SCREEN PRINT GURUS

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WWW.SCREENPRINTGURUS.COM

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PRE-PRODUCTION STEPS

This section of the TRAINING will involve Art Preparation, Out-Put of Film and Screen Preparation.

ART PREPARATION

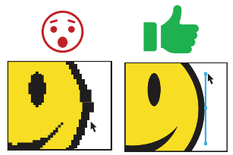
Programs	Function	Website
Adobe Photoshop	Separation Process	www.adobesuite.com
Vector Magic	Vectorize Art	www.vectormagic.com
123RF.com	Stock Art	www.123rf.com
Epson Printer Settings	Output Film	www.epson.com

SECTION: #1 FILM OUTPUT

Follow the separation steps listed on the 'Working with Photoshop' brochure.

EQUIPMENT & SUPPLIES NEEDED:

Description	Type
Epson Artisan 1430 Printer	Inkjet Printer
Inkjet WP Film	11x17 or 13x19



SECTION: #2 PREPARING SCREENS

Identify the correct Mesh count needed for the job, refer to the Mesh guide in section 3.0 for additional details.

EQUIPMENT & SUPPLIES NEEDED:

Item /Description	Use
Screens	ALUM 20x24
Photo-Emulsion	Textil PH BLUE
Emulsion Coater/Applicator	SC-16
Paper Towel	Clean-up

COATING SCREENS WITH EMULSION

Using the thinner side of the Emulsion Coater apply 1 coat of emulsion on each side of the Mesh, make sure you pick up the excess on the inside of the screen.

Allow emulsion to dry for at least 1 – 2hours, cut your drying time if a Drying cabinet is available: 20-30 mins recommended.

Cost Analysis

Supplies used	Cost per Color	Avrg. Cost per Item
Emulsion	$0.90	$20.00 / Quart
Tape	$0.10	$3.50 /roll
Film /Toner	$1.00	Inkjet Film area 13x19
Total Cost to prepare 1 Screen :	$2.00 per ***Screen + Labor***	
Art Preparation (Tim e/Labor)		

*Average amount of screens coated approx.:20 screens Size: 20x24 from 1quart of Emulsion

Supplies used	Cost per Print	Avrg. Cost per Item
Inks (Standard)	$0.12	$25.00 / Quart
Pallet Adhesiv e	$0.15	$7.00 / Can of Adhesive
Total Cost of printing per Shirt:	$0.27 per ***Print + Labor***	
Production (Time /Labor)		

*1gallon of Ink yields approx. 1,000 to 1,300 shirts, with a print area of: 8x10in

Inks (Poly Colors)	$0.16	$30.00 /Quart
Inks (Glitter/Metallic)	$0.20	$38.00 /Quart

*Labor can be calculated on how many shirts /per hour in production vs. employee hourly salary.
Production Average: 25 pcs/ per hr. with 1 person plus a ***Flash Cure*
Production Average: 25-50 pcs/ per hr. with 1 person plus a ***Conveyor Dryer*
Production Average: 100-125 pcs per hr. with 2 persons plus a ***Conveyor Dryer*

Supplies used	Cost per Screen	Avrg. Cost per Item
Ink Removal – BIO1	$0.25	$44.00 /gal lon
Emulsion Removal -ER -5	$0.15	$20.00 /gal lon
Brushes	$0.05	$3.50 /each
Total Cost to rec laim 1 Screen :	$0.45 per ***Screen + Labor***	
Cleaning (Time/Labor)		

*Labor can be calculated on how many screens can be cleaned per hour vs. employee hourly salary.
**Average worker cleans: 10 screen per hr.

DARKROOM SUPPLIES

- **Emulsions**
  - Textil PH BLUE – Photopolymer
    Compatible with Plastisol Inks
    Ready to Use – Fast Exposing
  - Graphic HU – Dual Cure
    Compatible with Plastisol & Waterbase Inks
    Dual Cure – requires activation with Diazo Powder
    Slower Exposure time
- **Scoop Coater**
  - Size: 16” wide for 20x24 Screens
  - Size: 18” wide for 23x31 Screens
- **Paper Towels**
- **Screen Block-Out Liquid: FINISH S1 (Red or Blue)**
  - For Blocking out open areas and covering pin holes
  - Water soluble – cleans up during reclaiming
- **Screen Block-Out Tape: TAPE2T Masking Tape**
  - For Blocking out open areas and covering pin holes
- **Screen/Emulsion Hardener**
  - Fixer 9 – use only when working with *Waterbase inks*
- **T-Square Metal – 18” wide**
  - Used when aligning & measuring placement of Film to the Screen

RECLAIMING DEPT.

- **Reclaim Chemicals**:
  - **BIO-1** Biodegradable Ink Wash
    Liquid use for Step#1 Ink Removal
    Also use for Step#3 Stain/Haze Remover
  - **ER-130** Emulsion Remover
    Liquid use for Step#2 Emulsion Removal
    Concentrated: mix 1part to 5parts water
  - **Green Scrub** Dehazer
    Gel/Paste – use for Ghost Remover & Degreaser
- **Spray Bottles & Sprayers**
- **Scrub Brushes**
- **Screen Drying Cabinet**
  - Great optional for Startup shops that do not have room for a Darkroom
  - Dries Emulsion in 15-20min after coating
  - Dries Mesh after reclaiming in 15-20min
- **Hand-Cleaner & Wallmount dispenser**
  - Tough works great to remove inks from fingernails

EMULSION CHART

Select your Emulsion based on Application, Ink Type and Equipment:

Emulsion	Type	Application	Type of Ink	Color of Emulsion	Shelf Life
Textil PH BLUE	Ready to Use	Textiles	Plastisol inks	**Blue** *(Appears green on yellow mesh)*	12 months
Textil PV	Ready to Use	Textiles	Plastisol inks	**Pink** *(Appears red on yellow mesh)*	12 months
Textil DW	Mix/ Diazo	Textiles	Plastisol & Waterbase inks	**Purple** *(Appears brown on yellow mesh)*	3 months
Graphic HU	Mix/ Diazo	Graphic	Solvent & UV inks	**Blue** *(Appears green on yellow mesh)*	3 months
QT Discharge	Mix /Diazo	Textiles	Waterbase & Discharge inks	**Red** *(Appears Brown over Yellow Mesh)*	3 months

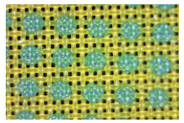
Emulsion Storage: *Keep your emulsion away from direct light and extreme temperatures*

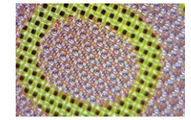
MESH SELECTION CHART

Mesh 40ct	Mesh 90
Glitter Inks	Metallic & Shimmer Inks

Mesh 110ct	Mesh 130
Metallic & White Inks	White Inks

Mesh 160ct	Mesh 180
Black & Colors	Black & Colors

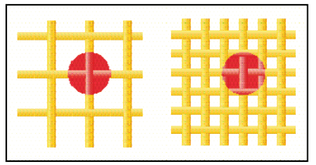




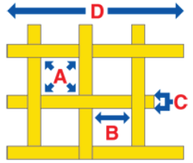
Mesh 200ct	Mesh 230	Mesh 250	Mesh 305
High Details/Fine Lines	Halftones & Fine Lines	Halftones & Fine Lines	4 Color Process CMYK

Identify the correct Mesh count based on your Art, for Solid areas such as Shapes, Text and Numbers use a **Lower Mesh** (*between 110 – 180ct*) is recommended. For higher resolution Full Color images, such as Photos/Pictures with gradiences and Halftones a **Higher Mesh** (*between 200 – 305ct*) is recommended.

Keep in mind that your change in Mesh count will alter your ink deposit, higher # mesh such as 200 and 230ct will lay down less amount of ink as 130 and 160ct.



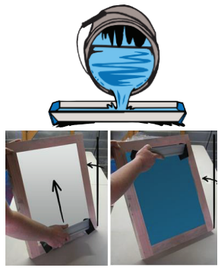
Mesh Count
160ct vs. 200ct
Low vs. High
Resolution



A = Mesh Opening
B = Mesh Separation
C = Thread Diameter
D = Mesh Count /inch

SCREEN EXPOSURE & DEVELOPING

SECTION: #4 – PREPARING & COATING SCREENS



Mesh must be clean prior to applying emulsion, use BIO-1 or H7 Degreaser when screens are new to remove any residue from the mesh.

Apply 1 coat of Emulsion on each side of the screen and pick up any excess from the inside of the screen. This will insure that the emulsion deposit/coat is even throughout.

SECTION: #5 – EXPOSURE (BURNING THE IMAGE)

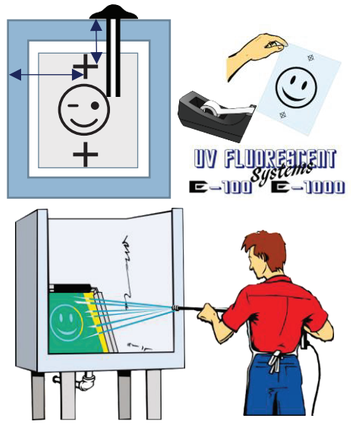
Exposure time is based on your type of emulsion, mesh count and light-source.

Light-Source: **UV 40watt Bulbs**

Emulsion	Mesh Count	Exposure Time	Application
Photopolymer	Mesh 90 – 180ct **(Low Count)**	**45** seconds	Spot Colors
Textil PH BLUE	Mesh 200 – 305 **(Higher Mesh)**	**25** seconds	Fine Lines & Halftones
Textil PV			
Universal Photopol			

Emulsion	Mesh Count	Exposure Time	Application
DUAL CURE /Diazo	Mesh 90 – 180ct **(Low Count)**	**145** seconds	Spot Colors
Textil DW	Mesh 200 – 305 **(Higher Mesh)**	**75** seconds	Fine Lines & Halftones
Graphic HU			
QT-Discharge			

STEP #1



Place the Film Positive on the Back side of the screen, using a T-Square measure from the top of the screen to 5” inches and at the center of the screen to 10” from either side. Use Clear Scotch Tape and tape the film to the Top and Bottom of the film to the surface of the emulsion.

STEP #2

Place Screen with Film facing the glass of the exposure unit and set proper exposure time.

Refer to the Exposure time table for more info.

STEP #3

Remove film from the screen and proceed to place the screen at the washout booth. Rinse both sides of the screen with water, wait 30-60 seconds and proceed to spray water until image develops.

Note: this process should be done indoors under a safe-light and away from the direct light.

ON-PRESS PRODUCTS

- **Squeegees w/70duro Blade**:
  - Left Chess – Size: 4-6” wide
  - Child & Kids – Size: 8-10” wide
  - Standard /Adults - Size: 12-14” wide
  - Squeegee Handles are available in Wood or Aluminum
- **Squeegee Racks**
  - Wallmount – Holds 5 squeegees
- **Spray Tack – Aerosol & Liquid**:
  - Brush-Tac Waterbase Pallet Adhesive /Liquid
    - Longer lasting tack
    - Non-Aerosol cleaner option for the shop
  - Mist Adhesive/Aerosol
    - Standard Tack
    - Regular Cotton/Blends shirts
  - Flash Tack Adhesive /Aerosol
    - Heavier Tack
    - Poly Blend & Dri-fit Shirts
  - Web Adhesive /Aerosol
    - Solid Spray Tack
    - Hoodies & Heavier Garments (Jackets)
- **Press Side Cleaners**:
  - Screen Opener – Aerosol Spray
    - Excellent for Color Changing during production
  - Press Wash – Liquid version
    - Smells better than Screen Opener
    - Good for wiping down the press & squeegees
- **Test Squares – available in 2 sizes**:
  - White 15x15 & 18x20
  - Black 15x15 & 18x20
- **Pallet Protect Tape**
  - PT-145 18” & 24” wide – ROLLS
- **T-Square Ruler**
  - Used to Center the design during registration
- **Screen Block Out Tape**
  - TAPE2T Masking Tape 2” & 3” wide – ROLLS

LIST OF SUPPLIES FOR SCREEN PRINTING

PRE-PRESS – ART DEPT

- **Inkjet Film Positive**: 13x19 or 11x17
- **Inkjet All-Black** Cartridges
- **Scotch Tape** – Clear

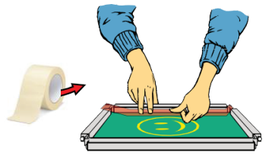
SCREEN DEPT.

- **Aluminum Frames 20x24**
  - 40ct Mesh = Glitter Inks
  - 90-110ct Mesh = Metallic Inks
  - 110-130ct Mesh = White Ink
  - 160-180ct Mesh = Black & Colors with Detail
  - 200-230ct Mesh = Halftones & Fine Lines
  - 250-305ct Mesh = 4Color Process & Halftones
- **Screen Racks** for 20x24 & 23x31 Frames
  - Holds 10 or 20 Frames for storage

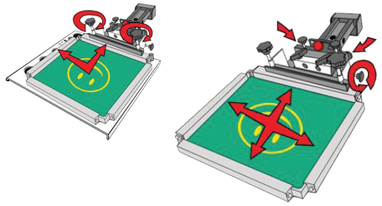
INK DEPT.

- **Plastisol Inks**:
  - 9002SW Brite White – for Cotton & Poly Blends
  - 9007PW Poly White – for Polyester 100% & Dri-fits
  - GT - Glitter Inks
  - MET – Metallic & Shimmer Inks
  - AP – All Purpose inks for Light Color Garments
  - HO/LB – High Opaque & Low Bleed inks for Dark Color Garments
  - CMYK – 4Color Process Inks
  - PIM – Pantone Mixing system for Color Matching
  - FLS – Neon Fluorescent Color Inks
- **Additives and Bases**:
  - 3000FF Curable Reducer – mix 5-10% to reduce ink viscosity
  - 3010FF Stretch Additive – mix 10-15% for Lycra & Spandex fabrics
  - 3004FF Soft Base – Extender Base for a softer touch
  - 3060FF Nylon Catalyst – mix 10% when printing on Nylon fabrics
  - 3035FF Suede Base – mix 15-20% for Flock/Suede effects
  - 3045FF Puff Base – mix 20-30% for 3D Puff effects
  - 3085FF Silver Metallic Base – mix 30% of color to create metallic shades
  - 3090FF High Density Gel – Use as an over-print or for a wet-look
- **Mixing Spatulas** – Metal & Plastic
- **Cleanup Cards** – Disposable cards
- **Disposable Gloves** – Latex
- **Empty Containers** – for Mixing

SECTION #6 – ON-PRESS SET UP



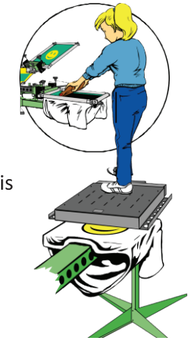
Using Screen Tape cover the outer areas around the border of the screen.



LOAD SCREENS ON TO THE PRESS

- Sequence: Largest to Smallest
- Center screens using the Registration Marks and the T-Square

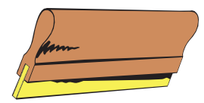
REGISTERING MORE THAN 1-COLOR



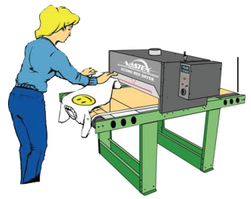
- PRINT the First Color – Use Test Squares
- FLASH for 10 seconds at 3-4” inches from the ink surface. Flashing will dry the ink to the touch but will not fully cure the ink. This allows you to print the next color.
- Proceed to register the next color using the registration marks. Once Registration is complete, remember to cover the marks with Screen Tape.
- Print the next color and so on, until all colors are done.

Note: When printing on Darker color garments it is recommended to under base the ink color with white ink.

Squeegee Durometer	Application /Effect
60Duro (Softer)	Lower Detail /More Ink Deposit
70Duro (Medium)	Detail /Proper Ink Deposit
80Duro (Harder)	Higher Detail /Less Ink Deposit



PLACE PRINTED SHIRT ON THE CONVEYOR DRYER BELT



The Conveyor dryer belt will pass the shirt under the infrared heaters for a constant amount of time allowing the ink to dry. Plastisol inks require 320-340F to reach cured temp. Conveyor Dryers control the Heat Temp and Belt Speed.

Adjust the Belt Speed so that the garment is in the chamber until it reached proper temperature.

CHECKING THE PRINT

Use a Spot Cleaning Gun to remove any undesired ink spots.

Note: For your Safety please wear protective gear while using the spot cleaning gun.

Remember to PUT AWAY all your inks at the end of production, CLEAN your Squeegees and proceed to RECLAIM your Screens.

SECTION # 7 – RECLAIMING SCREENS

When the production is completed, determine if the design on the screens will be kept for future use, if not then proceed to Reclaim steps.

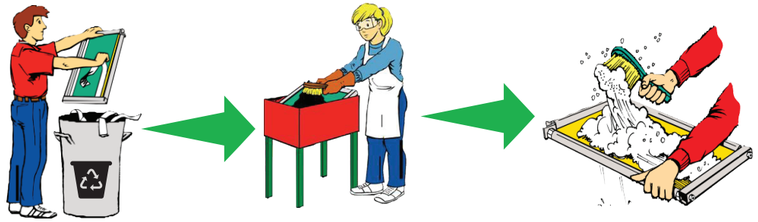
Note: If you are planning to keep the screens simply use a spray and wipe product such as a Press Wash (PRO-WASH) to remove the reminder of the ink.

RECLAIMING - STEP #1

Scrape all remaining ink from the screens and place it back on your ink container.

Remove all Tape from the screens and discard. Items such as Rags and Tape that are discarded with residual of ink must be done in accordance with local regulations.

Contact customer service for assistance.



RECLAIMING - STEP #2

Apply INK DEGRADANT (BIO-1) and using a SCRUB BRUSH scrub all residual of ink & rinse with water. Regular garden hose pressure is ok, for larger shops a PRESSURE WASHER is recommended.

Note: Use Biodegradable products that are environmentally safe, contact us for a list of these products.

To remove the emulsion from the screen, apply EMULSION REMOVER (ER-130) use a brush to scrub the emulsion off and rinse off with water.

Note: Rinse off all the emulsion from the screen… do not allow any reminder emulsion to dry on the screen or it won't come off.

RECLAIMING – STEP #3

To remove any residual /ghost images, use BIO-1 or PRO-Clean Haze Remover, these products also act as degreasers and will ensure proper emulsion adhesion in the future.

Place cleaned screens in the SCREEN DRYING CABINET, or near a FAN of drying.

Contact us for any assistance.

Thanks to our sponsors!

VASTEX INTERNATIONAL, INC. W.M. Plastics

LIST OF EQUIPMENT FOR SCREEN PRINTING

Manual Press &
Flash Cure Unit

Exposure Unit &
Washout Booth Unit

Computer, Printer
& Photoshop