

# 2013 PRODUCT CATALOG



**UliANO**<sup>®</sup>  
*ADVANCED STENCIL TECHNOLOGY*



# INTRODUCING ULANO

Ulano specializes in the manufacture of stencil-making products and chemicals for screen process printing. We also supply masking films, inkjet media, frame adhesives, and stencil evaluation tools. We are the world's largest completely integrated manufacturer of screen printing stencil systems. Our administrative and manufacturing headquarters is in Brooklyn, New York, where we also have research and development laboratories, applications laboratories, a technical training center, and two warehouses—one for raw materials and the second for finished goods. We have representative offices in Switzerland and Singapore.

Ulano's principal attribute is a record of technological innovation that is unequalled in our industry. We invented the film stencil and masking film; the first reclaimable, 100% solvent and water resistant emulsions; fast-exposing diazo resins; bichromate and di-butyl phthalate free photographic products; we introduced capillary film to the world market; the first comprehensive, industry-specific line of screen chemicals; (in 2012) the first emulsion to contain anti-halation colorant; and (again in 2012) the first presensitized, pre-mixed version of standard, diazo-sensitized emulsion in a series of "Epic-Cure" emulsions utilizing our proprietary RD Sensitizing Technology. A few months ago, we introduced two new capillary films, CDF® Vision and CDF® Lexar.

Accomplishments notwithstanding, we must always look ahead. We will continue to promote our products in the trade press, and to enhance our Website. In operations, we will continue to seek ways to improve yields and reduce costs, thereby freeing funding for Research & Development and for Sales & Marketing initiatives.

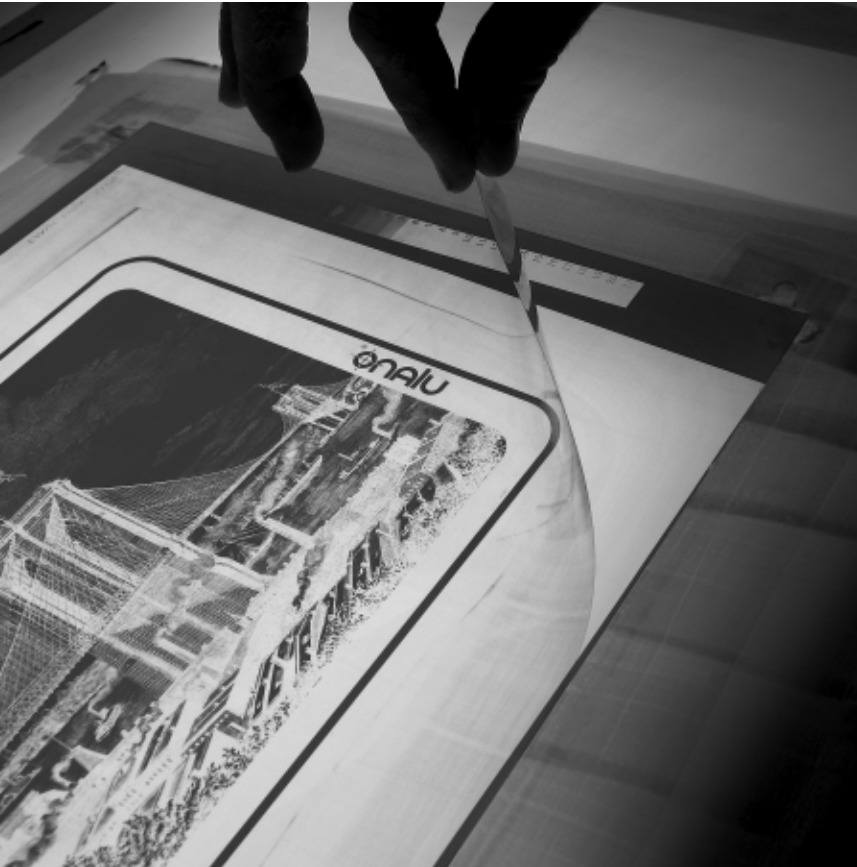
Our future growth will be built on technological innovation--but by the careful, logical extensions of research and development skills and manufacturing capabilities. I think this is the best way to protect and strengthen the Ulano brand name--one of the best known in the entire graphic arts industry.

We will also continue to utilize our domestic and international channels of distribution, nurtured for over two generations, to promote the Ulano brand. As an international company, we must meet the environmental, commercial, and technical demands of worldwide competitiveness. This is a challenge we embrace!



President

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## ***THE INNOVATION WE PROMISED!***

Ulano's goal is to manufacture the most advanced films, emulsions, and screen chemicals in the industry. We focus on three clear objectives:

- to improve stencil imaging properties (resolution and acutance)
  - to manufacture products that are fully dependable, with reproducible results, every time
  - to develop products that make stencil production faster, easier, and less costly
- 

### **Anti-Halation Emulsion**

#### **What Is It?**

Emulsion that is fast exposing, yet also significantly "masks" light scattering (halation), a principal cause of reduced stencil resolution. The key is Ulano's development of a fast-exposing, pure photopolymer that will not polymerize or age prematurely. *Only Ulano has this technology!*

#### **What Will It Do for Me?**

Ulano anti-halation emulsions such as Orange™ offer superior resolution without the need to purchase costly dyed mesh in order to avoid halation.

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### **RD Sensitizing Technology**

#### **What Is It?**

Advanced photo chemistry that provides Ulano's traditional diazo-sensitized and diazo dual-cure emulsions that are pre-sensitized, with no need to add diazo. *Only Ulano has this technology!*

#### **What Will It Do for Me?**

Ulano's "Epic-Cure" emulsions such as Proclaim EC™ are convenient and ready-to-use, with the additional bonus of extended, 18-month pot life.

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### **Advanced-Formulation Capillary Film**

#### **What Is It?**

Two advanced-formulation capillary film groups. CDF® Vision supersedes traditional diazo-sensitized CDF® Direct-Film and diazo dual-cure CDF®/LX and CDF®/Matrix. CDF® Lexar supersedes pure photopolymer-sensitized CDF®/QSR. *Only Ulano has this technology!*

#### **What Will It Do for Me?**

CDF® Vision and CDF® Lexar offer the speed and processing simplicity of capillary film with superior imaging properties and solvent resistance.

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### **Future Stencil Technology**

#### **What Is It?**

Ulano Research & Development will look for ways to combine Anti-Halation properties with RD Sensitizing Technology in film and emulsion products. And we will continue to develop Advanced Stencil Technology.

#### **What Will It Do for Me?**

Our goals are clear: to improve stencil imaging properties, to manufacture products with always-reproducible results, and to make stencil production faster, easier, and less costly.



## *THE FUTURE OF CAPILLARY FILM*

**CDF Vision** is a diazo dual-cure capillary film system. Its special formulation controls mesh penetration and enhances photo-polymerization, resulting in sharp printing shoulders and mechanical durability. Particulate-size control reduces granularity effects for optimal resolution and definition. Texturing agents impart a micro-structural pattern to the bottom of the stencil, minimizing hydrostatic attraction to the printing stock under conditions of high humidity, and electrostatic attraction under low humidity conditions. **CDF Vision** is compatible with UVs, vinyls, and virtually all solvent-based inks. Depending on the thickness selected, it is suited to such printing applications as: electronic circuit traces and membrane switches, halftones, CDs and DVDs, ceramic decals, posters, and containers and bottles.

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- **Availability: CDF Vision-15, -18, -20, -25, -30, -35.**
  - **Excellent imaging properties**
  - **Solvent resistant**
  - **High-contrast color**
  - **Easy to Use**
  - **Fast exposure and processing**

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*THE INNOVATION WE PROMISED!*

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**CDF<sup>®</sup> VISION<sup>™</sup> - DUAL-CURE CAPILLARY FILM**



## CDF<sup>®</sup> LEXAR<sup>™</sup>

### *THE FUTURE OF CAPILLARY FILM*

**CDF Lexar** utilizes SBQ (pure photopolymer) and is formulated for use with solvent-based inks. **CDF Lexar** is easy to reclaim and well suited to the printing of flat-stock graphics, plastisols for textiles, POP displays, computer-to-screen (CTS), containers, printable adhesives, and advertising specialties. The red film is coated on a matte-surfaced polyester. This imparts a slight texture to the printing surface of the stencil, thus minimizing hydrostatic attraction to the printing stock under conditions of high humidity, and electrostatic attraction under low humidity conditions.

- 
- **Availability: CDF Lexar-15, -20, -25, -30, -40, -50.**
  - **Matte-surfaced polyester backing imparts texture to the printing side of stencils**
  - **Good solvent resistance**
  - **Red, high-contrast color**
  - **Easy to Use**
  - **Fast exposure and processing**

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***THE INNOVATION WE PROMISED!***

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*New and only from ULANO!*

## *THE FUTURE OF DIRECT EMULSION*

### *RD SENSITIZING TECHNOLOGY RE-INVENTS DIAZO EMULSIONS*

#### **No Mixing, Stirring, or De-Bubbling Time!**

In a major photochemical breakthrough, Ulano Research and Development has introduced *RD Sensitizing Technology* that functions with our familiar diazo-sensitized and diazo-dual cure emulsions—without the need for diazo! ***RD Sensitizing Technology products are ready-to-use!***

Conventional diazo-sensitized products have been on the market for more than 30 years. They are labor-intensive for stencil makers, who have to dissolve diazo in water, wait for the release of any air that has been entrapped, stir the diazo solution into the emulsion, then wait again for at least an hour for the emulsion to de-bubble the nitrogen that the mixing has generated. Diazo is especially vulnerable to heat and humidity influences, which slow its exposure speed and accelerate its aging. Moreover, under hot and humid conditions, unless dissolved very carefully, diazo tends to clump, risking pinholes or incomplete sensitization. Conventional diazo-sensitized products also have a relatively short pot life; they create yellow diazo stains; and the diazo itself is a readily airborne irritant. By eliminating mixing and measuring for customers, Ulano has greatly reduced the possibility of errors—and greatly improved the assurance of highest quality stencils for customers, each and every time.

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***THE INNOVATION WE PROMISED!***

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RD SENSITIZING TECHNOLOGY

# PROCLAIM™ EC - EPIC-CURE EMULSION



## PROCLAIM™ EC

First in a new line of EPIC-Cure emulsions featuring revolutionary

### *RD SENSITIZING TECHNOLOGY*

**Eliminates the need for diazo; fast, easy-to-use and safe!**

- **Breakthrough technology:** *RD Sensitizing Technology* functions with our familiar diazo-sensitized and diazo-dual cure emulsions—without the need for diazo!
- **Ready-to-use:** Pre-mixed, Proclaim EC eliminates the mixing and measuring involved in using conventional diazo-sensitized emulsions, thereby lessening the possibility of errors.
- **Speeds stencil production time:** Conventional diazo-sensitized emulsions require stencil makers to dissolve the diazo in water, wait for the release of trapped air, stir the diazo solution into the emulsion, then wait for the emulsion to de-bubble. Proclaim EC is pre-mixed and pre-sensitized. No measuring, no mixing, no waiting.
- **Resistant to heat and humidity:** Proclaim EC and the other forthcoming EPIC-Cure emulsions are much less affected by ambient conditions than conventional diazo emulsions. Conventional diazo reacts to heat and humidity, resulting in slower exposures and accelerated aging. Moreover, diazo tends to clump, risking pinholes and incomplete sensitization.
- **Environmentally safe:** Diazo is an airborne irritant. Proclaim EC and the other EPIC-Cure Line of emulsions do not utilize diazo, diazo bottles, or stirrers.
- **Longer shelf and pot life:** EPIC-Cure emulsions offer substantially longer (18 months) shelf and pot life compared to conventional diazo-sensitized emulsions (6 weeks).

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***THE INNOVATION WE PROMISED!***

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# ULTIMATE™ 758

## *PREMIER QUALITY DUAL-CURE DIAZO-PHOTOPOLYMER EMULSION*

**Compatible with surface brighteners; Ideal for exacting industrial and electronics printing**

**Ultimate 758** is a premier quality diazo-photopolymer (dual-cure) emulsion formulated to provide unequalled printed image properties for the most exacting (30-micron lines and spaces) industrial printing and electronics manufacturing applications, including LCD panels, touch screens, solar cells, mobile phone panels and lenses, etc. **Ultimate 758** is formulated to promote light columnization and more consistent image area aspect ratios between squeegee- and printing-side image areas, in addition to having superb acutance. **Ultimate 758** is recommended for use with high mesh counts, including stainless steel up to 196 threads/cm. (500/inch). It has excellent solvent resistance and is easy to decoat. **Ultimate 758's** high solids content (35% sensitized) provides good stencil build per coat, excellent mesh bridging, and fast drying. Sensitized viscosity: 6,000 – 8,000 centipoise. **Ultimate 758** is blue in color.

- **Advanced dual-cure formulation**
  - Highest resolution, acutance, and image fidelity; for use with high mesh counts
  - Fully compatible with advanced surface brighteners
  - Can be precoated and stored for days prior to stencil processing
- **Formulated to promote light columnization**
  - Consistent squeegee-side and printing-side aspect ratios
- **Superb solvent resistance**
  - Easy to reclaim even if underexposed and used with aggressive solvents
- **High (35% sensitized) solids content**
  - Fast drying; good EOM (emulsion over mesh thickness) buildup per coat
- **Blue in color**
  - Facilitates both see-through registration and high contrast stencil inspection
- **Readily-soluble powder diazo**
  - No heating of water necessary for dilution

ULTIMATE™  
758 -  
DUAL-CURE  
EMULSION

# ORANGE™ - TEXTILE EMULSION

## ORANGE™

### *ULTRA-FAST EXPOSING PURE PHOTOPOLYMER (SBQ)*

**Unique anti-halation formula produces super resolution at ultra-fast exposure speeds!**

**Orange** is ready-to-use SBQ-photopolymer direct emulsion formulated for imprinted sportswear printing. It is formulated with a “masking color” that reduces light scattering. With **Orange**, it is possible to use less costly white mesh without the closing up of fine lines and details. Despite its anti-halation color, **Orange** is ultra-fast exposing! It is perfect for shops with high stencil making throughput, as well as shops with fluorescent tubes or other low-intensity light sources. **Orange** stencils are durable, will not become tacky under high humidity condition, and have excellent wet strength and exposure latitude. **Orange** reduces coating time (because of its high viscosity), drying time (due to its high solids), and exposure time (due to its high photo-sensitivity).

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***THE INNOVATION WE PROMISED!***

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# CAPILLARY FILM



## *CAPILLARY FILM*



Capillary direct film (sold by Ulano under the trademark CDF® Direct-Film) consists of a light sensitive emulsion coated on a polyester “backing sheet.” Capillary direct film is, quite simply, the easiest-to-use stencil system, enabling even inexperienced stencil makers to produce “direct stencils” with excellent printing properties, reliable and reproducible results, and with fewer touchups and makeovers. Because CDF® Capillary Direct-Films use the same full range of sensitizers as direct emulsions (diaz, dual-cure, and SBQ/pure photopolymer), they are compatible with the same broad range of inks. CDF® Direct-Films are coated to a tolerance of  $\pm$  one micron (= 0.0004 inch). This thickness standard cannot be reproduced with hand-coated direct emulsion, and is very difficult to achieve even with automatic emulsion coating equipment.

- **Easy to use**
  - Minimal training required
  - “Pre-coated” stencils = perfect stencils—every time
  - Consistent exposure time
  - Consistent stencil thickness = control of ink deposits—and ink costs
  - Wet processing reduces pinholing and drying time; speeds production
- **Fewer processing steps**
  - User friendly; easiest-to-use stencil system
- **Wet processing**
  - Avoids dirt- and dust-caused pinholes
- **Consistent stencil thickness**
  - Consistent exposure time
  - Control of ink deposit—and ink costs
- **Backing sheet prevents stencil contraction during drying**
  - Low Rz values; sharper printing edges
- **Capillary film processing**
  - Simplicity, reliability, consistency, quality; yields 10,000-30,000 impressions when water adhered
- **Can also be adhered /reinforced with emulsion**
  - Adjustment of stencil thickness; printing runs of 50,000 – 70,000 impressions

Capillary film is adhered to screens still wet from the degreasing rinse. (This rinse virtually eliminates dirt and dust that so often cause pinholes with direct emulsions, which must be coated on dry mesh.) The film is attracted up into the structure of the wet mesh by capillary action. With a single squeegee stroke, the stencil maker skims off excess water, speeding drying. After drying, the dust-protecting polyester backing is removed and the screen is ready for exposure and washout. Capillary film is clean, neat, and far less skill- and labor-intensive than emulsion.

Steps in Stencil Processing	Emulsion	Capillary Film
Sensitizing (diazodual-cure)	•	
Debubbling(diazodual-cure)	•	
Screen preparation	•	•
Drying after screen prep.	•	
Coating/adhering	•	•
Drying	•	•
Re-coating for flatness	•	
Drying	•	
Exposure	•	•
Washout	•	•
Drying	•	•
Touchup/blockout	•	•
Drying	•	•
Cleaning scoop coater	•	
Number of Steps	14	8

### Selecting a CDF® Capillary Direct-Film

- From the CDF® Direct-Films in the following pages, select one or more products appropriate for the printing application--and compatible with the ink and washup solvent to be used.
- Select the mesh count appropriate to the printing application.
  - There should be a correlation between the resolution (i.e., fineness of detail) of the stencil and the mesh count. The finer the detail, the higher the mesh count should be, so that the details on the stencil have sufficient "anchorage" on the mesh threads.
  - Except at the very image edge, or with fine lines or halftones, the mesh "geometry" (thread thickness; percentage of open area) and not the thickness of the stencil is the principal determinant of the ink deposit thickness. Ink manufacturers can provide information on recommended mesh count ranges, especially for specialty inks (UV, high density, etc.), so that the ink deposit can be controlled and the ink properly cured after printing.
- Select a CDF® Direct-Film whose thickness is compatible with the mesh count to be used.

### Capillary Film Designations and Recommended Mesh Counts

Film Number	Threads/Inch	Threads/Centimeter
15 microns	420+	165+
18 microns	305 – 420	120 – 165
20 microns	305 – 380	120 – 150
25 microns	255 – 380	100 – 150
30 microns	230 – 305	90 – 120
35 microns	180 – 280	70 – 110
38 or 40 microns	180 – 230	70 – 90
50 microns	86 – 196	33 – 77
100 - 400 microns	30+	12+

### DUAL-CURE CAPILLARY FILM

Diazotopolymer formulas resist most solvent-based, water-based, and co-solvent inks.

### CDF® Vision

Special formulation controls mesh penetration and enhances photo-polymerization, resulting in sharp printing shoulders and mechanical durability. Particulate-size control reduces granularity effects for optimal resolution and definition. Texturing agents impart a micro-structural pattern to the bottom of the stencil, minimizing hydrostatic attraction to the printing stock under conditions of high humidity, and electrostatic attraction under low humidity conditions. CDF Vision is compatible with UVs, vinyls, and virtually all solvent-based inks. Depending on the thickness selected, it is suited to such printing applications as: electronics circuit traces, and membrane switches, halftones, CDs and DVDs, ceramic decals, posters, and containers and bottles. Availability: **CDF Vision-15, -18, -20, -25, -30, -35.**

#### • Advanced formulation

- Superb acutance (printed edge definition) and resolution
- Long printing runs

#### • Superb solvent resistance

- Compatible with aggressive inks and solvents
- No image distortion from stencil swelling
- No "fusing"; reclaiming is easy; no staining of mesh



## CDF® Vision (con't)

- **High-contrast color**
  - Easy stencil inspection and see-through registration
- **Fast exposure and processing**
  - Fast stencil turnaround
  - Significantly less labor and production time
  - Wide exposure latitude
- **Low Rz and thin EOM (emulsion over mesh thickness)**
  - No piling ink tone skewing (“PITS”)
- **Formulated with texturing agents**
  - Easy lift-off under humid conditions
  - Minimal electrostatic attraction under low humidity conditions

**CDF Vision** was formulated to meet or exceed every functional criteria of traditional diazo-sensitized **CDF® Direct-Film** (15, 20, 30, 38. and 50 microns) and **CDF®/Matrix** (UV, -20, -30, and -40). Although we will continue to manufacture these products until June 30, 2014, we urge customers now using them to contact their nearest Ulano distributor or regional office to request samples of **CDF Vision**.

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## *PURE PHOTOPOLYMER (SBQ) SENSITIZED*

Pure photopolymer sensitized formulations assure fast exposure times, virtually unaffected by heat or humidity, and extended shelf life.

## CDF® Lexar

**CDF Lexar** utilizes SBQ (pure photopolymer) and is formulated for use with solvent-based inks. **CDF Lexar** is easy to reclaim and well suited to the printing of flat-stock graphics, plastisols for textiles, POP displays, computer-to-screen (CTS), containers, printable adhesives, and advertising specialties. The red film is coated on a matte-surfaced polyester. This imparts a slight texture to the printing surface of the stencil, thus minimizing hydrostatic attraction to the printing stock under conditions of high humidity, and electrostatic attraction under low humidity conditions. Availability: **CDF Lexar-15, -20, -25, -30, -40, -50.**

- **Capillary film processing**
  - Simplicity, reliability, consistency, quality; yields 10,000-30,000 impressions when water adhered
- **SBQ sensitizer**
  - Fast exposure
  - Long shelf life
  - Exposure time essentially unaffected by heat and humidity
- **Adhere /reinforce with SBQ emulsion**
  - Adjust stencil thickness /50,000 – 70,000 impressions

- **Matte-surfaced polyester imparts “texture” to the printing side of stencils**
  - Minimizes hydrostatic attraction to the printing stock under high humidity conditions
  - Minimizes electrostatic attraction under low humidity conditions
- **Good solvent resistance**
  - Reclaims easily without staining screen fabrics
- **Red, high-contrast color**
  - Easy stencil inspection and see-through registration
- **Fast exposure and processing**
  - Fast stencil turnaround
  - Significantly less labor and production time
  - Wide exposure latitude

**CDF Lexar** was formulated to meet or exceed every functional criteria of **CDF®/QSR** (15, 20, 30, and 40 microns). Although we will continue to manufacture **CDF/QSR** until June 30, 2014, we urge customers now using it to contact their nearest Ulano distributor or regional office to request samples of **CDF Lexar**.

### **EZ-FILM-30 and -50**

Special textile capillary films priced as a viable alternative to direct emulsion; fast drying; fast exposing photopolymer (SBQ); compatible with plastisol inks. Sold in prepackaged sheets (50 per box) 15" X 17" (≈ 38 X 43 cm.) and 17" X 24" (≈ 43 X 61 cm.).

### **CDF®/QT-50 (50 microns)**

Capillary film version of Ulano’s popular QTX® textile emulsion. Fast exposing; appropriate for halftone work and general sportswear printing. Can be adhered with water or QTX® direct emulsion. Compatible with most non-aggressive inks and washup solvents.

### **CDF/QT Thick-Film**

Our thickest capillary films; suitable for high density printing and other applications requiring ultra-thick ink deposits using non-aggressive solvent inks and pastes. Ideal for the production of thick stencils for specialty

printing needs, including high density, puff, and lenticular effects for imprinted sportswear; peelable solder masks in the electronics industry; false mosaic and leading effects for glass and ceramic decorating; printed gaskets and seals.

**CDF®/QT-100 (100 microns)**

**CDF®/QT-150 (150 microns)**

**CDF®/QT-200 (200 microns)**

**CDF®/QT-250 (250 microns)**

**CDF®/QT-300 (300 microns)**

**CDF®/QT-400 (400 microns)**



CAPILLARY FILM



# CDF® DIRECT-FILM APPLICATIONS GUIDE

- Most Suitable
- Suitable

	Textile: Plastisol	Graphics: Flat Stock	4-Color Process	POP Displays	Nameplates, Overlays	CTS	Containers	CD Printing	Glass/Ceramic Decals	Printed Circuits	Printable Adhesives: Solvent-Based
<b>DIAZO SENSITIZED</b>		●	●	●	●	●		●			●
CDF Vision-15 *(CDF-15)		●	●	●	●	●		●			●
CDF Vision-18 CDF Vision-20 *(CDF-2/UV)		●	●	●	●	●	●	●		●	●
CDF Vision-25 CDF Vision-30 *(CDF-3)		●	●	●	●	●	●			●	●
CDF Vision-35 *(CDF-4)	●	●	●	●	●	●	●			●	●
CDF Lexar-50 *(CDF/5VT)	●	●	●	●	●	●			●	●	
<b>DUAL-CURE</b>		●	●	●	●	●	●	●		●	●
CDF Vision-18 *(CDF/Matrix-UV)		●	●	●	●	●	●	●		●	●
CDF Vision-18 CDF Vision-20 *(CDF/Matrix-20)		●	●	●	●	●	●	●	●	●	●
CDF Vision-25 CDF Vision-30 *(CDF/Matrix-30)		●	●	●	●	●	●	●	●	●	●
CDF Vision-35 *(CDF/Matrix-40)	●	●	●	●	●	●	●		●	●	●
<b>PHOTOPOLYMER (SBO) SENSITIZED</b>		●	●	●	●	●		●			●
CDF Lexar-15 *(CDF/QSR-15)		●	●	●	●	●		●			●
CDF Lexar-20 CDF Lexar-25 *(CDF/QSR-20)		●	●	●	●	●	●		●	●	●
CDF Lexar-30 *(CDF/QSR-30)		●	●	●	●	●	●		●	●	●
CDF Lexar-40 *(CDF/QSR-40)	●				●		●		●	●	
CDF®/QT 50	●										
CDF®/QT Thick Film	●										
EZ-Film	●										



A collection of red buckets arranged in a cluster, each containing a different colored liquid. The colors range from light blue to deep purple, with one bucket in the foreground containing a white liquid. The buckets are set against a dark background, and the lighting highlights the smooth surfaces of the liquids and the metallic rims of the buckets.

# DIRECT EMULSIONS

# DIRECT EMULSIONS

## ***DIRECT EMULSIONS***



**Direct emulsion** is the most widely used type of stencil system, for several reasons.

First, for a given square area of stencil, direct emulsion has the lowest material cost. (Total production costs are often higher, however, because emulsion has more processing steps and slower stencil through-put than film, requires skilled labor—or an automatic coating machine—to make film-quality stencils, and is inherently more vulnerable to pinhole-causing dirt and dust, and thus to the need for touchups and makeovers.)

Second, until recently, direct emulsion formulations were more versatile than those of film, so that emulsions could be used with a wider variety of inks and in a greater range of printing applications.

Third, emulsion stencils are capable of longer printing runs than film stencils. Not that film stencils are “fragile,” as some screen printers think. Indirect system stencil films, for example, are capable of printing runs of 2,000 - 4,000 impressions – well within the requirements of most screen printing jobs. Water-adhered capillary films can produce 10,000 - 30,000 impressions and, reinforced or adhered with emulsion, 50,000 - 70,000 impressions. Nonetheless, emulsion stencils can hold up to 100,000 impressions or more.

Fourth, the quality of emulsion has improved markedly in recent years, with higher solids content, improved sensitizers and plasticizers, better filtration methods that reduce particle size and granularity (thus improving resolution and definition), the inclusion of texturing agents or conductive compounds to eliminate “sticking” of the bottom of the stencil to smooth substrates under high humidity conditions, and to reduce electrostatic attraction under low humidity conditions.

Direct emulsions can be used to produce high quality circuitry, decals, nameplates, four-color process and fine line work, but are generally preferred for general screen printing, imprinted sportswear, and for applications that require tough, wear-resistant stencils, such as printing on contoured or abrasive surfaces, printing with abrasive inks, or for very large stencils requiring a high off-contact.

As you will see in the pages that follow, Ulano manufactures a full range of diazo, diazo-photopolymer (dual-cure), and SBQ (hybrid and pure photopolymer) direct emulsions for all printing applications. We maintain the industry’s highest quality control standards in order to guarantee consistent, dependable, high quality direct emulsion products.

**Proclaim EC** is the first to our “EPIC-Cure” emulsions utilizing Ulano's proprietary *RD Sensitizing Technology* to provide traditional diazo emulsion in a “pre-sensitized” format.



## ***RD SENSITIZING TECHNOLOGY***

In a major photochemical breakthrough, Ulano’s diazo-added direct emulsions will be superseded by **RD Sensitizing Technology**—“**EpicCure**” emulsions that are pre-mixed, pre-measured, pre-sensitized, ready-to-use.

## Proclaim EC

Light blue; provides unequalled exposure latitude and ease of decoating, even if underexposed and used with aggressive inks and washup solvents—but with no mixing, no stirring, no de-bubbling time! Same solids content and viscosity as original Proclaim.



## DIAZO

**Diazo-sensitized emulsions** have been an industry mainstay for more than 40 years and are available in formulations for complete solvent or water resistance.

- **Diazo sensitizer**
  - Color change indicates complete exposure
  - Lowest-cost emulsion group
- **Wide range of available emulsions**
  - Compatible with all inks except co-solvent

## 569

(34% solids; viscosity, 6200 centipoise; purple): provides complete solvent resistance and, thus, easy stencil removal. Very good resolution and edge definition.

**569CL** is undyed for easier see-through registration.

**569FAST** (34% solids; viscosity, 5500 centipoise; light purple) exposes in half the time of 569.

## FX88, FX88-SR

(28% solids; viscosity, 6000 centipoise; blue): fast-exposing, general purpose emulsion for use with solvent-based poster or enamel inks, and plastisols. Abrasion resistant. Recommended for low intensity light sources. **FX88-SR** (34% solids; sensitized viscosity, 5500 centipoise); completely solvent resistant; undyed for easier see-through registration; sold with separate blue dye.

## 925WR-P

(41% solids; viscosity 7000 centipoise; violet): Ulano's workhorse textile emulsion; 925WR, with powder rather than syrup diazo.

**925WR-P/CL** is undyed for easier see-through registration. Separate dye supplied with purchase.

**TZ** (33% solids; viscosity, 4000 centipoise; light blue): formulated for use with water-based inks, water dyes, and plastisols. Excellent mechanical resistance, good resolution and edge definition, and excellent water resistance. Recommended for imprinted sportswear applications.

**TZ/CL** is undyed for easier see-through registration;

## DIAZO-PHOTOPOLYMER (DUAL-CURE)



**Diazo-photopolymer** formulations utilize diazo and acrylic monomers, both of which are light sensitive. During exposure, both components are cross-linked or "cured." Dual-cure emulsions resist solvent-based, water-based, and co-solvent inks.

- **Dual-cure formulation**
  - More molecular cross-linking assures wider ink resistance and stencil durability
  - Best imaging properties of any emulsion group
- **Wide processing latitude**
  - User friendly; reliable

**Proclaim** (37% solids; viscosity, 7700 centipoise; light blue): provides unequalled exposure latitude and ease of decoating, even if underexposed and used with aggressive inks and washup solvents.

**Proclaim/CL** is undyed; separate dye supplied with purchase.

**Proclaim HR** (37% solids; sensitized viscosity, 7700 centipoise; green): offers all the features of Proclaim with the additional advantage of higher resolution

## DLX™

(37% solids; viscosity, 6500 centipoise; blue): formulated to eliminate the residual oiliness characteristic of most dual-cures; dries quickly and reduces the sticking of positives while allowing them to be taped-on securely. Brilliant blue allows easy inspection.

NOTE: Solids contents shown are for unsensitized emulsion; viscosity for sensitized emulsions.



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## *DIAZO-PHOTOPOLYMER (DUAL-CURE)*

### **RLX®**

(38% solids; viscosity, 7700 centipoise; magenta): multi-purpose; exceptional exposure latitude, edge definition, and resolution. High solids provide better build per coat, excellent bridging of coarse mesh, and fast drying. Durable. Resistant to a wide variety of solvent- and water-based inks.

**RLX®/CL** is undyed; dye supplied with purchase.

### **TLX®**

(38% solids; viscosity, 7700 centipoise; green): superb coating properties and durability. Resistant to most solvent- and water-based ink systems. Recommended for imprinted sportswear, P-O-P, and advertising specialty printing.

### **LX®-660**

(38% solids; viscosity, 6500 centipoise; red): superior resistance to water-based and co-solvent inks. Suitable for virtually all general graphics and industrial applications.

### **LX®-680**

(38% solids; viscosity 7700 centipoise; blue): high solids content for fast drying. Excellent resistance to all solvent-based and UV-cured inks. Suitable for high quality graphics and industrial printing.

### **LX®-892**

(48% solids; viscosity, 6500 centipoise; blue): extremely resistant to ceramic pastes and inks, on flat or cylindrical screens; ideal for printing floor tiles and single-, double-, or triple-fired glazed tiles and porcelainized stoneware; performs very well under high temperatures and humidity. Can be catalyzed using Hardener Z for longer printing runs.



### **Ultimate™ 758**

(35% solids; viscosity, 7,000 centipoise; blue): premiere quality provides unequalled printed image properties for the most exacting industrial printing and electronics manufacturing applications. Promotes light columnization and more consistent image area aspect ratios between squeegee- and printing-side image areas. Recommended for use with high mesh counts, including stainless steel up to 196 threads/cm.(500/inch).

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## **SBQ PURE PHOTOPOLYMER**

**Presensitized (ready-to-use) formulation;** ; extended pot life and ultra-fast exposure times that are unaffected by heat and humidity.

**QX-1™** (37% solids; viscosity, 9000 centipoise; blue-green): a “hybrid” dual-cure that substitutes SBQ for diazo; thus combines the ready-to-use convenience, exposure speed, reliability under humid conditions, and shelf life of pure photopolymer emulsions with the durability, versatility, and imaging properties of dual-cure emulsions. Wide exposure latitude.

**QX-3™** (36% solids; viscosity, 6200 centipoise; blue): “hybrid” dual-cure for high resolution printing with conventional and water-based UV Inks, and most solvent-based inks; durable; very good wet strength; easy to reclaim, even if underexposed.

**QX-5 Blue** (41% solids; viscosity, 5000 centipoise; blue): ultra-fast exposing; resists a wide variety of solvent-based inks, making it easy to reclaim in automatic stencil removal equipment or by hand; extremely durable stencils; no tackiness under high humidity conditions; formulated to reduce stencil-making time (coating, drying, and exposure) for high-volume shops.

**QX-5 Red** offers the same features as QX-5 but is red in color for higher contrast stencil inspection.

**QTX®** (48% solids; viscosity, 7000 centipoise; magenta): For industrial halftone and fine detail graphics printing with solvent inks. Superb resolution. High solids content for exceptional edge definition. Durable; reclaims easily.

**QFX™** (38% solids; viscosity, 11,000 centipoise; magenta): for industrial halftone and fine detail graphics printing with solvent inks. Superb resolution. High solids content for exceptional edge definition. Durable; reclaims easily.

**QPX™** (30% solids; viscosity, 3700 centipoise; violet): ultra-fast; for use with commercial computer-to-screen exposure units. Requires as few as one coat for good printed edges, even on coarse mesh.

**QLT** (43% solids; viscosity, 7000 centipoise; blue): ultra-fast exposing; for imprinted sportswear; resists newer, more aggressive, post-phthalate plastisols and most washup solvents, making it easy to reclaim in automatic equipment; durable stencils; no tackiness under high humidity conditions; with added diazo and treatment with Hardener WR, can be used with discharge and other water-based inks.

**QT-THIX™** (52% solids; viscosity, 55,000 centipoise; red): produces very thick stencils for manufacturing and decorating applications requiring ultra-thick ink-film deposits through coarse mesh using plastisol, water-based, or non-aggressive solvent inks and pastes. Holds detail well. Applications include high density, puff, and lenticular effects for sportswear; peelable solder masks; false mosaic and leading effects for glass and ceramics; and screen printed gaskets and seals. Extremely durable and does not become tacky under high humidity conditions.

**QT-DISCHARGE™** (45% solids; viscosity, 5000 centipoise; red): formulated to resist discharge inks; also compatible with water-based and plastisol inks; requires fewer coats than 925WR, dries more quickly, and exposes twice as fast.

**CTS-FAST** (34% solids; viscosity, 8000 centipoise; red): very fast exposing, thus offering savings on costly CTS bulbs and suitability for pixel exposures; formulated for computer-to-screen and high-magnification projection exposure equipment; ideal for producing general large-format work, such as posters and outdoor advertising, and other large-scale industrial applications; requires as few as one coat for a good printing edge, even on coarse fabric; excellent coating properties, good solvent resistance; durable.



**ORANGE** (45% solids; viscosity, 7000 centipoise; orange): ultra-fast exposing for high-volume imprinted sportswear printing; the industry's first emulsion formulated with an antihalation “masking color” that reduces light scattering without the need to purchase more costly dyed mesh; reduces stencil making time—in coating (because of high viscosity), drying (due to high solids), and exposure speed.



## DIRECT EMULSIONS APPLICATIONS GUIDE

- Most Suitable
- Suitable

	Textile: Plastisol	Textile: Water-Based	Graphics: Flat Stock	4-Color Process	Graphics Water-Based	POP Displays	Nameplates, Overlays	Containers	Ceramic Decals	Ceramic Tiles
569, 569CL	●		●	●		●	●	●		
569FAST	●		●	●		●	●	●		
FX88								●		
FX88-SR	●		●	●		●	●	●		
TZ, TZ/CL	●	●		●						●
925WR-P 925WR-P/CL	●	●	●							
Ultimate 758			●	●			●		●	
ProclaimEC ProclaimCL	●		●	●		●	●	●		
Proclaim HR	●		●	●		●	●	●		
DLX	●		●	●		●	●	●		
RLX RLX/CL	●		●	●		●	●	●	●	
TLX	●		●	●		●	●	●		
LX-660	●	●	●	●	●	●	●	●		
LX-680	●		●	●		●	●	●	●	
LX-892		●								●
QLT™	●	●*		●						
QX-1™	●		●	●		●	●	●		
QX-3™	●		●	●		●	●	●	●	
QX-5™ Red QX-5™ Blue	●							●		
QTX	●	●*								
QT-THIX™	●									
Orange	●									
QFX™	●			●		●	●	●		
QPX™			●	●	●					
QT- DISCHARGE™ (supplied with diazo)	●	●*		●						
CTS-FAST™			●	●		●				

Flat Glass	Auto Glas	Printed Circuits	Printable Adhesives: Solvent-Based	Printable Adhesives: Water-Based
		●	●	
		●		
				●
		●	●	
		●	●	
			●	
			●	
	●	●	●	
		●	●	●
		●		●
	●	●	●	●
				●*
	●	●	●	
		●		
				●*



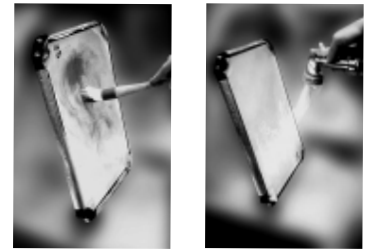
\*With Diazo

# SCREEN CHEMICALS

## *SCREEN CHEMICALS*



Over 30 years ago, Ulano led the industry in offering the first comprehensive line of screen chemicals—assuring screen printers that their chemicals were industry specific and fully compatible with all Ulano stencil making systems.



With the addition of many new products over the years, the Ulano Chemical Line has remained an industry mainstay, offering a full range of pre-press chemicals for mesh preparation, blocking out and touchups, and stencil treatment, and post-printing chemicals for ink removal, stencil removal, and stain and haze removal.

As the industry has become increasingly complex, screen printers need ever more sophisticated chemicals in order to address new types of inks, surface-treated mesh, interest in concentrates, and the more widespread use of automated screen preparation, ink wash, and stencil removal equipment.

Ulano Chemicals offer screen printers many choices, in both form and performance characteristics. For example, we offer stencil removers as either a ready-to-use liquid or a paste, in two liquid concentrations that can be diluted as needed for automated stencil removal equipment, as a dry powder for dilution with water, as a formulation intended for use in automated equipment, and as a concentrate that removes ink as well as stencils. One of our haze removers, Walk Away Haze Remover, is applied with a coating trough and has unlimited dwell time. It is formulated to work as it dries and can be applied and left to work for hours—even overnight—without risk to the fabric, even to high mesh-count, thin-diameter screens.

Ulano Chemicals are available in a variety of size formats—convenient for the largest high volume industrial printers, as well as small, one- or two-person shops. Our chemical concentrates have become increasingly popular among screen printers willing to trade the convenience of ready-to-use products for lower product and shipping costs, and the environmental benefit of reduced packaging.

Ulano Chemicals facilitate consistent, trouble free stencil making—every time.

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## *FABRIC PREPARATION*

### **Microgrit No. 2**

A fine, 500-grit abrasive powder that increases the surface area of synthetic mesh, for better wetting during emulsion coating or film application, and a better mechanical bond of stencils to mesh.

### **Ulanogel 23**

A combined abrasive powder and degreaser gel.

### **Screen Degreaser Liquid No. 3**

For degreasing before stencil making--and after ink removal to speed the action of the stencil remover. Ready-to-use, foam action cleaning.



## Screen Degreaser Concentrate No. 33

Degreases all fabrics; dilute 10:1 with water.

## Magic Mesh Prep™

Ready-to-use; combines the properties of screen degreaser, wetting agent, and antistatic treatment. Treated with Magic Mesh Prep, screen fabric can be coated with emulsion more evenly and transfers ink more readily during printing.

## CDF Mesh Prep No. 25

Promotes the uniform adhesion of capillary films; ideal with thin capillary films applied to fine mesh, which inherently holds little water.

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## *BLOCKOUT AND TOUCHUP*

### Screen Filler No. 60

A safe water-soluble blockout suitable for all non-aqueous inks and washup solvents. Can be used for touchups when thinned with cold water.

### Extra Heavy Blockout No. 10

Water-soluble blockout. High viscosity is ideal for use with coarser mesh, provides easier handling, and usually allows effective coverage in a single coating.

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## *STENCIL REMOVAL*

### Enzyme No. 1

Formulated for the removal of gelatin-based indirect photographic stencils.

### Stencil Remover Liquid No. 4

A ready-to-use liquid for the removal of direct films and emulsions, and no-developer indirect photographic films. Contains no strong alkalis or hypochlorites. Ideal for use in tanks; will not attack fabric adhesives on stretch and glue frames.

### Stencil Remover Paste No. 5

Ready-to-use paste for the removal of direct films and emulsions, and no-developer indirect photographic films. Paste consistency helpful for larger-sized formats.

## Ink & Stencil Remover Concentrate™

Two products in one: a liquid concentrate for removing both plastisol inks and direct emulsion or capillary film stencils.

## Stencil Remover Concentrate No 42

A concentrated liquid for the removal of direct films and emulsions, and no-developer indirect photographic films. Can be diluted 50: 1.

## Stencil Remover Concentrate 1:20

A concentrated liquid for the removal of direct films and emulsions, and no-developer indirect photographic films. Can be diluted as needed for automated stencil remover equipment.

## Stencil Remover Powder No 44

For the fast and thorough removal of direct films and emulsions, and no-developer indirect photographic films. 454 gm. (1 pound) unit can be dissolved in 9.5 – 19 liters (2.5 - 5 gallons) of water, depending on the strength desired.

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## *STAIN & HAZE REMOVAL*

### Walk Away Haze Remover™

Effective against most ink stains and stencil residues. Formulated to react as it dries on the screen: its dwell time is not critical!

### Haze Remover Paste No. 78

A paste ink haze and stencil residue remover.

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## *INK DEGRADANTS*

### All-Purpose Ink Wash™

A solvent blend for the manual removal of screen printing inks

### Citrus Screen Opener

A fast-evaporating solvent blend for opening screens or making ink changes on press; leaves no residue after drying and can be used to remove residue from slower-evaporating solvents; balanced vapor pressure and flash point reduces odor yet dries quickly.



## **Eco-Wash 160**

Fast-acting, low VOC (volatile organic compounds) ink wash for the manual or automated removal of virtually all screen printing inks; stable—does not separate nor require re-mixing; also functions as a remover of fresh ink stains.

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## ***STENCIL TREATMENT***

### **Hardener D**

A liquid stencil hardener that improves the durability and water resistance of QT-DISCHARGE textile emulsion.

### **Hardener X**

A post-exposure and processing stencil hardener for textile emulsions, including 9250WR, LX-660, LX-892, and QTX.

### **Hardener WR**

A companion product to QLT direct emulsion (when it is used with added diazo to provide water resistance); use after QLT stencil processing to improve water resistance, durability, and compatibility with discharge inks. Unlike other hardeners that render stencils permanent, Hardener WR-treated stencils can be reclaimed. Hardener WR can also be used with diazo-dual cure (water resistant) emulsions, and SBQ textile emulsions.

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## ***FRAME ADHESIVE PRODUCTS***

### **Frame Adhesive-Fast**

A two-component screen adhesive for bonding of screen mesh to frames made from aluminum, steel, wood, and galvanized iron; can be applied easily by brush; fast drying; after curing, resists virtually all screen printing inks and most cleaning agents; does not become brittle and, therefore, will not cut mesh if some adhesive has been brushed into the screen surface.

### **Frame Adhesive Catalyst-Fast**

A green-colored hardener for Frame Adhesive-Fast.

### **Frame Adhesive Reducer**

A fast-evaporating solvent blend to remove adhesive residues on natural rubber (caoutchouc), synthetic resin, and dispersion bases. (Already-cured, two-component adhesives usually cannot be softened or dissolved.)



## PIGMENT INKJET FILM



The most important factor determining image quality when making screen printing positives with an inkjet printer is the coated film. The coating must be formulated carefully to absorb the inkjet ink quickly and thoroughly, whether it is a water-based pigment or a dye; otherwise, the image will smear or spread, and image acutance (edge definition) will be compromised. Ulano Pigment Inkjet Film utilizes a state-of-the-art formulation and controlled-coating technique.

**Pigment Inkjet Film** is compatible with a full range of printers from Hewlett Packard, Epson, Canon, and other major brands.

**Pigment Inkjet Film** can be used with off-the-shelf pigment inks. Has a special Ulano inkjet-receptive nano-porous coating on 125 $\mu$  (5-mil) clear polyester formulated to control the shape of fine lines and halftones with pigment or dye inkjet inks. The coating does not reduce UV transmission and is water-resistant to prevent smearing under high humidity conditions. Compatible with the industry standard Epson Stylus Photo R1800 and R2400 models; the Stylus Pro 3800, 4800, 7800, and 9800 models; and other similar pigment or dye inkjet printers.

- **Clear Polyester with Ink-Receptive Coating**
  - Faster exposure times than laser positives
- **Capillary Action Nano-Porous Coating**
  - Pigment or dye ink is instantly absorbed and trapped
- **No Heat Needed to Fuse Ink**
  - Inkjets can achieve near image setter registration; vellum finish laser paper shrinks
- **Film Is More Durable Than Vellum**
  - Film positives can be used repeatedly to make new screens
- **Works with Water-Based (Aqueous) Pigment or Dye Ink**
  - Only one film is needed
- **Fast Drying Time**
  - Even with heavy ink loads, positives are dry when the next film exits the printer
- **Anti-Static Coating**
  - Positives move smoothly through the printer and are stackable

### PREPACKAGED SHEETS

<b>USA A Letter</b>	8.5" x 11"	22cm x 28cm	<b>Euro A3</b>	11.69" x 16.54"	29.7cm x 42cm
<b>USA Legal</b>	8.5" x 14"	22cm x 26cm	<b>Euro A4</b>	8.27" x 11.69"	21cm x 29.7cm
<b>USA B Tabloid</b>	11" x 17"	28cm x 43cm	<b>Euro B3</b>	13.9" x 19.69"	35.3cm x 50cm
<b>USA Super B</b>	13" x 19"	33cm x 46cm			
<b>USA C</b>	17" X 22"	43cm x 56cm			

### ROLLS

13" x 100'	33cm x 30.4m	42" x 100'	106.6cm. x 30.4m	60" x 100'	152.4cm x 30.4m
14" x 100'	35.5cm x 30.4m	44" x 100'	111.7cm x 30.4m	62" x 100'	157.4cm x 30.4m
17" x 100'	43.1cm x 30.4m	50" x 100'	127cm x 30.4m	64" x 100'	162.5cm x 30.4m
24" x 100'	60.9cm x 30.4m	52" x 100'	132cm x 30.4m		
36" x 100'	91.4cm x 30.4m	54" x 100'	137.1cm x 30.4m		

*(Please note that metric sizes are rounded down to the nearest tenth.)*

# PIGMENT INKJET MEDIA

# INDIRECT SYSTEM FILMS

## *INDIRECT SYSTEM FILMS*



Direct emulsions and capillary direct films are called “direct systems” because they are coated or affixed to the screen fabric, then exposed and washed-out directly on the mesh. Indirect System films, on the other hand, as the name suggests, are imaged away from the mesh—“indirectly”—then adhered to it.

The original Indirect System films were knifecut (image outlines were cut with stencil knives; image areas peeled or weeded away). We continue to manufacture solvent- and water-adhered knifecut films, which can be a cost-effective alternative to photo stencils. They can be cut with automated cutting equipment to produce stencils “from machine to screen.” With knifecut stencil films, screen printers can produce stencils without any investment in special artwork generating equipment, exposure units, vacuum frames, or safelighting.

Even so, the majority of Indirect System film stencils are photographic--and represent the fastest package-to-screen stencil making system. Indirect System photographic films offer many additional advantages. Most are completely solvent resistant. Stencil processing is straightforward and simple: expose, washout, adhere (gelatin-based films require a developing step). The “backing sheet,” onto which we coat the emulsion layer, lies outside the mesh during drying. The emulsion is held flat and cannot contract into the mesh weave, so that Indirect System stencils are characteristically low in both EOM (emulsion over mesh thickness) and Rz value. Thus, the printing properties—the resolution and definition--of Indirect System photographic films are superb and capable of the highest quality printing in the industry. With Indirect System photographic films, stencil thickness and, thus, ink deposit can be adjusted by the exposure—a subtlety that is impossible with direct systems. Indirect System photographic films are sometimes dismissed as “fragile,” yet when properly processed, they are capable of producing 2000 – 4000 impressions—well within the requirements of many printing jobs.

- **Fastest package-to-screen system**
  - Rapid stencil throughput
- **Easy processing**
  - Less makeovers and fewer touchups
- **Indirect System**
  - No mesh influences during exposure
  - Low EOM and Rz values = excellent imaging properties
- **Controlled stencil thickness**
  - Controlled exposure
  - Controlled ink deposit and ink costs

## ***GELATIN BASED (IRON SALT SENSITIZED)***

Gelatin-based films have complete solvent resistance; use with premeasured **A & B Developer Powders** to assure developer freshness and proper concentration. Films are available in rolls or custom-cut sheets:

### **Ulanoprex®**

Offers superb resolution (30 – 50µ; 1.2 – 2 mils) for negative printing and fine halftone work; ideal for the highest quality ceramic decals and circuit traces.

### **Quasar Red 100™**

Features extremely wide processing latitude; suitable for a wide range of applications, including graphics and electronics.

### **Red TI™**

Can be exposed thin for circuit traces or thick for solder mask work; ideal for fine line and halftone work; resolution: 50 - 75µ (2 - 3 mils).

### **Blue Poly®-2,**

On 50µ (2-mil) carrier sheet; combines wide exposure latitude with good resolution; ideal for general screen printing work; resolution: 75 - 100µ (3 - 4 mils).

### **Blue Poly®-3**

The same as Blue Poly-2, except for a thicker backing (75µ, 3 mils), which affords additional dimensional stability and easier handling of large stencils.

### **Super Prep®**

a green emulsion on a 50µ (2-mil) polyester backing. Hides dust, tape marks, and positive edges; suitable for general graphics work.

## ***NO DEVELOPER FILM***

### **Pulsar™ DISCONTINUED**

The fastest stencil processing system; exceptional imaging fidelity, control of EOM (emulsion over mesh thickness), and wide processing latitude. Excellent solvent resistance.

## ***INDIRECT SYSTEM PHOTOGRAPHIC FILMS, PROPERTIES AND APPLICATIONS***

	<b>Super Prep®</b>	<b>Blue Poly®-2</b>	<b>Blue Poly®-3</b>	<b>Red TI™</b>	<b>Pulsar™</b>	<b>Ulanoprex™**</b>	<b>Quasar R 100™</b>
sensitizer	iron salt	iron salt	iron salt	iron salt	diazo	iron salt	iron salt
color	green	blue	blue	red	red	blue	red
resolution (microns)*	100 - 125µ	75 - 100µ	90 - 110µ	50 - 75µ	<b>D I S C O N T I N U E D</b>	35 - 50µ	50 - 75µ
thickness (microns)*#	9µ	6µ	6µ	10µ		5µ	10µ
general printing	4	4	4	2		2	2
halftones	1	2	2	4		4	4
vinyl ink	4	4	4	4		4	4
legend printing	2	2	1	4		2	4
membrane switches	1	2	2	4		4	4
circuit traces	1	1	1	3		4	3
solder mask	2	0	0	4		3	4
ceramic decals	1	1	1	3		4	3
containers	3	2	2	3		2	3
plasticols	3	2	2	0		0	0
posters	3	2	2	3		2	3
UV inks	2	2	2	4		4	4

\*for mils (0.001"), divide by 25; # EOM (emulsion over mesh thickness) at best exposure

4 = excellent, 3 = good, 2 = fair, 1 = acceptable, 0 = poor/not advised



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**INDIRECT SYSTEM FILMS**

# KNIFECUT FILMS

## *KNIFECUT FILMS*

The original stencil film system remains the most cost effective way to produce bold line work for printing runs of 2,000 – 4,000 impressions. Available in rolls or custom-cut sheets.



## *SOLVENT ADHERED*

### **Sta-Sharp® S3S**

“Trace-cut” designs and peel away image areas. Adhere with Sta-Sharp® Adhering Liquid. Resistant to all water-based inks and many non-aggressive solvent-based inks.

## *WATER ADHERED*

### **Ulanocut Green**

Adherable and removable with plain water; completely solvent resistant.

## *MASKING FILM*

### **Rubylith®**

Red masking film; use with light sensitive media having orthochromatic sensitivity. Suitable with all screen process photographic stencil systems. Universal tack level, available coated on 75 and 125 $\mu$  (3 and 5 mil) polyester as

**Rubylith® RU3 and RU5.**



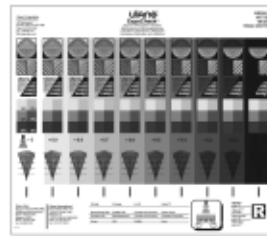
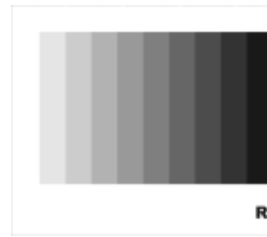
# MEASURING TOOLS

## MEASURING TOOLS AND ANCILLARY PRODUCTS



### ExpoCheck Exposure Calculator

A high-quality test positive, each with ten identical test images: a halftone pattern (at 10%, 25%, 75%, 85%, and 90%), line work patterns in positive and negative, and a special fan-like pattern used to evaluate both resolution and stencil hardness. A second ExpoCheck positive is a nine-step neutral-density filter—so that a single exposure allows the evaluation of ten different exposure times. ExpoCheck, unlike many “exposure calculators” on the market, permits separate use of the neutral density filter positive with any other artwork—silver film positives, Rubylith® brand masking film, laser printed vellums and acetates, and inkjet prints on Ulano’s Pigment Inkjet Film—in order to evaluate stencil exposure times using those materials as artwork. Alternatively, ExpoCheck test positives can be used with Rubylith® in sheets or strips, or with cardboard strips, to make Step Wedge Tests with lesser (or greater) exposure increments than can be made using the neutral density filter.



### Stencil Thickness Gauge

A professional tool for measuring stencil thickness (emulsion over mesh thickness, or EOM)—at an affordable price. Control of stencil thickness means control of image quality--and ink costs. Measurement range: 1 – 1000 microns (1 – 40 mils), with an accuracy of  $\pm 2\mu + 3\%$  ( $\pm 0.1$  mils + 3%). Handy reset feature when no zero reference is available; no calibration required for most applications. Wear-resistant ruby probe. Easy-to-read display screen is switchable from microns to mils. Includes hard shell storage case, built-in probe, base plate, plastic shims, AAA battery, and a one-year warranty. Size: 100 X 38 X 23 mm. (4 X 1.5 X 0.9 inches). Weight: 70 grams (2.5 ounces).



### Round Screen Brush

An industry favorite for the manual application and use of Ulano Screen Chemicals.

### Lid Remover

Ulano one- and five-gallon emulsion lids must fit tightly to assure freshness and avoid leakage. The Lid Remover makes it easy to open our bucket lids after they’ve arrived safely and securely.

### Direct Emulsion Pump

Designed for use with all 18.9 liter (5 gallon) units of Ulano direct emulsions. The “Ulanopump” makes it convenient and easy to dispense Ulano direct emulsions directly into coating troughs.

### Emulsion Drum Faucet

Designed for the convenience of high-volume shops using 50- and 55-gallon drums of Ulano emulsion.



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