mins. **Exposure Time** 45 mins. Temps d'exposition Tiempo de exposición 250-Watt - BBA No. 1 Photoflood / BBA n° 1 Photoflood / 250 watts - BBA n° 1 Photoflood Lamp Height Hauteur de la lampe 30,5 cm 43,2 cm 43,2 cm 38,1 cm Altura de la lámpara 16 mins. 20 mins. Exposure Time 10 mins. Temps d'exposition

10 mins.

SHOP REFLECTOR / RÉFLECTEUR D'ATELIER / REFLECTOR DE USO COMERCIAL

| 10"x14"

# PRINTING / IMPRESSION / IMPRESIÓN CLEAN UP / NETTOYAGE / LIMPIEZA

# Speedball.

**Additional Materials:** Image / Transparency Speedball Print Screens Speedball Squeegee Speedball Screen Printing Ink BBA 1 Photo Flood Light Mixing Sticks

# Matériaux supplémentaires: Image / Transparence

Ecrans à imprimer Speedball Raclette Speedball Encre sérigraphique Speedball Projecteur photo BBA-1 Baguettes pour mélanger Ruban adhésif

### Materiales adicionales:

Imagen / Transparencia Mallas serigráficas Speedball Escurridor Speedball Tinta para serigrafía Speedball Lámpara BBA 1 Photoflood Palillos mezcladores Cinta



ATTENTION: SEE INSTRUCTIONS FOR MIXING AND PROCESS STEPS ATTENTION : VOIR LES INSTRUCTIONS POUR MÉLANGER ET LES ÉTAPES DU PROCESSUS ATENCIÓN: VER LAS INSTRUCCIONES PARA LOS PASOS DE MEZCLADO Y PROCESO