



2002 Edition

Wilflex Screen Printing Inks
Manufactured by PolyOne Corporation
TEXTILE USER'S MANUAL & CATALOG

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An Introduction

TO WILFLEX

The Wilflex brand of screen printing inks was founded in the 1960s, in Marietta, Georgia. As a supplier to the US garment decoration industry, the company's growth accelerated rapidly during the 1970s and 1980s and then became global when Wilflex opened a subsidiary in the United Kingdom and purchased controlling interest in a former distributor in Australia. Now Wilflex inks are distributed throughout the world.

In 1998, The Geon Company acquired Wilflex and Plast-O-Meric, two leading manufacturers of textile screen printing inks. Geon was one of the largest North American producers of vinyl (PVC) resins and the world's largest producer of vinyl compounds. By purchasing the plastisol ink producers, Geon strengthened its strategy of providing value-added products and services to the worldwide marketplace.

In September 2000, Geon merged with MA Hanna and the two companies formed a new corporation called **PolyOne**. This merger created the world's largest polymer services company, an international team that can be a single source for custom compounding and manufacture of high-performance polymers. At this time, no other company offers such a diverse and unbiased portfolio of polymer products and services. As a member of the PolyOne family, Wilflex continues to lead the textile screen printing market as the plastisol ink brand of choice by offering their customers a high level of quality, innovation and service.



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ATLAS / CONTROL PROCESS

9353 Seymour Avenue
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COMMERCIAL PLASTICS & SUPPLY

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Caparra Heights, PR 00922
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Avon, MA 02322
508-583-2300 • 800-227-1449
Commercialscreen@worldnet.att.net
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Troy, MI 48083-4502
810-589-9100 • 800-968-1115
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TW GRAPHICS EAST

1175 Florida Central Parkway Ste 3000
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Slippery Rock, PA 16057
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Wilflex International Distributors

Canada

SCREENFLEX INKS, CANADA, LTD.	Calgary, Alberta	403-255-7766 800-661-7766
SCREENFLEX INKS, CANADA, LTD.	Waterloo, Ontario	519-746-0227 877-205-9218

Caribbean

SUPLIDORA GRAFICA	Dominican Republic	809-689-7637
COMMERCIAL PLASTICS	Puerto Rico	787-792-8747

Central America & Mexico

NEBIERA, SA	El Salvador	503-225-5598
OMNIGRAFIC	Guatemala	502-476-2583
NAZDAR	Mexico	52 55 55 19 02 81
RAY COLOR SA DE CV	Mexico	525-718-0703

South America

COLOR MIXING SA	Argentina	5411 4298 8300
MARIA-TERESA LUJAN		
<i>Latin American Manufacturer's rep</i>	Florida, US	954-288-8685
JAIME A. CHAVEZ S.A.C.	Peru	011 511 471 6381

Distribution for the Americas through PolyOne (Kennesaw, GA)

Wilflex International Distributors

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AENTEP LTD.	Cyprus	0035 75 587120
JUHL A/S	Denmark	0045 8693 1333
TR IMAGE	France	0033 1414 75059
BORCHERT & MOLLER	Germany	0049 7474 95650
GABLER SIEBDRUCK SERVICE	Germany	0049 2349 237710
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AENTEP LTD.	Greece	0030 15 142312
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MAN ROLAND RIGA	Latvia	00371 780 5275
LIPNUS PRODUKTAI	Lithuania	0037 07 209 553
NORLEAS A/S	Norway	0047 331 14477
YOU & ME	Poland	0048 2286 52510
SOPROTEX LDA	Portugal	0035 12 294 82913
TECNOSCREEN	Spain	0034 95234 4750
CLUB SHOP AB	Sweden	0046 1113 1617
BEZEMA AG	Switzerland	0041 71 763 8811
POLYONE POLIMEKS	Turkey	0090 212549 2256
COLENSO SCREEN SERVICES LTD	United Kingdom	0044 1928 701356
INK SOLUTIONS LTD	United Kingdom	0044 116 270 1188
POLYONE WILFLEX EUROPE LTD	United Kingdom	0044 1322 277778

Africa

COLORSCREEN (PYT) LTD.	South Africa	0027 21 511 6750
PACE LTD.	Mauritius	00230 454 7256
MAMI SA	Tunisia	00216 178 7433

Asia

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CHEMIFLEX	Pakistan	0092 21 256 7532
EVERLIGHT CHEMICALS	Sri Lanka	0094 143 5689

Middle East

PONGER 2000	Israel	00972 35 371997
AL-RASHED PRINTING EQUIPMENT	UAE	00971 4 221 0059

Distribution through PolyOneWilflex Europe Ltd.

Wilflex

International Distributors

Australia/New Zealand

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EUROTECH QUALITY PRODUCTS	New South Wales	61 2 9517-1411
JUST SCREEN LTD.	Auckland	64 9 299 7770
LANART GRAPHICS	New South Wales	61 2 4957 4474
SERICOL AUSTRALIA	Queensland	61 07 322 3465
SERICOL AUSTRALIA	Western Australia	61 8 9381 8200
SERICOL AUSTRALIA	South Australia	61 8 8351 8677
WILFLEX AUSTRALASIA PTY. LTD.	Melbourne, Aust.	61 3 9887-1522
WILFLEX AUSTRALASIA PTY. LTD.	Sydney, Australia	61 2 9569-8666

Asia

ARTREND	Shanghai, China	(86) 21 6426 1080
ARTREND	Guangzhou, China	86) 20 8157 3698
TONY SILK SCREEN TECHNOLOGY	China	86 10 6345-0625
TONY SCREEN TECHNOLOGY	China	86 21 6254-4211
ARTREND HOLDINGS LTD.	Hong Kong	852 2950-0030
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DNN Ltd.	Vietnam	848 849 1494

Pacific Region

FT WIMBLE & CO.	Fiji	679 309 333
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Distribution for the through PolyOne Wilflex Australasia Pty. Ltd.



Wilflex® Additives and Aerosols

ADDITIVES

Reducers, Thickeners, Extenders

Miscellaneous additives to add puff or dimension, improve flash, etc.

AEROSOLS

Fabri-Tak: Web spray adhesive

Duo-Tak: Mist spray adhesive for transfer papers and garments

Hot-Tak: Mist spray adhesive

Screen Wash: Remove clogs and stains from screen mesh



REDUCERS

CURABLE REDUCER 10070RED: Viscosity reducer that will cure at standard plastisol cure temperatures (320 F/160 C), which ensures that you can lower ink viscosity without fear of cure problems. Curable Reducer is an efficient reducer & an addition of 5% by weight will lower the viscosity of most Wilflex inks by 25%. Additions greater than 10% may reduce bleed resistance & opacity. Any dramatic changes in viscosity may result in altered printing characteristics.

VISCOSITY BUSTER 10025VB: Additions of 1-3 % by weight will stabilize & improve the flow properties of finished ink. Do not use more than 3% by weight! This product is very efficient in small amounts. Will not affect Bleed Resistance or opacity, when used as directed.

REDUCER #1: Reducer 1 is a plasticizer blend, therefore, excessive use may cause cure & bleed problems. Preferred reducer is Curable Reducer or Viscosity Buster.

REDUCER #11: Plastisol viscosity reducer, plasticizer type, suited for SSV-FF & MCV-FF ink lines. Up to 5 % (by weight) recommended.

THICKENERS

THICKENER #1: Viscous brown liquid used to increase viscosity & add body to low viscosity inks. Recommended limit: up to 3% by weight.

THICKENER #2: White Powder- An essential for High Density printing. Additions up to 8 oz. cup per gallon of ink are recommended to body & stiffen a finished ink. By increasing viscosity, the ink film will sit on substrate surface, improving opacity. Excessive amounts of Thickener 2 will cause build-up on back of screen & accelerate the aging of the ink viscosity. A mask is recommended when handling Thickener 2. High speed, high shear mixing will disperse powder without lumping. Be cautious to not overheat the ink.

THICKENER #3: Use this thickener as a final addition to GNS, OPM, & MX. When adjusting with Thickener 3, it is important to add .5 - 1% (MAXIMUM) to 100 parts ink. Be sure to weigh the amount precisely, as an over-addition will dramatically reduce printability. After adding Thickener 3, stir thoroughly, but do not overheat mixture. You may not notice an immediate build after the introduction of Thickener 3, but refrain from adding more than 1% as the additive may take time to work (up to two hours). PolyOne recommends mixing only what you need to complete the job as any leftover ink may become difficult to print later.

EXTENDERS

SMOOTH EXTENDER 10222SE: Soften inks & increase flow properties & printable characteristics by mixing 10-20% by weight with inks that exhibit high tack. Additions greater than 20% can reduce opacity & bleed resistance. May also be used as a process base to extend primary colors or mix with other colors to increase color vibrancy in transparent ink.

FINESSE 10150FNS: Additions of 10-20% may be used to improve printability & soften hand of general purpose & specialty Wilflex inks. Additions greater than 20% will reduce opacity. Pre-test the product to ensure that the desired characteristics are present before a production run.

SOFT HAND CLEAR 10140CLEAR: A soft, clear plastisol designed to blend with general purpose & specialty plastisol inks to soften & extend inks. Tends to drop viscosity slightly. Will reduce build-up while making inks easier to print.

PROMATCH CLEAR 10853CLR: A clear plastisol designed to blend with process plastisol inks to soften & extend inks. Will reduce build-up while making inks easier to print.

MISCELLANEOUS ADDITIVES

DULLING ADDITIVE: Additions of 7-10% by weight to Genesis inks will reduce gloss of surface & will not interfere with print properties. Dulling Additive is curable & addition greater than 10% may be used, but print characteristics will change.

FLEXIPUFF ADDITIVE 10520: Formulated to be mixed with general-purpose inks (GNS, MP, MX) to give a raised or elevated effect. Flexipuff may be added in amounts of 30% by weight.

FLASH ADDITIVE (FLASHADD): Add up to 10% by weight of this powder to GNS or MP inks to lower flash temperature. However, this product will alter the print characteristics of these inks & cause build-up when printing wet-on-wet.

STRAIGHTUP HIGH DENSITY ADDITIVES: Add to existing inks, like MX, to create totally innovative, three-dimensional. WP220SUP GLOSS WP221SUP SATIN WP222SUP SUEDE

STRETCH ADDITIVE 10108SA: Increase elongation of Wilflex general-purpose inks (GNS MX, SB) by adding 1part additive to 2 parts finished color.

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

USAGE CHART FOR WILFLEX ADDITIVES and EXTENDERS

Ink Series	Reducers		Extenders			Viscosity Modifiers		
	Reducer #1 *Disc 1/02	Reducer #11	Finesse 10150	SoftHand Clear 10140	Curable Reducer 10070	Thickener #2	Thickener #3	Viscosity Buster
Whites	0-5% by weight	NR	5-15% by weight	0-10% by weight > 10% will alter ink properties by reducing opacity & BR	0-10% by weight	3% by weight MAX	NR	1-3%
GNS	0-5% by weight	NR	10-20% by weight (20-100%,when opacity not critical)	0-20% by weight	0-10% by weight	3% by weight	.5-1% by weight	1-3%
MX OPM	NR	NR	10-20% by weight (20-100%,when opacity not critical)	0-20% by weight	0-10% by weight	1-3% by weight	.5-1% by weight	1-3%
SSV	0-5% by weight	NR	10-20% by weight	0-30% by weight	0-10% by weight	1-3% by weight	NR	1-3%
NPF Suedes	0-3% by weight	NR	0-10% by weight	0-10% by weight > 10% will alter ink properties by reducing puff height	0-5% by weight	NR	NR	1-3%
TF	0-5% by weight	NR	NR	NR	NR	NR	NR	1-3%
MCV-FF & SSV-FF	NR	0-5% by weight	0-10% by weight	0-10% by weight > 10% will alter ink properties by raising cure temperatures	0-10% by weight > 10% will alter ink properties by raising cure temperatures	NR	NR	1-3%
HD Clear	NR	NR	10-20% by weight	0-30% by weight	0-10% by weight	NR	NR	1-3%
Straight-UP inks	NR	NR	NR	NR	0-10% by weight	NR	.5-1% by weight	1-3%
Rock Base	NR		10-20% by weight	0-30% by weight	0-10% by weight	NR	.5-1% by weight	1-3%
MSH Nylon Mesh OSN	NR	NR	Use 11422MSH Base as extender	NR	NR	NR	NR	1-3%

Non-Standard / Custom Compounds

PolyOne manufactures many products that are considered “non-standard.” These products range from custom color matches to products that are specifically produced to meet certain needs. Minimum quantities may apply. Please consult your local Wilflex representative for more information regarding these products.

Flame Retardant (FR) Inks - Many of our standard and non-standard ink lines are also available in a flame retardant version. Please contact your local Wilflex representative or call our Customer Service Department for more information.

WILFLEX® AEROSOLS

Wilflex Aerosols are a line of products with chemistry designed and tested for the textile printing industry. As the slogan "engineered chemistry with aerosol convenience" suggests, PolyOne offers unique chemical technology and give the printer increased efficiency. All Wilflex Aerosol products are user-friendly and color coordination of packaging helps in product identification.

1. Fabri-Tak (Magneta can)

- Web-spray adhesive
- Special nozzle reduces over spray
- Exceptional mileage
- Minimal transfer to garment
- High relief holds heavy fabrics
- Not intended for paper
- Easy to clean using Screen Wash or mineral spirits
- Ideal for fleece, jersey knits



2. Duo-Tak (Red can)

- Mist adhesive for transfer papers and garments
- Holds garment under print-stroke pressure
- Allows frequent re-spraying without adhesive build-up
- Does not stain or transfer to fabrics
- Used properly, will not tear transfer paper
- Easy to clean using Screen Wash or mineral spirits.

3. Hot-Tak (White can)

- Mist spray adhesive
- Exceptional flash cure resistance
- Easy vertical release
- Does not stain or transfer to fabric
- Does not contain chlorinated solvents

4. Screen Wash (Green can)

- Cleaning spray to remove clogs and stains from screen mesh
- Low odor, evaporates slowly for easy cleaning
- Dries without leaving greasy film or oil stain
- Can clean screens without removing from press

WILFLEX® AEROSOLS

Storage and Safety Information

Many aerosol products are flammable and must be stored and handled properly to avoid injury. The products are a severe eye irritant and a mild skin irritant. Safety glasses and gloves should be worn when using these materials. Breathing the vapors can cause dizziness and nausea. Use only in a well-ventilated area. It is recommended that Wilflex products be used within one year of receipt of product.

Emergency Treatment

For eye exposure, flush thoroughly with clean water.

Wash any affected skin areas with soap and water.

If breathing problems occur, move to a well-ventilated area.

Do not induce vomiting if swallowed.

Get prompt medical attention for any emergencies.

Wilflex Aerosol products must be stored in a cool, dry location away from flames and excessive heat. During a fire, containers exposed to high temperatures may explode. Cool water should be used on cans exposed to fire.

Spills should be picked up with absorbent material and disposed of following all appropriate regulations. Cans must be completely vented before disposal.

Wilflex Material Safety Data Sheets should be used to educate all employees in the safe use of Wilflex Aerosols products and the proper use of safety equipment.

WILFLEX® SCREEN WASH

Application: Remove excess ink from screen and aim Screen Wash spray at residual ink. Spray Screen Wash onto screen with circular motion. Screen Wash stays wet to allow time for cleaning. Wipe away excess with towel or rag.

Safety: Screen Wash is flammable. Do not spray near motors or electrical parts. Keep away from heat and open flame. Use only with adequate ventilation. Check compatibility with indirect stencil systems. Do NOT use to clean hands or skin. Consult MSDS for complete safety information. Do not allow waste to accumulate in closed containers. d-Limonene (and other solvents) have the potential for spontaneous ignition, under certain conditions. Read the MSDS and follow storage and handling procedures outlined therein.



Wilflex® Athletic Inks

MSH SERIES

Designed to direct print on 100% Nylon Open Mesh

High gloss, excellent durability, superior adhesion, creamy viscosity

15 MSH Mixing Colors (MX Color) produce PANTONE® simulations
or 11422MSH Nylon Mesh Base for use with the PC Express

MVP SERIES

Designed for printing on fabrics prone to dye migration.

Excellent bleed resistance and coverage for dark, polyester blends



WILFLEX® MSH NYLON SERIES

DESCRIPTION Wilflex's MSH Series is designed to direct print on 100 percent Nylon Open Mesh offering: High gloss, excellent durability, superior adhesion, creamy viscosity suitable for manual or automatic printing.

- 15 MSH Mixing Colors (MX Color) produce simulations of coated and uncoated PANTONE® Color Formula Guide colors. Starter kits available.
- PC Users: 11422MSH Nylon Mesh Base can be used with the PC Express Mixing System to simulate PANTONE colors.

PRINTER'S PARAMETERS

Substrates	100% nylon
Bleed resistance	Excellent
Mesh	40-160 t/in (15-61 t/cm)
Stencil emulsion	Conventional direct or capillary films
Squeegee type	60 to 90 durometer, straight edge blade
Cure temp	325 F (163 C) entire film
Extender/Base	11422MSH Nylon Mesh Base
Reducer	10025VB Viscosity Buster. Use 1- 3% max by weight. Do not exceed recommended amount.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
HS&E	Available upon request. Formulated to comply with EN71, ASTM F9-63.

MIXING COLOR GUIDELINES

- MSH Mixing colors are created to mirror MX Mixing colors. For Pantone simulations, simply follow the MX formulas in the Wilflex MX Formula Guide. MSH formulas that reproduce PANTONE® color simulations have been calculated by weight and are presented as a total of 1,000 grams in the Formulation Guide. The final volume of ink produced from these formulas will vary according to color and the specific gravity of the ink concerned, but all formulas will make approximately 1 quart/1 liter.
- PC USERS: 11422MSH Nylon Mesh Base can be used with Wilflex Pigment Concentrates. Generally, a 15% maximum pigment loading is suggested. However, we recommend the use of a PC to Base Ratio Chart or IMS (Wilflex Ink Management Software) to calculate the maximum loading for each pigment.
- PolyOne recommends that MSH Mixing Inks be weighed on scales accurate to +/- 0.1 gram. Proof formulas prior to commencing any production run to ensure color accuracy, as the final color is dependent on print technique, mesh count and substrate used. PolyOne and its associated companies assume no responsibility for the actual color achieved.

COLOR SPECIFICATION

MX formulas were printed through a 156 t/in (62 t/cm) mesh screen and viewed under cool white fluorescent (4100K illuminant). These specifications were used internally at PolyOne for all PANTONE simulation color approvals. Similar print application, screen mesh, squeegee profile and light specifications should be implemented in your shop to ensure comparable results. Remember, any variation in screen mesh and application can vary depth of color and opacity. We recommend that you maintain a color library of your prints.

SPECIAL RECOMMENDATIONS

- Inks produced using the MSH Mixing System are translucent to opaque. When blended according to formulations, resulting colors vary in opacity from translucent to semi-opaque.
- If your application requires Non-migrating Pigments, please contact PolyOne Technical

Services for custom blending.

- Colors will reproduce best on white or light fabrics.
- 11888MSH is used as a Mixing White. For High Opacity Nylon Mesh Printing, 11000PEN Pennant White is suggested.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion and unacceptable durability. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

USE OF HUGGER CATALYST

- MSH inks WILL NOT adhere to nylon jackets and other water repellent fabrics without the addition of Hugger catalyst at 10 percent by weight.
- Wipe down the print area with rubbing alcohol or acetone if printing on a tightly weaved jacket material.
- The cross-link reaction between the catalyst and ink takes approximately 48-72 hours to fully bond to the fabric. Therefore, scratch testing should not be a quality criteria immediately following printing.
- The Hugger Catalyst chemistry activates upon exposure to moisture in the air. The amount of moisture exposure determines the shelf life of the mixed ink. Pot life generally ranges from 4-8 hours.
- Opened Hugger Catalyst containers should be squeezed to push air out of the bottle and then sealed tightly. If left open or loosely sealed, Hugger will crystallize & solidify in the bottle.
- Ink mixed with Hugger Catalyst must be removed from the screen immediately following printing with cleaning solvents to prevent permanent mesh damage. Squeegees and any other printing apparatus must be cleaned immediately also.
- Preprinting and testing for adhesion are necessary prior to production.

ORDERING INFORMATION

11888MSH Nylon White	78888MSH Nylon Green
19888MSH Nylon Black	88888MSH Nylon Yellow
38888MSH Nylon Orange	98888MSH Nylon Fluorescent Yellow
48888MSH Nylon Red (Blue Shade)	98884MSH Nylon Fluorescent Red
48889MSH Nylon Magenta	98880MSH Nylon Fluorescent Pink
58888MSH Nylon Violet	98886MSH Nylon Fluorescent Blue
68888MSH Nylon Marine (Red Shade)	98885MSH Nylon Fluorescent Purple
68889MSH Nylon Blue (Green Shade)	

SOLD SEPARATELY

- MSH Starter Kit - contains 1 quart of each color, 1 gallon 11888MSH White, formulations, PANTONE® Color Formula Guide and IMS software.
- MSHGKit - contains 1 gallon of each color, 1x5 of 11888MSH, formulations, PANTONE® Color Formula Guide and IMS software.
- IMS Software - Windows™-based software containing all formulations or download recipes from www.wilflex.com
- PowerPax - Buy an MSH kit, plus software and a scale for one low price. 7,500- and 1,000-gram capacity scales available.

Wilflex MSH ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. MSH inks were matched under Cool White Fluorescent 4100K Illuminant. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions © Pantone, Inc., 1963, 1991.

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WILFLEX® MVP LOW-BLEED SERIES

DESCRIPTION MVP Series inks are designed for printing on fabrics prone to dye migration. These inks exhibit excellent bleed resistance and coverage for dark, polyester blend substrates. A white base plate is not always necessary but a print - flash - print method is recommended for best coverage.

FEATURES

- High opacity on darks, high viscosity but easy to print
- Excellent elongation, rugged tensile strength, superior mat down properties
- For PC System Users- 10099MVP LB Neutral Base
- For maximum bleed resistance and opacity, use 11195MVP LB White as base plate

PRINTER'S PARAMETERS

Substrates	100% polyester, 50%/50% Poly/cotton,
Bleed resistance	Excellent
Mesh	83-186 t/in (33-73 t/cm)
Squeegee	60-90-60 Triple Durometer or 70 single duro, straight edge blade. For maximum deposit, rounded edge.
Emulsion	Conventional direct or capillary films
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	Curable Reducer #10070, but modification will alter Bleed Resistance.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
HS&E	Available upon request. Formulated to comply with EN71 and ASTM F9-63.

PC SYSTEM USERS

- 10099MVP LB Neutral Base can be used with Wilflex Pigment Concentrates. Generally, a 20% maximum pigment loading is suggested. However, we recommend the use of a PC to Base Ratio Chart or IMS (Wilflex Ink Management Software) to calculate the maximum loading for each pigment.

SPECIAL RECOMMENDATIONS

- When processed properly, MVP colors will not ghost on 100% cotton garments.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual. Check cure temperature at the ink's surface.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron printed area.
- Preprint and test all fabrics for dye migration and bleaching properties.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353).

AVAILABLE STANDARD COLORS

10099MVP MVP LB Neutral Base	40500MVP MVP LB Super Red
11195MVP MVP LB Super White	80000MVP MVP LB Super Gold
30200MVP MVP LB Super Bright Orange	80100MVP MVP LB Super Lt. Gold
30401MVP MVP LB Super Dolphin Orange	87020MVP MVP LB Super Lemon Yellow



Wilflex® General Purpose Inks

GENESIS SERIES

Print at high production rate. Excellent for auto and manual printing.

Build-up resistant, wide standard color range

Genesis 10540GNS, 10680GNS Bases available for use with PC Express

SUPERBASE SERIES

Soft hand with the ultimate matte finish. One of PolyOne's most opaque bases.

GENESIS PROCESS COLORS

Clean, high intensity colors for process printing

SuperGuard HT fights fibrillation when printing process

ART SETS

Ink color sets for automated separation software and process printing

WILFLEX COLOR SYSTEMS

MX finished ink system

Opaque MatchMaker finished ink system

PC Express for maximum versatility

Epic non-phthalate system

ColorMaster for dispensing

Equalizer balanced PCs



WILFLEX® GENESIS SERIES

DESCRIPTION Wilflex Genesis (GNS) plastisol inks are specifically formulated for high productivity wet-on-wet printing. Although most Genesis inks are opaque, optimum opacity is achieved with Genesis Super inks. Genesis inks have excellent resistance to build-up. Genesis inks also may be used to print conventional cold-peel transfers. 10540GNS Genesis Base and 10680GNS Genesis Plus Base have similar print characteristics, but 10680GNS offers a matte finish and more opacity.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, polyesters, some nylon (generally open weave or mesh types) as well as other synthetics
Bleed resistance	None, use BR underbase white
Mesh (on darks)	86-120 t/in (34-49 t/cm)
Mesh (on lights)	110-280 t/in (49-110 t/cm)
Mesh (fine line)	230-305 t/in (90-120 t/cm)
Gel temp	230 F (110 C)
Cure temp	320 F (160 C) entire film
Transfer temp	350 F (177 C)
Extender	Up to 20 percent (by weight) 10150FNS Finesse
Reducer	Up to 5 percent (by weight) Curable Reducer #10070
Caution	The viscosity of GNS inks is designed to enhance opacity and printability. Any alteration of viscosity should be minimized.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Build-up resistant for high productivity printing. Printable creamy viscosity.
- Choice of opacity and finishes in the Genesis family
- Use to print direct onto fabric or for cold-peel transfers

BASES

- *10000GNS Half Tone Base*: To be used for Process colors or high-level fluorescent colors
- *10540GNS Genesis Base*: High productivity wet-on-wet printing, moderate gloss
- *10680GNS Genesis Plus Base*: Similar to 10540GNS, matte finish, more opaque, creamy

SPECIAL RECOMMENDATIONS

- For bleed resistance, an underbase white, such as Athletic Trophy White, Bright Tiger or Xtreme White is suggested. Olympia Plus white can be used as an underbase for 100 percent cotton fabrics.
- For cold-peel transfers, use release paper.
- Glow-in-the-dark Genesis Phosphorescent 99900GNS is available. For best results, this product should be printed on white or light-colored substrates or over a white base plate. Print using meshes 60-140 t/in (24-55 t/cm).
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing

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GENESIS

Standard Color List

Genesis*

12600	Rebel Flesh	66100	Bear's Navy
13300	Russell Gray	67800	Deep Aqua
14600	Dark Gray	68500	Winter Blue
19000	Black	70000	Kelly
20100	Dark Brown	70500	Dallas Green
23800	Spice Brown	75300	Turquoise
30200	Bright Orange	75900	Blacklight Green
30400	Dolphin Orange	80000	Gold
40000	Scarlet	80100	Light Gold
42000	Dallas Scarlet	81000	Lemon Yellow
43000	National Red	82500	Yellow
45800	Russell Cardinal	90000	Fluo. Yellow
47600	Brandywine	90100	Fluo. Blue
48600	Burgundy	90200	Fluo. Green
50200	Purple	90300	Fluo. Orange
50400	Russell Purple	90400	Fluo. Pink
60000	Navy	90500	Fluo. Neon
60420	Deacon Blue	90600	Fluo. Red
60650	Contact Blue	90700	Fluo. Magenta
62100	Light Royal	90800	Fluo. Purple

Genesis Super*

23801	Super Spice Brown	75601	Super Spring Green
30401	Super Dolphin Orange	80000	Super Gold
34800	Super Clockwork Orange	80100	Super Light Gold
40500	Super Red	87020	Super Lemon Yellow
47030	Super Fuchsia	87030	Super Primrose
47210	Super Red 2	90010	Super Fluo. Yellow
57010	Super Purple	90110	Super Fluo. Blue
57130	Super Fuchsia 3	90210	Super Fluo. Green
60007	Super Marine Blue	90310	Super Fluo. Orange
67040	Super Bright Blue	90410	Super Fluo. Pink
67050	Super Royal	90510	Super Fluo. Neon
70501	Super Dallas Green	90610	Super Fluo. Red
74240	Super Alpha Lime	90710	Super Fluo. Magenta
75301	Super Turquoise	90810	Super Fluo. Purple

**Above products are made with 10540GNS Genesis Base or 10000GNS Halftone Base*

Genesis Specialty Inks

19850	Process Black	89850	Process Yellow
49850	Process Magenta	99990	Phosphorescent
69850	Process Cyan		

WILFLEX® GENESIS APPLICATIONS CHART

	Product Applications	Suggested Meshes threads/in threads/cm	Suggested Squeegees durometer
GNS Colors †	wet-on-wet or over flashed white Cotton White on cotton Bleed Resistant White on 50/50	$\frac{180-230}{68-90}$ Underbase $\frac{110}{43}$	70-85
GNS Super Colors (except Super Fluos) ††	wet-on-wet or dark substrate	$\frac{86-125}{34-49}$ Staggered by print order	70-85
	wet-on-wet over flashed white— Cotton White on cotton Bleed Resistant White on 50/50	$\frac{140-230}{55-90}$ Underbase $\frac{140}{55}$	70-85
	wet-on-wet over flashed clear— Miracle Clear 10160	$\frac{140-180}{55-73}$ Underbase $\frac{140}{55}$	70-80
GNS Super Fluo	wet-on- wet over flashed white— Cotton White on cotton Bleed Resistant White on 50/50	$\frac{180-196}{73-77}$ Underbase $\frac{86-110}{34-43}$	70-80
GNS Process Colors †††	wet-on-wet on white or ecru	$\frac{280-355}{110-140}$	85, 60-90-60

Special Notes

† evaluate opacity of colors

†† courser meshes earlier in print order

††† roller frames with high tension preferable; consistency, detail and precision are essential

WILFLEX® SUPERBASE SERIES

DESCRIPTION 21000SB SuperBase was developed with the ColorMaster Series as a pigment concentrate and base mixing system especially for use with PCMaster dispensing equipment. The general purpose base exhibits a soft hand, with the ultimate matte finish and is one of WILFLEX's most opaque bases. Advanced technology and a creamy viscosity allow SuperBase to be pumped. SuperBase is virtually build-up free, a plus for high productivity printers.

PRINTER'S PARAMETERS

Substrates	Inks made using SuperBase may be printed on cotton, cotton blend fabrics.
Bleed resistance	None, use BR underbase white
Mesh (on darks)	86-120 t/in (34-49 t/cm)
Mesh (on lights)	110-280 t/in (49-110 t/cm)
Mesh (fine line)	120-305 t/in (49-120 t/cm)
Cure temp	320 F (160 C) entire film
Extender	Up to 20 percent (by weight) 10150FNS Finesse
Reducer	Up to 5 percent (by weight) Curable Reducer #10070
Caution	The viscosity of SB inks is designed to enhance opacity and printability. Any alteration of viscosity should be minimized.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FORMULATIONS

Although SuperBase can be used with Wilflex P.C. System's Pigment Concentrates, the ColorMaster Formulation Guide offers accurate simulations of the Coated PANTONE® Color Formulation Guide with only nine (9) pigment concentrates and five (5) fluorescent pigment concentrates (ColorMaster PCMs). PC to Base Ratio Charts are available in the Formulation Guide as well as in the IMS Software.

SPECIAL RECOMMENDATIONS

- When blended according to formulations, resulting colors vary in opacity from opaque to semi-opaque.
- For bleed resistance, an underbase white, such as Athletic Trophy White or Bright Tiger is suggested.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with Wilflex Technical Services Department prior to printing (US - 800-735-4353).

SUPERBASE STANDARD COLORS

19011SB	SB Matte Black
42270SB	SB Super Drake Red
43000SB	SB National Red
485CSB	SB PANTONE® 485 C Simulation
80100SB	SB Super Light Gold

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WILFLEX® GENESIS PROCESS

DESCRIPTION



Genesis process inks are formulated to achieve the cleanest and highest intensity colors for textile process screen printing. These pure, transparent colors are designed for high productivity, direct wet-on-wet printing. Excellent resistance to build-up, superb printability, extremely soft hand and minimal dot gain.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, all-white grounds.
Mesh	305 to 355 threads/in (120-140 threads/cm)
Tension (newtons)	25+
Stencil emulsion	Direct, indirect & capillary
Squeegee type	Dual (70/90) or triple (70/90/70)
Squeegee blade	Sharp
Squeegee angle	60+ degrees
Squeegee speed	Medium/fast
Cure temp	320 F (160 C) entire film
Extender	ProMatch Clear/Soft Hand Clear 10140
Reducer	Finesse #10150FNS
Storage year of	65-90 F (18-32 C). Avoid direct sun. Use within one receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

ORDER INFORMATION

GENESIS STANDARD PROCESS SET:

- 19850GNS Process Black
- 13850GNS Process White
- 49850GNS Process Magenta
- 69850GNS Process Cyan
- 89850GNS Process Yellow

GENESIS PROCESS TONE SET:

Create natural colors straight from the container.

- 49855GNS Process Tone Magenta
- 69855GNS Process Tone Cyan
- 89855GNS Process Tone Yellow
- Use with 19850GNS Black, 13850GNS White.

PROMATCH SET

- 19854GNS Black 69854GNS Cyan
- 49854GNS Magenta 89854GNS Yellow

EXTENDED GAMUT

Extended gamut refers to adding RGB to a CMYK palette. Wilflex recommends using the Tone Set with RGB colors:

- 47507GNSRGB Red 67507GNSRGB Blue
- 77507GNSRGB Green

HEXACHROME

The hexachrome set is an independent color gamut.

- 87501GNSHX Hex Yellow C
- 37501GNSHX Hex Orange C
- 47501GNSHX Hex Magenta C
- 67501GNSHX Hex Cyan C
- 77501GNSHX Hex Green C
- 19501GNSHX Hex Black C



FIBRILLATION

Lower viscosity process inks are more prone to allowing fibers to be exposed during laundering. To combat this, use SuperGuard HT as an overprint.

The left side of the image at left was overprinted with SuperGuard HT.

WHERE TO GET THE COLOR VALUES

The process color values for Wilflex inks are available on the Wilflex User's Manual CD-ROM, or download from the PolyOne web site: www.wilflex.com.

SPECIAL RECOMMENDATIONS

- Use an appropriate underbase on colored fabrics.
- Lower viscosity process inks are more prone to allowing fibers to be exposed during laundering. To combat this, use SuperGuard HT as an overprint.
- To ensure good quality separations, use a separator who specializes in the textile screen print industry.
- Line/mesh count relations of 55/305 (55/120) and 65/355 (65/140) have proven to be very effective at minimizing moire. Refer to information on half-tones in the Art Work section of the Wilflex User's Manual.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- Retensionable frames that allow for work-hardening of the mesh fabric are recommended.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

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WILFLEX® SUPERGUARD HT #10075IS

DESCRIPTION SuperGuard HT is a clear plastisol designed to fight fibrillation when used as an overprint, especially effective for process printing. SuperGuard HT enhances color brightness, improves adhesion and elongation and improves wash properties.

PRINTER'S PARAMETERS

Substrates	100 percent cotton, blends, fleece, polyester
Bleed resistance	None
Mesh	305-355 t/in (77-140 t/cm) for direct flat finish, depending on art/graphic detail and ink deposit requirements
Screen tension	In excess of 15 newtons per centimeter
Pallet	No metal surface. Prepare semi-soft platen.
Off-contact	1/16"
Squeegee	60/90/60 durometer-triple/straight edge profile (hard squeegee)
Gel temp	170-190 F (75-88 C)
Cure temp	320 F (160 C) entire film
Extender/Reducer	None
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Matte finish, clear when overprinting designs. Excellent printability
- Enhances color brightness
- Improves adhesion and elongation, fights fibrillation, improves wash properties
- Excellent shelf life. Safe, non-hazardous.

ART AND SCREEN RECOMMENDATIONS

● Process Printing

1. Combine CMYK positives to reproduce the fifth plate for SuperGuard HT.
2. Shoot the fifth screen in a lower mesh count than the CMYK screens.
If your CMYK mesh is: 305 t/in 120 t/cm Use mesh for SGHT 255 t/in.100 t/cm
If your CMYK mesh is: 355 t/cm140 t/cm Use mesh for SGHT 305 t/in.120 t/cm.
3. Place the SuperGuard HT screen in fifth printing position and apply wet-on-wet.
4. You also can flash after the CMYK for optimum results. Pretest & evaluate for preference.

- **Spot Colors** Overprint with SuperGuard HT using slightly coarser mesh than spot colors.

SPECIAL RECOMMENDATIONS

- Printing: Allow one flood, one print application. (Printing properties will be determined by manual or automatic printing applications.)
- Flash Cure and fusion will be determined by the Wilflex base used. Please refer to specifications outlined for the base.
- Use as a clear overprint on any type of printing to fight fibrillation.
- Do not use as an underprint on process printing. Overprinting offers better washability and color accuracy.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).



Wilflex Color Sets

Control from Art to Production

Wilflex offers color sets to load into Photoshop or work in conjunction with Photoshop Plug-ins or separation programs to help artists bring their vision of the design to reality without the hassle. Wilflex inks feature excellent translucency, allowing colors to blend during printing to produce a full spectrum of color.

PROCESS SET

Strongest process color set. This set reproduces strong, rich colors. Download color values from www.wilflex.com.

- Process Cyan 69850GNS
- Process Yellow 89850GNS
- Process Black 19850GNS
- Process Magenta 49850GNS
- Process White 13850GNS

Starter kit: **PROCESSKIT**

STONE SET

Most balanced Wilflex process color set. Download color values from www.wilflex.com.

- Tone Cyan 69855GNS
- Tone Yellow 89855GNS
- Tone Magenta 49855GNS
- Tone Black 19850GNS

Starter kit: **PROTONEKIT**

EXTENDED GAMUT

Use with process sets to extend the color palette and improve the look of your prints.

- RGB Red 47507GNSRGB
- RGB Blue 67507GNSRGB
- RGB Green 7507GNSRGB

Starter kit: **EXTGAMKIT**

HEX SET

A form of extended gamut, the Hex Set is designed to work with the widest gamut.

- Hex Yellow 87501GNSHX
- Hex Cyan C 7501GNSHX
- Hex Mag. C 47501GNSHX
- Hex Orange C 77501GNSHX
- Hex Green C 77501GNSHX
- Hex Black C 19501GNSHX

Starter kit: **HEXKIT**

PROMATCH SET

- ProMatch Black 19854GNS

- Cyan 69854GNS
 - Magenta 49854GNS
 - Yellow 89854GNS
 - Clear 10853CLR
- Starter kits: **PMKIT, PMQTKIT**

SPOT/COLOR-CRUNCH SET

Print in the same rotation for each job and increase the repeatability and consistency of your prints. Use with Freehand Graphics' automated separation software, Spot Process. (www.colorcrunch.com) To use with ColorCrunch (CC), drop Tan, Purple, Turquoise and Gray. Use with Xtreme White. (With Pantone Cross Ref.)

Red WP43542SPT	PMS 032
Green WP74209SPT	PMS 351
Blue WP61982SPT	PMS 300
Turquoise.WP72253SPT	PMS 312
Tan WP20841SPT	PMS 471
Gray WP16062SPT	Cool Gray 8
Gold WP81029SPT	PMS 123
Purple WP5715SPT	Purple C
White WP11888SPT	18888MX
Black WP19888SPT	19888MX

Starter kits: **WSPOTKIT, WPCRCHKIT**

RENAISSANCE SET

designed to work with the ICISS color separation programs from Coudray Graphics Technologies. This 8-color set covers an extended gamut for optimal color reproduction www.coudray.com

- Renaissance White 15111SB
- Renaissance Cyan 65111SB
- Renaissance Black 19111SB
- Renaissance Blue 66111SB
- Renaissance Red 44111SB

- Renaissance Green 75111SB
 - Renaissance Mag. 45111SB
 - Renaissance Yellow 85111SB
- Starter kit: **RENKIT**

HOPKINS 6-COLOR SET

The Genesis Hopkins 6 ink set is designed to work with the Riley Hopkins 6-color separation software. It consists of six colors that create a wide gamut with minimal ink stations.

- Hopkins 6 Black 17996GNS
- Hopkins 6 Rose 47946GNS
- Hopkins 6 Orange 37936GNS
- Hopkins 6 Blue 67966GNS
- Hopkins 6 White 17916GNS
- Hopkins 6 Yellow 87986GNS

FAST FILMS SET

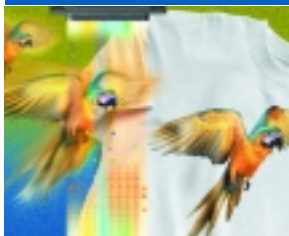
Match the following Pantone® colors using a color mixing system to produce a set to use with Fresener's Fast Films separation software. Use with a high opacity white, like Xtreme White or Bright Tiger.

Yellow	102C
Red	185C
Blue	286C
Purple	219C
Green	361C
Lt. Blue	306C
Gray	421C
Brown	167C
White	11888MX
Black	19888MX

Optional colors:
 Lt. Flesh 475C
 Dk. Flesh 161C

Colors can be made with PC Express or MX kit.

Let your imagination soar



Wilflex Color Systems put the most advanced technology in the industry to work for you, giving you the power to turn visions into reality. Easy to use and print, Wilflex Color Systems are the simplest and most cost effective way to achieve Pantone® simulations.

	MX/MSH/ Epic PF	PC Express	ColorMaster/ Equalizers
DESCRIPTION	RFU matching system. Strong, single-pigment colors, which yield minimal build-up, speeding production. MSH Nylon is an MX lookalike for printing on uncoated nylon. Epic is a non-phthalate system.	Pigment concentrate/base mixing system. PC Express pigments are strong and vibrant, and the inks yield minimal build-up, speeding production.	ColorMaster: Pigment concentrate and base mixing system for use with automated dispensing equipment. Equalizers: Group of balanced pigment concentrates used as colorants with General Purpose Bases.
FEATURES & BENEFITS	<ul style="list-style-type: none"> ● Soft, matte finish ● Accurate Pantone simulations ● Limited inventory ● Simple to use 	<ul style="list-style-type: none"> ● Most versatile ● Use PCs with a variety of bases ● Full cost, opacity control ● Limited inventory ● Requires more shop controls 	<ul style="list-style-type: none"> ● ColorMaster perfect fit for automated dispensing machines ● Equalizers give benefits of PC System without the worries
SYSTEM COMPONENTS	15 RFU mixing colors	15 PCs and	14 PCs, 21000SB base 14 Equalizers, 21000SB base
SPECS	<p>PANTONE® approved on white fabric, 156T (62 t/cm) mesh under Cool White Fluorescent 4100K.</p> <p>Printing recs 156-305 t/in (43-120 t/cm). Cotton, blends.</p>	<p>PANTONE® approved on white fabric, 156T (62 t/cm) mesh under Cool White Fluorescent 4100K.</p> <p>Printing recs 156-305 t/in (62-120 t/cm). Cotton, blends.</p>	<p>PANTONE® approved on white fabric, 156T (62 t/cm) mesh under Cool White Fluorescent 4100K.</p> <p>Printing recs 156-305 t/in (62-120 t/cm). Cotton, blends.</p>
RISK FACTOR	Low risk, needs elementary controls	Higher risk with beginners or shops with poor controls	ColorMaster: Higher risk with beginners or shops with poor controls Equalizers: Low - Medium risk. Equalizers will cure even when out of balance
ORDERING INFO	STARTER KIT (MXKIT or MSHKIT): 1 qt. of each color & Finesse, 1 gal. 11888MX (or 11888MSH) & Formulation Manual including PANTONE® Color Formula Guide, plus IMS Software or download recipes from wilflex.com.	STARTER KIT (PCEXP-KIT): 1 pt. of each pigment, 1 gal. 10680GNS base & Formulation Manual including PANTONE® Color Formula Guide, plus IMS Software or download recipes from wilflex.com.	STARTER KIT (CMASITERKIT): 1 pt. of each PC, 1 qt. 21011PCM ColorMaster White PC, 1 gal. 21000SB SuperBase. (EQUALKIT): 1 qt. of each Equalizer, 1 gal. 21000SB SuperBase. Both kits include Formulation Manuals, IMS Software & PANTONE® Color Formula Guides.

WILFLEX® MX COLOR MIXING SYSTEM



DESCRIPTION The Wilflex MX Mixing System is an easy-to-use, easy-to-mix color matching system with 15 intermixable colors that enables printers to produce simulations of coated and uncoated PANTONE® Color Formula Guide colors on white and dark (with white underlay) garments. MX inks produce soft-hand inks for high production, wet-on-wet printing, offering a matte finish and improved crock resistance. MX Kits contain mixing inks, an MX Manual, and a PANTONE® Color Formula Guide.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	None, use BR underbase
Mesh	156-305 t/in (43-120 t/cm)
Squeegee	60 to 90 durometer, straight edge blade
Emulsion	Conventional direct or capillary films
Cure temp	320 F (160 C) entire film
Extender	10150FNS Finesse, but modification may alter color and performance
Reducer	Curable Reducer #10070, but modification may alter color and performance
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request. Formulated to comply with EN71 and ASTM F9-63.

COLOR SPECIFICATION

MX formulas were printed through a 156 t/in (62 t/cm) mesh screen on white, 100 percent cotton fabric and viewed under cool white fluorescent (4100K illuminant). These specifications were used internally at PolyOne for all PANTONE simulation color approvals. Similar print application, screen mesh, squeegee profile and light specifications should be implemented in your shop to ensure comparable results. We recommend that you begin a color library of your prints. By keeping prints achieved under various conditions and on differing substrates, it is possible to build your own reference library of color and data.

MIXING GUIDELINES

MX formulas that reproduce PANTONE® color simulations have been calculated by weight and are presented as a total of 1,000 grams in the Formulation Guide. The final volume of ink produced from these formulas will vary according to color and the specific gravity of the ink concerned, but all formulas will make approximately 1 quart/1 liter. Wilflex recommends that MX Mixing Inks be weighed on scales accurate to +/- 0.1 gram. Proof formulas prior to commencing any production run to ensure color accuracy, as the final color is dependent on print technique, mesh count and substrate used. PolyOne and its associated companies assume no responsibility for the actual color achieved.

SPECIAL RECOMMENDATIONS

- Inks produced from the MX Mixing System are translucent to opaque. When blended according to formulations, resulting colors vary in opacity from translucent to semi-opaque.
- Colors will reproduce best on white or light fabrics.
- For bleed resistance, an underbase white, such as 11999XW Xtreme White, 11480HT Bright Tiger or 11195MVP MVP White must be used.
- For consistency, all formulas provided were printed through 156 t/in (62 t/cm) mesh screen on

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

white, 100 percent cotton fabric for color approval. Wilflex MX Mixing Inks can, however, be printed through a range of meshes between 110T and 305 t/in (43-120 t/cm). Variation in screen mesh and ink deposit can result in variation in depth of color and opacity.

- All MX Mixing Inks colors were developed using Genesis technology and can be printed wet-on-wet with exceptional resistance to build-up.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. This product has a unique viscosity. Upon opening a container that has been unused for several days or weeks, it will appear slightly thick. Stir to easily restore the creamy texture.
- Do not dry clean, bleach, iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with Wilflex Technical Services Department prior to printing (US - 800-735-4353).

ORDERING INFORMATION

11888MX MX White
19888MX MX Black
38888MX MX Orange
48888MX MX Red (Blue Shade)
48889MX MX Magenta
58888MX MX Violet
98880MX MX Fluorescent Pink
98884MX MX Fluorescent Red
98885MX MX Fluorescent Purple
98886MX MX Fluorescent Blue
98888MX MX Fluorescent Yellow

SOLD SEPARATELY

- MX Starter Kit - contains 1 quart of each color, 1 gallon 11888MX and Formulation Manual including PANTONE® Color Formula Guide (coated).
- IMS Software - Windows-based software containing all formulations in MX Manual or download recipes from www.wilflex.com
- PowerPax - Buy an MX kit, plus software and a scale for one low price. 7,500- and 1,000-gram capacity scales available.
- DispenseMaster™ II- an automatic ink dispensing system with MX formulations preprogrammed into the software.
- S007 Ink Shaker - quick, easy way to mix ink. No blades to clean.
- MXFormGuide - three-ring binder containing product specifications, MX Color Card and MX PANTONE formulations.



Wilflex MX ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. MX inks were matched under Cool White Fluorescent 4100K illuminant. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions© Pantone, Inc., 1963,1991.

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

WILFLEX® OPAQUE MATCHMAKER COLOR MIXING SYSTEM

GENERAL DESCRIPTION The Wilflex Opaque MatchMaker Color Mixing System is an easy-to-use, easy-to-mix color matching system with 11 intermixable colors that enables printers to produce opaque simulations of PANTONE® Color Formula Guide colors on dark garments. Opaque MatchMaker produces soft-hand inks for high production, wet-on-wet printing, offering a matte finish and improved crock resistance. The formulas used in this system have been carefully designed to closely simulate PANTONE colors on coated stock as presented in the PANTONE® Color Formula Guide 1000. For convenience, a PANTONE® Color Formula Guide 1000 has been included with this Opaque MatchMaker Manual.

OPAQUE MATCHMAKER MIXING COLORS

11973OPM White	57973OPM Violet (Strong Red Shade)
87973OPM Yellow (Green Shade)	65973OPM Ultramarine (Red Shade)
88973OPM Golden (Red Shade)	66973OPM Blue (Green Shade)
33973OPM Orange (Red Shade)	77973OPM Green (Blue Shade)
44973OPM Vermilion(Yell. Shade Red)	47973OPM Magenta (Strong Blue Shade)
19973OPM Black (Slight Brown Shade)	

All of the above Opaque MatchMaker Mixing Colors have been formulated to comply with both EN71 and ASTM F9-63. The 11 Mixing Colors are fully intermixable. Every effort has been made to closely simulate an opaque representation of the PANTONE® colors listed and, as a result, the finished colors will have consistent opacity.

RECOMMENDED SUBSTRATES Cotton, cotton blends and some synthetic fabrics. For bleed resistance, an underbase white such as 11480HT Bright Tiger or 11195MVP MVP White must be used. Pre-print and test all substrates for dye migration, ink adhesion, wash fastness and other desired properties. Opaque MatchMaker formulas have been designed for use on dark garments but are very suitable for overprinting onto a flashed white underlay.

PRINTING RECOMMENDATIONS Mesh: For optimum opacity, use 86 threads/in (34 threads/cm) mesh. For overprinting and fine-line printing, use 120-305 threads/in. (49-120 threads/cm). Squeegee: Medium durometer, slightly rounded edge. Emulsion: Conventional direct or capillary films. For consistency, all formulas provided were printed through a 86 T/in (34 T/cm) mesh onto 100 percent cotton black fabric for color approval. Wilflex Opaque MatchMaker inks can, however, be printed through a range of meshes between 86-195 threads per inch (34-77 threads/cm). Variation in screen mesh and ink deposit can result in variation in depth of color and opacity. All Opaque MatchMaker colors have been developed using Genesis technology and can be printed wet-on-wet with exceptional resistance to build-up.

MODIFIERS Opaque MatchMaker inks are easy to print and mix. The viscosity or thickness has been designed specifically to enhance opacity and printability. We do not recommend any modification to these inks. However, if necessary, 10150FNS Finesse and 10070 Curable Reducer may be used to extend or reduce ink, but these additions may alter color and performance of the ink. Note: Stir before use. Upon opening a container that has been unused for several days or weeks, the ink will appear slightly thick. Stir to restore creamy texture.

COLOR SPECIFICATION For PANTONE® color approval, Opaque MatchMaker formulas were printed through an 86 T/in (34 T/cm) mesh onto 100 percent cotton black fabric and viewed under D65 simulated daylight. Wilflex recommends that you begin a color library of your prints. By keeping prints achieved under various conditions and on differing substrates, it

is possible to build your own valuable reference library of color and data.

MIXING GUIDELINES All Opaque MatchMaker formulas have been calculated by weight and are presented as a total of 1000 grams. The final quantity of ink produced from these formulas will vary according to color and the specific gravity of the ink concerned, but all formulas will make approximately 1 quart/1 liter. We recommend that you weigh Opaque MatchMaker inks on scales accurate to +/- 0.1 gram. Wilflex strongly recommends that all the formulas be proofed prior to commencing any production run to ensure color accuracy as the final color is dependent on print technique, mesh count and substrate used. Wilflex Inc. and its associated companies assume no responsibility for the actual color achieved.

MAXIMIZING OPTIONS with VERSION 2 Formulations

Wilflex now offers an alternative formulation guide that offers cleaner, brighter colors on white fabric under fluorescent lighting and a broader mixing color palette.

Version 2 formulations offer the following features:

- Introduction of three (3) new mixing colors
43559OPM Red (Bright Blue Shade Red)
62973OPM Blue 2 (Clean Green Shade Blue)
82973OPM Yellow 2 (Clean Green Shade Yellow)
- Enhanced Color Brightness on white fabric, under fluorescent lighting.
- Introduction of Finesse in formulations to improve color clarity.
- Broader mixing color palette
- Introduction of Standard Genesis Super Fluorescent inks as mixing colors:
90010GNS Super Fluo. Yellow 90110GNS Super Fluo. Blue
90410GNS Super Fluo. Pink 90310GNS Super Fluo. Orange
90610GNS Super Fluo. Red
90710GNS Super Fluo. Purple

CURING Wilflex Opaque MatchMaker inks must reach a temperature of 320 F (160 C) to achieve full cure. Failure to reach full cure will result in poor washfastness, adhesion and wet rub resistance. Fusion tests should be made prior to any production run. See the "Evaluating Plastisol Inks" section of the Wilflex User's Manual for cure testing procedures.

WASH-UP Opaque MatchMaker inks may be cleaned from the screen with Wilflex Screen Wash or other conventional solvents.

SAFETY Complete Health and Safety Information is available upon request.

STORAGE Recommended storage temperature is 65-90 F (18-32 C). Avoid storing in direct sunlight or in extreme temperature conditions. It is recommended that Wilflex products be used within one year of receipt of product. Inks subjected to extreme temperatures or prolonged shelf life could thicken in the container.

Wilflex OPM ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. OPM inks were matched under D65 simulated daylight. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions© Pantone, Inc., 1963,1991.

WILFLEX® EPIC COLOR MIXING SYSTEM

DESCRIPTION The Wilflex Epic new ink technology color mixing system has been specially formulated with non-phthalate plasticizers. It is an easy-to-use, easy-to-mix color mixing system with 15 intermixable colors that enables printers to produce simulations of coated and uncoated PANTONE® Color Formula Guide colors on white and dark (with white underlay) garments. Epic inks produce soft hand inks for high production, wet-on-wet printing, offering a matte finish and improved crock resistance

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	None, use 11001PFW White as an underbase on cotton fabric
Mesh	156-305 t/in (43-120 t/cm)
Squeegee	60 to 90 durometer, straight edge blade
Emulsion	Phthalate-free emulsions of choice
Cure temp	320 F (160 C) entire film
Extender	10000PFX Epic non-phthalate plasticizer extender
Reducer	No modification of Epic inks is recommended
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request. Formulated to comply with EN71 and ASTM F9-63.

MIXING GUIDELINES

Epic colors are created to mirror MX Mixing colors. For Pantone simulations, simply follow the MX formulas in the Wilflex MX Formula Guide. Epic formulas that reproduce PANTONE® color simulations have been calculated by weight and are presented as a total of 1,000 grams in the Formulation Guide. The final volume of ink produced from these formulas will vary according to color and the specific gravity of the ink concerned, but all formulas will make approximately 1 quart/1 liter.

NON-CONTAMINATION OF EPIC INKS

- Do not add or mix non-Epic, phthalate-containing inks, additives or extenders with the Epic ink products.
- Use only Epic inks and Epic extenders together.
- Under normal printing parameters, the Wilflex Epic inks are ready to use straight out of the container, without the additives.
- Do not dilute or modify Epic inks with alien products, other than those recommended by PolyOne.
- When mixing, all buckets, palette knives and stirring apparatus must be cleaned properly and free of phthalate-containing inks.
- All squeegees, flood bars and screens must be cleaned properly to remove phthalate-containing inks before printing Epic.

FAILURE TO ADHERE TO THESE VITAL INSTRUCTIONS MAY EXPOSE YOU TO LEGAL CONSEQUENCES FROM YOUR CUSTOMERS WHO HAVE REQUESTED NON-PHTHALATE PLASTICIZERS IN THEIR PRINTS.

SPECIAL RECOMMENDATIONS

- Inks produced from the EPIC Mixing System are translucent to opaque. When blended according to formulations, resulting colors vary in opacity from translucent to semi-opaque.
- Colors will reproduce best on white or light fabrics.

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

- An approved PF White such as 11001PFW Epic Cotton White may be used as an underbase and highlight white for 100 percent cotton **ONLY**. If bleed resistance is required, use 11000PFW Epic BR White.
- For consistency, all formulas provided were printed through 156 t/in (62 t/cm) mesh screen on white, 100 percent cotton fabric for color approval. Wilflex EPIC Mixing Inks can, however, be printed through a range of meshes between 110T and 305 t/in (43-120 t/cm). Variation in screen mesh and ink deposit can result in variation in depth of color and opacity.
- All EPIC Mixing Inks colors were developed using Genesis technology and can be printed wet-on-wet with exceptional resistance to build-up.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. This product has a unique viscosity. Upon opening a container that has been unused for several days or weeks, it will appear slightly thick. Stir to easily restore the creamy texture.
- Do not dry clean, bleach, iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with Wilflex Technical Services Department prior to printing (US - 800-735-4353).

ORDERING INFORMATION

11888PFX Epic PF White
 19888PFX Epic PF Black
 38888PFX Epic PF Orange
 48888PFX Epic PF Red
 48889PFX Epic PF Magenta
 58888PFX Epic PF Violet
 68888PFX Epic PF Marine
 68889PFX Epic PF Blue
 78888PFX Epic PF Green
 88888PFX Epic PF Yellow
 98880PFX Epic PF Fluorescent Pink
 98884PFX Epic PF Fluorescent Red
 98885PFX Epic PF Fluorescent Purple
 98886PFX Epic PF Fluorescent Blue
 98888PFX Epic PF Fluorescent Yellow

11000PFW Epic BR White
 11001PFW Epic Cotton White
 10000PFX Epic PF Extender

Wilflex EPIC ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. EPIC inks were matched under Cool White Fluorescent 4100K illuminant. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions © Pantone, Inc., 1963,1991.



The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

WILFLEX® PC EXPRESS COLOR MIXING SYSTEM

DESCRIPTION Wilflex PC Express is a pigment concentrate and base color mixing system that enables printers to produce accurate coated or uncoated simulations of the PANTONE® Color Formulation Guide with only 15 pigment concentrates, including fluorescents.

PRINTER'S PARAMETERS (with 10680GNS)

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	None, use BR underbase white
Mesh (on darks)	86-120 t/in (34-49 t/cm)
Mesh (on lights)	110-305 t/in (49-120 t/cm)
Mesh (fine line)	230-305 t/in (90-120 t/cm)
Cure temp	320 F (160 C) entire film
Extender	10150FNS Finesse, but modification may alter color and opacity
Reducer	Curable Reducer #10070, but modification may alter color and performance
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
HS&E	Available upon request

SUPPORT MATERIALS

The PC Express Manual includes instructions for use and the formulation guide for coated and uncoated chips in the PANTONE® Color Formula Guide. All PC Express color approvals were printed through a 156 t/in (62 t/cm) mesh screen on white, 100 percent cotton fabric and were matched under Cool White Fluorescent 4100° K illuminant. PC Express recipes are available on the Wilflex Ink Management Software, a Windows™- based program written to enhance the formulation guide. The user-friendly, menu-driven software is supplied on a CDROM or via download from www.wilflex.com.

BASE The general-purpose base designed for use with PC Express pigments is 10680GNS Genesis Plus. Genesis Plus exhibits a soft hand, matte finish and excellent opacity. Advanced technology allows Genesis Plus to be pumped, due to its creamy viscosity. Genesis Plus is virtually build-up free, an added benefit for high productivity printers.

PIGMENTS The PC Express pigments were selected for their ability to produce accurate PANTONE® simulations.

10110PC Extra White PC	18010PC Electron Blue PC
18000PC Electron Yellow PC	10450PC Maroon PC
10940PC Velvet Black PC	19080PC Fluo. Purple PC
18060PC Electron Red PC	10470PC Magenta PC
10870PC Bright Yellow PC	11650PC Marine Blue PC
19040PC Fluo. Pink PC	10680PC Blue PC
11300PC Bright Orange PC	10570PC Violet PC
10700PC Green PC	

SPECIAL RECOMMENDATIONS

- When blended according to formulations, resulting colors vary in opacity from opaque to semi-opaque.
- For bleed resistance, an underbase white, such as 11999XW Xtreme White, 11480HT Bright Tiger, 11003WHT Athletic Trophy White or 11195MVP MVP White, must be used.
- Colors will reproduce best on white or light colored fabrics.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with Wilflex Technical Services Department prior to printing (US - 800-735-4353).

SOLD SEPARATELY

- PC Express Starter Kit - contains 1 pint of each pigment, 1 gallon base and Formulation Manual including PANTONE® Color Formula Guide (coated).
- IMS Software - Windows-based software containing all formulations in PC Express Manual or download recipes from www.wilflex.com
- PowerPax - Buy an PC Express kit, plus software and a scale for one low price. 7,500- and 1,000-gram capacity scales available.
- DispenseMaster™ II- an automatic ink dispensing system with PC Express formulations preprogrammed into the software.
- S007 Ink Shaker - quick, easy way to mix ink. No blades to clean.
- PCXGuide - three-ring binder containing product specifications, PC Express Color Card and PC Express PANTONE formulations.



Wilflex PC Express ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. PC Express inks were matched under CoolWhite Fluorescent 4100K illuminant. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions® Pantone, Inc., 1963,1991.

WILFLEX PC EXPRESS COLOR MIXING SYSTEM

The Easy-to-Use PC/Base System

WILFLEX Base

10680GNS

Genesis Plus Base



**Create PANTONE®
Simulations with Just
15 Pigments**

Standard WILFLEX PC Express (PCs) Pigment Concentrates

10110PC	Extra White
10450PC	Maroon
10470PC	Magenta
10570PC	Violet
10680PC	Blue
10700PC	Green
10870PC	Bright Yellow
10940PC	Velvet Black
11300PC	Bright Orange
11650PC	Marine PC
18000PC	Electron Yellow
18010PC	Electron Blue
18060PC	Electron Red
19040PC	Fluo. Pink
19080PC	Fluo. Purple

Changing Bases: The use of IMS Software or PC Base Ratio charts allows you to change bases, with the modification of pigment loading or special requirements.

Optional Bases

10540GNS	Genesis Base
10250NPF	NuPuff Base
10440TF	TransFlex Base
11422MSH	Nylon Mesh Base
10108SA	Stretch Base/Additive
10000GNS	Genesis Halftone Base
10007TF	TransClear
10040SSVFF	SSV-FF Base
10150FNS	Finesse
18800MCVFF	MCV-FF Base
10099MVP	MVP LB Neutral Base
11422MSH	MSH Nylon Mesh Base
21000SB	SuperBase
10640GNS	Genesis Super Base (Europe only)

Optional (PCs) Pigment Concentrates

10000PC	Clear
10200PC	Light Brown
10370PC	Fast Red
10490PC	Venus
10770PC	Fast Gold
10830PC	Blaze Gold
10860PC	Blaze Yellow
10970PC	Black
11040PC	Fast White
11600PC	Bright Blue
11820PC	Blaze Lemon
12220PC	Shining Gold
18020PC	Electron Green
18030PC	Electron Orange
19050PC	Fluo. Neon
19070PC	Fluo. Magenta

Base Application Chart

Part Number	Description	Opacity	Bleed Resistance	Gloss	Elongation	Max PC Load by wt.	Temp	Special Features
12129CC	Classic Clear	Low	None	High	Excellent	5%	350F(177C)	<ul style="list-style-type: none"> Optically Clear Base Caution-Pigment migration on overprint colors
10540GNS	Genesis Base	Med-High	None	Medium	Good	20%	320F (160C)	<ul style="list-style-type: none"> Control opacity with 10110PC and PC Loading Max 40% 10110PC Extra White PC Max 16% Fluorescents
10000GNS	GNS Half Tone Base	Low	None	High	Good	10%	320F (160C)	<ul style="list-style-type: none"> Use to make Process Colors and Fluorescents
10680GNS	Genesis Plus Base	Med-High	None	Low	Good	20%	320F (160C)	<ul style="list-style-type: none"> Slightly more opaque than 10540GNS, easier to blend
10640GNS	GNS Super Base (European Sales only)	Med-High	None	Low	Good	23%	320F (160C)	<ul style="list-style-type: none"> Designed for European Market Opaque general purpose direct print
10009HDC	High Density Clear	Low	None	High	Excellent	5%	350F(177C)	<ul style="list-style-type: none"> Caution-Pigment migration on overprint colors Very Glossy, low pigment loading
10145IS	Ice Base	High	None	High	Excellent	15-20%	320-350F (160-177C)	<ul style="list-style-type: none"> Shiny, wax-like texture
10344REF	ImageBrite Reflective	Low	None	Low	Good	3%	325-340F (163-171C)	<ul style="list-style-type: none"> Special PC requirements-refer to PC Express Manual
18800MCVFF	MCV-FF Base	Low	None	High	Excellent	10%	270F(132C)	<ul style="list-style-type: none"> Slightly more glossy, less opaque than 10040SSVFF
12000MP	MP Multi-Purpose	Med-High	None	Low	Good	25%	320F (160C)	<ul style="list-style-type: none"> Willflex original wet-on-wet direct ink
13010MP	MP Super Opaque	High	None	Low	Good	25%	320F (160C)	<ul style="list-style-type: none"> Creamy, easy to print. Geared for manual, OK for Auto
10099MVP	MVP LB Neutral	High	Yes	High	Good	15-20%	320F (160C)	<ul style="list-style-type: none"> Use with fabrics prone to dye migration Excellent mat down properties
10425NS	Natural Suede	High	None	Low	Fair	15-20%	320F (160C)	<ul style="list-style-type: none"> Higher pigment loading = lower puff height
10399NB	Nova Base	Low	None	Low	Good	5%	330-340F (166-171C)	<ul style="list-style-type: none"> Great glitter carrier, very low viscosity
10250NPF	NuPuff	High	None	Low	Fair	10-20%	320F (160C)	<ul style="list-style-type: none"> Color lightens when cured Reduce 10110PC for dark colors
11422MSH	Nylon Mesh Ink	Low-Med	None	High	Excellent	15%	325F(163C)	<ul style="list-style-type: none"> Control opacity with 10110PC and PC loading
10670RB	Rock Base	Med-High	None	High	Excellent	10-15%	350F(171C)	<ul style="list-style-type: none"> Heavy viscous base
10890NRB	Rug Base	Low	None	High	Good	15%	300F(149C)	<ul style="list-style-type: none"> Low viscosity, good mat-down properties
10140SHC	Soft Hand Clear	Low	None	Medium	Good	5-10%	320F (160C)	<ul style="list-style-type: none"> Lower viscosity than Finesse
11110SSVHY	SSV Base	Med	None	High	Excellent	25%	320F (160C)	<ul style="list-style-type: none"> Willflex original "Athletic" ink
10040SSVFF	SSV-FF Base	Med	None	High	Excellent	10%	270F(132C)	<ul style="list-style-type: none"> Use of Fast PCs allow higher pigment loading (20-25%)1
10108SA	Stretch Additive	Low	None	High	Excellent	15%	300F (149C)	<ul style="list-style-type: none"> Can be used as base or extender
21000SB	Super Base	High	None	Very Low	Good	20-25%	320F (160C)	<ul style="list-style-type: none"> Most opaque base. Easy to blend, very matte finish Hot-split clear carrier for process and fluorescent colors, glitters, shimmers
10007TF	TransClear	Low	None	NA	Good	10%	195-230F (90-110C) Gel on	
10440TF	TransFlex Base	Med-High	None	Low	Good	15-20%	195-230F (90-110C) Gel on paper	<ul style="list-style-type: none"> Some colors may require 10000PC Clear or Reducer 1 Max 48% 10110PC Extra White PC Color Stability in Pastels- Use more than 1% 10870PC,10450PC, Fluorescents
10480TUF	Tuf Puff	High	None	Low	Good	5%	190-215F (88-102C) Gel on paper	<ul style="list-style-type: none"> Colors lighten when transferred

Pigment Concentrates

Part Number	PC	Definitions	Non-Migrating	Special Recommendations
10110PC	Extra White 	Very strong white dispersion. Used for high opacity colors.		<ul style="list-style-type: none"> Maximum loading 40% - 10540GNS, 10680GNS 48% - 10440TF Not for use in 10344REF
10450PC	Maroon 	Very strong maroon dispersion. The tint is very blue and not clean. Used to create maroon or burgundy colors, requiring a blue undertone.		<ul style="list-style-type: none"> High levels tends to increase viscosity of base. Not for use in 10344REF Improved color stability -Minimum Loading - .6%
10470PC	Magenta 	Strong, clean magenta dispersion with blue undertone. Excellent for making fuchsias and rhodamine colors.		<ul style="list-style-type: none"> Excellent clean colorant
10570PC	Violet PC 	Very strong blue-shade purple dispersion. Its color and tinting strength produce effective color with small amounts. Excellent for opaque purples and royals.		<ul style="list-style-type: none"> High levels tends to increase viscosity of base Not for use in 10344REF
10680PC	Blue 	Strong green -shade blue dispersion. Used in blue, turquoise and aqua inks.		<ul style="list-style-type: none"> Not for use in 10344REF
10700PC	Green 	Very strong blue-shade green dispersion. Excellent for creating turquoise and aqua inks. When making bright or yellow-shade green inks, blend with a green-shade yellow dispersion.		<ul style="list-style-type: none"> High Levels tends to increase viscosity of base Not for use in 10344REF
10870PC	Bright Yellow 	Bright, transparent yellow. Very clean in masstone and tint. Excellent for process colors or other transparent colors.		<ul style="list-style-type: none"> High levels tends to drop viscosity of base Improved color stability -Minimum Loading - .2%
10940PC	Velvet Black 	Strong black dispersion with bluish tint. Used to make blue-tinted grays and as a general purpose black PC		<ul style="list-style-type: none"> High levels tends to increase viscosity of base 10440TF color stability -Minimum Loading - .4%
11300PC	Bright Orange 	Opaque red-shade orange dispersion. Creamy texture allows it to be easily mixed into any base.		<ul style="list-style-type: none"> High levels tends to drop viscosity of base
11650PC	Marine Blue 	Strong, clean blue dispersion with a slight red undertone. Makes very clean blues with little opacity.		<ul style="list-style-type: none"> High Levels tends to drop viscosity of base
18000PC	Fluorescent Yellow 	Very bright, transparent yellow dispersion. Weak with green undertone		<ul style="list-style-type: none"> Maximum loading 16% - 10540, 10680GNS
18010PC	Electron Blue 	Bright, transparent blue dispersions. Dullest of the fluorescent PCs. Weak with a green undertone.		<ul style="list-style-type: none"> Maximum loading 16% - 10540, 10680GNS
18060PC	Electron Red 	Very bright, transparent red dispersion. Used to brighten red and orange shades.		<ul style="list-style-type: none"> Maximum loading 16% - 10540, 10680GNS
19040PC	Fluorescent Pink 	Bright, transparent pink dispersion. Very weak in color with a blue undertone.		<ul style="list-style-type: none"> Maximum loading 16% - 10540, 10680GNS
19080PC	Fluorescent Purple 	Bright, transparent purple-shade dispersion. Reddish blue undertone. Use to achieve difficult purple and magenta colors.		<ul style="list-style-type: none"> Maximum loading 16% - 10540, 10680GNS

WILFLEX® EQUALIZER SERIES

DESCRIPTION The Wilflex Equalizer Series is a balanced set of pigment concentrates used as colorants to Wilflex General Purpose Bases. The Equalizer PCMs are dispersions of dry pigments in plasticizer mixed with an innovative resin system. The resulting colorants are extremely strong, clean and stable. The Equalizer pigments were selected due to their ability to produce accurate PANTONE® simulations.

31011PCM <i>White</i>	High brightness level, high pigment loading concentrate that builds excellent opacity
31040PCM <i>Red</i>	Yellow Shade Red that can be used to produce warm reds and oranges, very clean color
31047PCM <i>Magenta</i>	Blue Shade red that exhibits excellent performance properties and high tint strength: clean color
31057PCM <i>Violet</i>	Blue Shade Violet exhibits outstanding performance properties and high tint strength; used to make purples and royals.
31068PCM <i>Blue</i>	General purpose green shade blue dispersion; excellent performance
31065PCM <i>Marine</i>	Red Shade blue; can be used to tone brown shade blacks to make them bluer; low tinting value.
31070PCM <i>Green</i>	Clean green shade dispersion; high tint value
31087PCM <i>Yellow</i>	Clean yellow shade dispersion; high tint value
31097PCM <i>Black</i>	Universal black that exhibits a brown undertone; can be made bluer with small amount of Marine Blue.
31001PCM <i>Fluo. Yellow</i>	Bright Transparent yellow dispersion with green-shade undertone.
31002PCM <i>Fluo Green</i>	Bright, transparent green dispersion with blue-shade undertone.
31003PCM <i>Fluo Blue</i>	Bright, clean transparent blue dispersion with a green- shade undertone.
31004PCM <i>Fluo Pink</i>	Bright, transparent pink dispersion with a bluish-red undertone.
31005PCM <i>Fluo Purple</i>	Clean, bright violet shaded dispersion. Useful in matching difficult bright purples, and magentas
31030PCM <i>Brt Orange</i>	Opaque red-shade dispersion with blue undertone. Similar to 11300PC Bright Orange
31045PCM <i>Maroon</i>	Effective in creating maroon or burgundy colors. Blue shade undertone, not clean

FEATURES

- Super smooth, creamy texture, easy to blend into base
- Clean colorants designed to produce PANTONE® simulations
- Unique Resin System added to Pigment dispersion to create a durable, balanced pigment colorant.

SPECIAL RECOMMENDATIONS

- Color Matching Guidelines
 - o Maximum recommended Equalizer loading is 50% to a general purpose base.
 - o The use of specialty bases is not recommended. (Hot split, Fast Fusion, Nylon) Pretest. The chemistry of the specialty base will be compromised with the addition of Equalizers.
 - o Using a specific factor determined for each Equalizer, color matchers can convert existing ColorMaster or custom colors to formulas using Equalizers.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

WILFLEX® COLORMASTER SERIES

DESCRIPTION The Wilflex ColorMaster Series is a pigment concentrate and base mixing system created especially for use with PCMaster dispensing equipment. The ColorMaster Formulation Guide enables printers to produce accurate simulations of the Coated PANTONE® Color Formulation Guide with only nine PCs and five fluorescent PCs.

PRINTER'S PARAMETERS (with SuperBase 2000)

Substrates	Cotton, cotton blends, and some synthetic fabrics
Bleed resistance	None, use BR underbase white
Mesh (on darks)	86-120 t/in (34-49 t/cm)
Mesh (on lights)	110-280 t/in (49-90 t/cm)
Mesh (fine line)	120-280 t/in (49-110 t/cm)
Cure temp	320 F (160 C) entire film
Extender	10150FNS Finesse, but modification may alter color & opacity
Reducer	Curable Reducer #10070, but modification may alter color & performance
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

SUPPORT MATERIALS The ColorMaster Manual includes the formulation guide, Instructions on System Use, and a coated PANTONE® Color Formula Guide. All ColorMaster color approvals were printed through a 156 threads/in (62 threads/cm) mesh screen on white, 100 percent cotton fabric and were matched under CoolWhite Fluorescent 4100°K illuminant. Recipes are available on the Wilflex Ink Management Software available on CD-ROM or via download from wilflex.com.

BASE 21000SB SuperBase 2000 is the general purpose base designed for use with ColorMaster pigments. SuperBase 2000 exhibits a soft hand, matte finish & excellent opacity. Advanced technology allows SuperBase 2000 to be pumped, due to its creamy viscosity. SuperBase 2000 is virtually build-up free, an added benefit for high productivity printers.

PIGMENTS ColorMaster PCMs are dispersions of dry pigments in plasticizer. Innovative chemistry has produced extremely strong, clean & stable pigment concentrates. ColorMaster pigments were selected due to their ability to produce accurate PANTONE® simulations.

21011PCM CMaster PC White	21004PCM CMaster Fluo Pink PC
21001PCM CMaster Fluo Chartreuse PC	21068PCM CMaster PC Blue G/S
21040PCM CMaster PC Red Y/S	21005PCM CMaster Fluo Purple PC
21002PCM CMaster Fluo Green PC	21065PCM CMaster PC Marine R/S
21047PCM CMaster PC Magenta B/S	21070PCM CMaster PC Green B/S
21003PCM CMaster Fluo Blue PC	21087PCM CMaster PC Yellow G/S
21057PCM CMaster PC Violet R/S	21097PCM CMaster PC Black

SPECIAL RECOMMENDATIONS

- If blended according to formulations, resulting colors vary in opacity from opaque to semi-opaque.
- For bleed resistance, an underbase white, such as 11999XW Xtreme White, 11480HT Bright Tiger or 11003WHT Athletic Trophy White, must be used.
- Colors will reproduce best on white or light colored fabrics.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach, or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

Wilflex ColorMaster ink formulations for screen process printing produce simulations of PANTONE® Colors in this color reproduction method due to differences in ink film, opacity, pigment selection, and substrate. The pigment selection used in blending screen process inks may cause metamerism. Pantone, Inc. assumes no responsibility for formula accuracy. PANTONE® is Pantone, Inc.'s check-standard trademark for color. Portions© Pantone, Inc., 1963,1991.

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.



Wilflex® Ink Room Management Tools

IMS SOFTWARE

Easy-to-use job and recipe management software for Windows™

Calculate costs of job, how much ink is needed

AUTOMATED DISPENSING EQUIPMENT

Save time and money by automating your ink kitchen

Accurate, consistent colors every time

SCALES

Weigh color systems recipes with precision

Increase consistency and efficiency, saving time and money

Automate the process by using with IMS Software

SHAKER

No fuss, no hassle way to mix inks. No blades to clean.

THERMO-PROBE

Ensure your prints are completely cured!

Reduce rejects due to undercuring





Wilflex Ink Management Software

Fast...Efficient...Cost-effective

Wilflex IMS is a Windows™-based program designed to enhance Wilflex's existing formulation books by offering all color mixing systems in one package. The user-friendly menu-driven software runs on IBM or IBM compatible computers.

- Provides formulations for Wilflex color mixing systems at the click of a mouse
- Forecasts ink usage by weight per print, print area or ink quantity
- Creates and stores job specifications, including mesh counts, ink quantities, design area, under-base requirements and MORE!
- Offers a variety of measurement units including grams, pounds, gallons and kilograms
- Allows printing of multiple formulations as reports or labels
- Customizes formulas with a "usage factor" to allow for double stroking, heavy film stencils, off contact or squeegee pressure
- Create and print your own formulation guides
- Recycle feature allows you to use up old inventory to make new colors
- Link PMA 7500-g scale with software by adding optional YCC01 6' cable

The IMS Software user may select an ink formulation based on the color code, color description or a prescribed reference code. The ink requirements for a specific job can be calculated by inputting the job reference term, size of print, percentage of coverage, number of prints, and mesh count. Based on this information, the software can calculate a suggested volume of ink required for the job. Because this is a suggested volume, the user can overwrite the program based on past experience and variations in ink stencils, squeegees, ink viscosity and waste.



The Wilflex Ink Management Software offers the user clear advantages in record keeping, costing and usage parameters for their inks.

SPECIFICATIONS

Hardware	IBM Pentium Processor or equivalent, 35MB hard drive space, 36MB RAM
Windows™	95, 98, ME. Microsoft® Explorer 5.0 or higher.
Monitor	VGA Color Display, settings: 16 bit color

Networking: You may load IMS on a common file on your network, however, each local computer will need to install IMS in order to load required system files.

VISIT OUR WEB SITE

To download the software or for application and database upgrades, visit our web site: www.polyone.com. The web site has the newest formulations, including uncoated Pantone formulas in MX and PC Express and revision postings.

- Select screen printing inks
- Select Tools & Downloads
- Select IMS - Ink Management Software
- Register for password

Wilflex Scales

ACCURATE, EASY TO USE

Designed for larger, automatic shops, the Sartorius PMA 7500-gram capacity scale offers:

- Accuracy to 0.1 gram
- Ruggedness and durability
- Adjustable, easy-to-view display
- Maximum overload protection
- Excellent warranty

Take the guesswork out of simulations. Link the Sartorius scale to Wilflex IMS Software with our **YCC01 cable**. It prompts you through the mixing sequence and alerts you if a component is out of tolerance.



For color labs or starter shops, we offer the Acculab 1200-gram capacity scale, also accurate to 0.1 gram.

Both scales are available at a reduced price as part of **PowerPax bundles**. PowerPax gives you the benefit of buying everything you need to start up your ink room, including Color System starter kits of ink, for one low price!



PowerPax I
For the Starter Shop or Color Lab

- MX Kit or PC Express Starter Kits
- Acculab VI 1200

Buy ink, software and an easy-to-use scale for one LOW PRICE!

Acculab VI 1200

Standard features include:

- 1,200-gram capacity - Accurate to 0.1 g
- Easy auto calibration - weights included with many models
- Memory feature allowing for consecutive weighing of multiple samples with totalled results displayed
- Easy-to-use parts counting program
- Large LCD with low battery, overload, underload, stability and mode indicators
- Raised membrane keypads for tactile feel, plus tone to signal function
- Large removable stainless steel platforms
- AC adapter and built-in lockdown bracket
- 9V alkaline battery operation
- Two-year renewable warranty, with 48-hour service turnaround (U.S. & Canada)

Ink Starter Kits

MX Kit (PPAX1MX)

One quart each of 14 MX Mixing Colors

- One gallon MX White
- Pantone® Color Formula Guide
- MX Form Guide
- IMS CD-ROM

PC Express Kit (PPAX1PCEXP)

- One gallon 10680GNS Genesis Plus Base
- One pint each of 15 Pigment Concentrates
- Pantone® Color Formulation Guide
- PC Express Form Guide
- IMS CD-ROM





PowerPax II For the Automatic Shop

- MX Kit or PC Express Production Kits
- PMA 7500 Scale

Buy ink, software and an easy-to-use scale for one LOW PRICE!

PMA 7500

Standard features include:

- 7,500-gram capacity
- Durable construction that is resistant to inks and solvents
- Adjustable, high contrast, backlit display for easy viewing
- Accurate to 0.1 gram for precise color matching
- Rugged weight cell for maximum overload protection
- Stainless steel weighing pan
- 7/5 warranty
 - Seven years - load cell
 - Five years - components
- Optional 6' cable #YCC01 available, which allows user to interface the scale and IMS Software

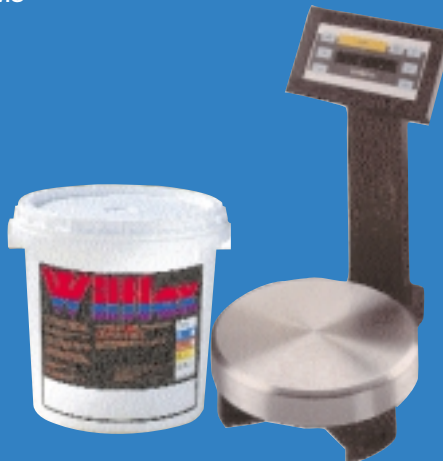
Ink Starter Kits

MX Kit (PPAX2MX)

- One gallon each of 14 MX Mixing Colors
- Five gallons MX White
- Pantone® Color Formula Guide
- MX Form Guide
- IMS CD-ROM

PC Express Kit (PPAX2PCEXP)

- Five gallons 10680GNS Genesis Plus Base
- One gallon 10110PC
- One qt. each of 14 Pigment Concentrates
- Pantone® Color Formulation Guide
- PC Express Form Guide
- IMS CD-ROM





DispenseMaster II

CUSTOMIZED AUTOMATED INK DISPENSER

Get it Right the First Time, Every Time.

PolyOne strives to be at the forefront of technological advancements that help our customers grow their businesses. Wilflex brought you the first - and only field proven - automated ink dispenser in 1995. Now more choices are available to help you save time and money.

DispenseMaster II eliminates guesswork and delivers complete accuracy. It's large enough to handle the most complicated formula, yet simple enough to make your job easier than you ever dreamed possible.

- **ACCURACY** Fast, accurate dispensing of ink to create PANTONE® simulations - "Pantone on Demand"
- **PRECISION** Dramatically improves color consistency, repeatability
- **VERSATILITY** Dispense finished inks (MX) or PCs and base
- **CUSTOMIZATION** Fully customizable - Add as many heads as needed to dispense your "most used" colors. Build to suit your needs and budget.

Pricing includes: On-site installation, computer (monitor, keyboard, mouse, CPU), scale, dispensing heads, controller and table. Each unit requires custom configuration and pricing will be based on the configuration.

- Warranty: One year on parts - FOB factory
- Power and Air Requirements: 208-230VAC 50/60hz



S007 Shaker

SHAKEN, NOT STIRRED!

- Fast, thorough mixing of ink with no blades to clean
- Will shake containers from one to five gallons. Adapter sleeve for one gallon container is included in price.
- Machine size: 1100 x 600 x 600 mm
- Net weight: 185 kg
- Power supply: 220/240V~ 50/60Hz 10A. Price includes power transformer 110V>220V.
- Motor size: 1000W
- Motor rev.: Alternating
- Clamping force: Adjustable



THERMO-PROBE

Digital Temperature Monitor and Donut Probe

The Thermo-Probe and Donut package bring a heightened awareness of plastisol curing and dryer performance.

This system provides continuous temperature data for the entire length of conveyor dryer. The Thermo-Probe will interpret air temperature, absorbed garment temperature, and absorbed ink temperature. The Thermo-Probe may also be used with flash cure equipment.

The heat history required to properly cure plastisol inks is reliant on several variables such as ink color, deposit, and cure characteristics. Equally important are the variables associated with the dryer such as type of heat and length of heat chamber. The Thermo-Probe and Donut Probe provide information to address these variables and establish settings for panel height, retention time (belt speed) suited for particular ink and substrate.

The Thermo-Probe Data does not replace the need for ink cure tests but gives quality information for development of quality guidelines and predictability.

Technical Assistance:

PolyOne: 800-735-4353 (US)

Technical Inc.: 352-378-5555

APPLICATION:

- 1) Choose °C or °F
- 2) Place donut probe onto garment with cross wires on ink film.
- 3) As donut probe moves through heat chamber, record temperature readings every 5 seconds.
- 4) Plot data points to produce curve characteristic of particular dryer settings, ink deposit, and garment color.



The Thermo-Probe includes a 15-foot wire to allow donut to move through heat chamber. Extension wires are available for larger drying units.



Wilflex® Specialty Inks

FIRST BASE PROGRAM

A line of specialty bases that you can use alone or in combination

Create your own textured ink surface concepts

FAST FUSION

Fuse and cure at lower temperatures

GLITTERS, METALLICS

Add sparkle to your prints

ONE STEP NYLON

For nylon bags and untreated jackets

PUFF

Add dimension and embossment to prints





PolyOne defines innovation in terms of creating new ways to help your shop stay ahead. More than one year ago, PolyOne developed the Wilflex First Base program, featuring innovative, unfilled bases for the "textured inks" market. If you want to produce unique, textured designs that are yours alone, check out First Base.

FOCUS ON: FIRST BASE BY WILFLEX

First Base features four bases that, when printed on garments, will have unique surface textures. Use the bases alone, in combination, or mix in additives such as pigments, glitters, shimmers, glow-in-the dark inks and more, to create your own custom print inks. Don't compete with the printer down the street! Maximum additions of additives such as pigment concentrates, finished inks, glitters, shimmers etc. should not exceed 15 percent by weight. A general rule to follow: 85% BASES, 15% ADDITIVE.



NEW! Ice Base 10145IB

Use as a high density or conventional flat ink to produce shiny wax textured surfaces. Super straight edges. Can be used as a metallic adhesive and a carrier for flake particle. Use alone or with ink/PC addition.



Rock Base 10670RB

Rock Hard ink surface. Use Rock Base alone or add other First Base products to create innovative textured surfaces. Add PCs or metallics to create special surface effects - tough and durable. Excellent foil adhesive.



Classic Clear 12129CC

A super smooth, MULTI PURPOSE gloss clear that can be used in both High Density printing techniques and as a flat overprint onto colored inks and textured surfaces, to create shiny finishes.



Natural Suede Base 10425NS Will produce suede/velvet surface finishes. Add other First Base products to produce innovative textured surfaces. Natural Suede can be colored to create leather and felt effects - tough and washable.



High Density Clear 10009HDC

Can be used as a high density gloss/clear or as a high gloss overprint to any ink. Add PCs to create special gloss images. Excellent adhesive carrier for foil, special flakes, caviar beads and other surface particles. Can be used on most fabric types as well as sublimation dyed garments - super elongation.

PRODUCT INFORMATION BULLETIN

WILFLEX[®] ICE BASE #101451B

DESCRIPTION Ice Base can be used as a high density or conventional flat print ink to produce shiny wax textured surfaces in multiple print applications.

PRINTER'S PARAMETERS

Substrates	100% cotton, blends, lycra & denim
Mesh	24-156 t/in (10-69 t/cm)
Tension	25-35 newtons
Stencil emulsion	Direct & capillary
Fat films (HD print)	200-600 microns
Squeegee type	75 durometer- (60/90/60) triple durometer
Squeegee blade	Sharp
Squeegee angle	Variable angles to suit each print finish
Squeegee speed	Medium
Off-contact	1/16"
Gel temp	220 F (104 C)
Cure temp	320-350 F (160-177 C) entire film
Extender	None
Reducer	3% max (by weight) Viscosity Buster
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash. Be sure not to scrub the HD image when cleaning.
Health & Safety data	Available upon request

FEATURES

- Shiny wax effect surface, super high density straight stack wall. Ink produces sharp edge printing.
- Excellent adhesion to many fabric types, super elongation, excellent wash properties
- Can be used as a metallic adhesive and a carrier for flake particle
- Use on its own or with ink/color addition

SCREEN PREPARATION

- Stretch an 86 mesh (34 t/cm) screen to a minimum of 25 newtons.
- Complete normal preparation of mesh, abrade, degrease, etc.
- Wet screen with mist of water, apply capillary film.
- For best results, use 250-400 micron film. Expose screen to the manufacturer's specs.
- Wash out image slowly, keeping water pressure on the emulsion side of the screen.
- Make sure the screen is totally dry.

SPECIAL RECOMMENDATIONS

- Flash colors. Print Ice Base as the last down overprint, onto the colors.
- When printing a high stack wall for HD printing, use a flash/print/flash method to build ink.
- Do not print wet on wet.
- Add up to 10% by weight of Wilflex PC or MX to achieve colors.
- When using the Ice Base as a foil adhesive, be sure to cure the ink at 320-330 F (160-165 C) & press foil onto the base at 375 F (191 C) for 10 seconds, 45 PSI, using a suitable heat press.
- Complete curing of the ink is important to enhance color and adhesion to fabric.
- Check cure temperature at the ink's surface on the drying conveyor belt.
- Preprint and test all fabrics for dye migration and bleaching properties.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353).

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

PRODUCT INFORMATION BULLETIN

WILFLEX® ROCK BASE #10670RB

DESCRIPTION Use Rock Base to create super textured effects, such as solid rock, coarse rope or fabric-textured surfaces.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, acrylic, lycra & uncoated nylon
Bleed resistance	Good
Mesh	24-230 t/in (10-90 t/cm)
Tension	25 newtons
Stencil emulsion	Direct, indirect & capillary
Fat films for HD	200-600 microns
Squeegee type	75 durometer- (60/90/60) triple durometer
Squeegee blade	Sharp
Squeegee angle	45 degrees
Squeegee speed	Medium
Off-contact	1/16"
Gel temp	220 F (104 C)
Cure temp	350 F (171 C) entire film
Extender	None
Reducer	3% max (by weight) Reducer #11
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash. Be sure not to scrub HD images when cleaning.
HS&E data	Available upon request

FEATURES

- Tough, stretchable textured surface
- Excellent adhesion to fabrics
- Excellent washability
- For light or dark fabrics
- Use as stand alone base or with additions of other additives to achieve many textured surface finishes
- Part of the "Wilflex First Base" program

SCREEN PREPARATION

- Use screens meshes from 83-230 t/in (32-90 t/cm).
- Stretch screen to 25 newtons tension.
- Can be used with High Density films such as 200-400 micron film.

SPECIAL RECOMMENDATIONS

- Can be used as a conventional flat print ink.
- Can be used as a High Density Ink.
- Addition of pigments and other additives to the base should not exceed 15% by weight.
- To gain higher yields, use a print/flash/print method for both flat and high density printing.
- Complete curing is important. Multiple dryer passes may be necessary to ensure total cure.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

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WILFLEX® CLASSIC CLEAR #12129CC

DESCRIPTION A super smooth, MULTI PURPOSE gloss clear that can be used in both High Density printing techniques and as a flat overprint onto colored inks and textured surfaces, to create shiny finishes.

PRINTER'S PARAMETERS

Substrates	100% cotton, blends, acrylic, lycra & uncoated nylon
Bleed resistance	None
Colorant addition	Add 5% by weight
Mesh	86-110 t/in (34-43 t/cm)
Tension	25 newtons
Stencil emulsion	Direct, indirect & capillary
Fat films for HD printing	200-600 microns
Squeegee type	75 durometer- (60/90/60) triple durometer
Squeegee blade	Sharp
Squeegee angle	45 degrees
Squeegee speed	Maximum
Off-contact	1/16"
Gel temp	220 F (104 C)
Cure temp	350 F (177 C) entire film
Extender	None
Reducer	3% max (by weight) Reducer #11
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash. Be sure not to scrub the HD image when cleaning.
Health & Safety data	Available upon request

FEATURES

- Super smooth glossy gel appearance
- Excellent adhesion to fabrics, elongation and stretch
- Print as a stacked wall to create High Density graphic images
- Use as an overprint clear on printed colors, metallics and textured surfaces.
- Can be used as a clear carrier for metallic, glitter, sparkle, small caviar beads and variable particle types to create special effects.
- Carrier/adhesive for the application of caviar beads.
- For light or dark fabric grounds (Best effect on darks)
- Excellent wash properties
- Classic Clear is part of the First Base Program.

SCREEN PREPARATION

- Stretch an 86 mesh (34 t/cm) screen to a minimum of 25 newtons.
- Complete normal preparation of mesh, abrade, degrease, etc.
- Wet screen with mist of water, apply capillary film.
- For best results, use 250-400 micron film.
- Expose screen to the manufacturer's specs. (Some manufacturers expose 2-3 times normal exposure time)
- Wash out image slowly, keeping water pressure on the emulsion side of the screen.
- Make sure the screen is totally dry.

SPECIAL RECOMMENDATIONS

- Flash colors. Print Classic Clear as the last down overprint, onto the colors. It is recommended

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that you evaluate the color and the clear before production because of the potential of the clear to change in appearance when overprinted onto colors.

- Use a print-flash-print method to build ink. Do not print wet-on-wet.
- When printing caviar beads, pre-test when printing on polyester blends, as dye migration can affect the appearance of the bead, especially clear beads.
- Due to the clarity of the Classic Clear, dyestuffs inherent in the garment fabric can change the clarity and color of the clear when overprinted onto colored inks.
- Complete curing of the clear is important to reduce the potential of ink/color migration. Multiple dryer passes may be necessary to ensure total cure.
- Surface of clear will appear milky after flashing, but the milky effect will disappear after the product is totally cured.
- Check the cure temperature at the ink clear surface.
- Preprint and test all fabrics for dye migration.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353).

WILFLEX® NATURAL SUEDE

NATURAL SUEDE BASE 10425NS

NATURAL SUEDE BLACK 19111NS

NATURAL SUEDE MEDIUM BROWN 29111NS

NATURAL SUEDE DARK BROWN 29222NS

DESCRIPTION Wilflex Natural Suede inks can be used to produce a printed graphic with a soft, Suede/Velvet finish that has a soft hand and is highly durable. This product assists the printer in creating fashion graphic concepts and new age designer finishes.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends
Mixing Ratio	To mix custom colors, add up to 10-15% (by weight) Wilflex PC to Suede Base. (PC to Base Ratio available)
Mesh	86-230 t/in (34-90 t/cm)
Tension	Up to 30 newtons
Squeegee type	65-75 or 70/90/70 durometer
Squeegee blade	Medium
Squeegee angle	To suit stencil & print image parameters
Squeegee speed	Reduced to ensure full flood of stencil
Off-contact	1/16-1/8"
Cure temp	320 F (160 C) entire film. Higher settings may be needed for extreme deposits
Extender	None
Reducer	Up to 5% (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Natural Suede is a textile, direct-print ink system.
- Produce a printed graphic that feels like suede.
- Use on light or dark colored textiles.
- Highly durable with excellent wash resistance.
- No odor.
- Easy to print and use. Suitable for manual or automatic presses.

SPECIAL RECOMMENDATIONS

- Variable cure temperatures will affect the surface texture and feel of the suede ink.
- Undercuring of the suede ink may result in poor washability.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, & increased likelihood of dye migration.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353).

WILFLEX® HIGH DENSITY CLEAR #10009HDC

DESCRIPTION Use High Density Clear to create special effects, such as the appearance of glass, gel, water or high gloss surfaces.

PRINTER'S PARAMETERS

Substrates	100% cotton, blends, acrylic, lycra & uncoated nylon
Bleed resistance	None
Mesh	24-110 t/in (10-43 t/cm)
Tension	25 newtons
Stencil emulsion	Direct, indirect & capillary
Fat films (HD print)	200-600 microns
Squeegee type	75 durometer- (60/90/60) triple durometer
Squeegee blade	Sharp
Squeegee angle	45 degrees
Squeegee speed	Maximum
Off-contact	1/16"
Gel temp	220 F (104 C)
Cure temp	350 F (177 C) entire film
Extender	None
Reducer	3% max (by weight) Reducer #11
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash. Be sure not to scrub the HD image when cleaning.
Health & Safety	Available upon request

FEATURES

- High gel gloss appearance
- Excellent adhesion to fabrics, super elongation and stretch
- Excellent wash properties
- For light or dark fabric grounds (Best on darks)
- Use as an overprint clear on printed colors and metallic inks to increase color vibrancy and create gloss surfaces. Use as a clear carrier/adhesive for caviar beads, sand, wood-chip particles. Use as a High Density Clear base, either on its own or with color addition.

SCREEN PREPARATION

- Stretch an 86 mesh (34 t/cm) screen to a minimum of 25 newtons.
- Complete normal preparation of mesh, abrade, degrease, etc.
- Wet screen with mist of water, apply capillary film.
- For best results, use 250-400 micron film.
- Expose screen to the manufacturer's specs. (Some manufacturers expose 2-3 times normal exposure time)
- Wash out image slowly, keeping water pressure on the emulsion side of the screen.
- Make sure the screen is totally dry.

SPECIAL RECOMMENDATIONS

- Flash colors. Print High Density Clear as the last down overprint, onto the colors. It is recommended that you evaluate the color and the clear before production because of the potential of the clear to change in appearance when overprinted onto colors.
- Use a print-flash-print method to build ink. Do not print wet-on-wet.
- When printing caviar beads, pre-test when printing on polyester blends, as dye migration can affect the appearance of the bead, especially clear beads.

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- Due to the clarity of the HD Clear, dyestuffs inherent in the garment fabric can change the clarity and color of the clear when overprinted onto colored inks.
- Complete curing of the clear is important to reduce the potential of ink/color migration. Multiple dryer passes may be necessary to ensure total cure.
- Surface of clear will appear milky after flashing, but the milky effect will disappear after the product is totally cured.
- Check the cure temperature at the ink clear surface.
- Preprint and test all fabrics for dye migration.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron printed area.

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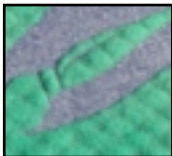


PolyOne knows that staying ahead creatively and meeting the demands of your business mean anticipating the latest trends. As the innovative leader in the industry, PolyOne is committed to giving you the edge by providing Wilflex Specialty inks to accommodate new and future trends.



NEW! Nova Base 10399NB

Dry Flake effect. Nova Base penetrates the fabric, leaving glitter flake exposed and dry. Glitter stays on the design, appears scatter coated. Multi-purpose special effects base.



Distressed Platen Printing

Use items such as aluminum foil, wire mesh or light fixtures to create unique textures.



Printing with Foil

Use Rock Base, Ice Base or HD Clear as a foil adhesive to create this eye-catching look.



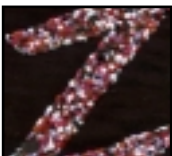
Straight-Up High Density Additives

Create totally innovative, 3-D, stacked graphics in three unique styles (Satin, Suede & Gloss) Add to 25% additive to 75% (by weight) existing inks, such as Wilflex MX or Genesis, to create graphic effects with little fuss.



NEW! ImageBrite Reflective Base 10344REF

Super reflectivity on cotton, cotton mix fabrics & polyester. Mix with up to 6 percent Wilflex pigment concentrates to create a range of reflective colors. ImageBrite Black & Mid Gray available.



Printing with Beads

Wilflex High Density Clear 10009HDC provides the perfect adhesive for caviar beads. Remelt beads to create effect at left. Combine printable caviar beads with Nova Base to create interesting effects.



Printing with Flakes

Wilflex High Density Clear provides the perfect adhesive for flakes. Unbelievable looks!

WILFLEX® NOVA BASE #10399NB

Multi-purpose special effects base

DESCRIPTION Wilflex Nova Base is a multi-purpose special effects plastisol base formulated for creating glitter/particle dry flake effects plus other specialty print surfaces for textiles. The base, when mixed with a glitter particle flake, has the ability to penetrate the fabric and leave the glitter flake exposed and dry. The effect created makes the glitter particle look as if it as been scatter-coated on the surface of the base. Nova Base allows the glitter flake to retain its edge sharpness and brilliance when printed onto light and dark fabrics.

PRINTER'S PARAMETERS

Substrates	100% cotton, blends, polyester
Mix ratio	20-30% flake, 70-80% Nova Base. We do not recommend that you print the base alone.
Mesh	25-40 t/in for glitter particle (10-15 t/cm). 86-230 t/in for flat color effects (34-90 t/cm).
Tension	25-35 newtons
Stencil emulsion	Direct, capillary
Fat films (HD print)	200 -400+ micron
Squeegee type	Medium durometer
Squeegee blade	Sharp
Gel temp	160-180 F (71-82 C)
Cure temp	330-340 F (166-171 C) entire film
Extender/Reducer	None
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash.
Health & Safety	Available upon request

FEATURES

- Multi-purpose special effects base, which creates special effect textured surfaces with the addition to the base of pigments, finished inks or particles.
- Allows glitter to retain sharp edges, shine and clarity
- Base penetrates fabric, leaving glitter flake exposed & dry
- For art design effects requiring intense glitter response
- Low viscosity, penetrating base
- Prints easily through recommended meshes
- Excellent wash properties - glitter stays on the design!

SPECIAL RECOMMENDATIONS

- To achieve the dry flake effect, you must print the glitter-Nova base mixture directly onto the fabric using the recommended meshes. If you wish to achieve a glossier look, print the ink onto a printed underlay.
- When using glitter particle, it is recommended to use particle size .008 x .008
- Be sure to completely stir the glitter particle into the Nova Base. Use as needed.
- Use a heavy flood stroke and then light squeegee pressure to print Nova Base and glitter particle ink onto the garment.
- Check the cure temperature at the ink surface.
- Preprint and test all fabrics for dye migration.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353)

PRODUCT INFORMATION BULLETIN

WILFLEX® IMAGEBRITE REFLECTIVE

ImageBrite Base 10344REF • ImageBrite Black 19000REF • ImageBrite Mid Gray 14295REF

DESCRIPTION Wilflex ImageBrite base and colors are plastisol inks formulated for direct printing on textiles. The base is combined with aluminum coated glass beads to produce a highly reflective ink. ImageBrite base is non-pigmented/non colored. Add up to 6 percent (by weight) pigment concentrate to create custom colors. If black or gray reflective colors are required, use stock colors ImageBrite Black 19000REF and Mid Gray 14295REF straight from the container.

PRINTER'S PARAMETERS

Substrates	100 percent cotton, cotton blends, polyester. DO NOT print on nylon.
Mesh	110-156 threads/in (43-61 threads/cm). Higher mesh counts produce enhanced results.
Tension	25-35 newtons
Stencil emulsion	Direct or capillary
Squeegee type	75 durometer or triple durometer 70/90/70
Squeegee blade	Sharp, straight edge
Squeegee speed	Medium fast
Gel temp	160-180 F (71-62 C)
Cure temp	325-340 F (163-171 C) entire film
Extender/Reducer	None
Caution	Reflective & wash properties may be compromised by adding products other than those recommended.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- State-of-the-art reflectivity on dark and light fabrics. Levels similar to reflective tapes and films
- Excellent adhesion, super reflective response even after washing
- Prints easily through recommended meshes
- For use with safety and fashion design concepts. For high visibility clothing.

SPECIAL RECOMMENDATIONS

- To produce reflective colors, add up to 6 percent, by weight, Wilflex pigment concentrate to the ImageBrite base. NOTE: When adding pigment concentrates to ImageBrite base 10344REF, it is recommended to mix only what is needed for the print application. Increased viscosity in the mixed ink may occur in the short term.
- Some pigment concentrates should **NOT** be used with ImageBrite base. These include: 10450PC Maroon, 10570PC Violet, 10500PC Purple, 10200PC Lt. Brown, 10250PC Dk. Brown, 10300PC Lt. Orange, 10400PC Red, 10610PC Horizon, 10680PC Blue, 10700PC Green
- Do not print reflective inks on top of an underbase, as the reflectivity will be greatly diminished.
- Do not double stroke the inks (ie. No print/flash/print)
- Wilflex reflective colors work well on dark fabrics, but they are not totally opaque. The color under normal lighting may vary with substrate color.
- To print a block graphic design on dark fabrics, the printer may print the inside of the design with either a reflective ink, and outline with another reflective color or a non-reflective ink.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353).

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WILFLEX® GLITTER SERIES

- 16055GT SILVER GLITTER • 86065GT GOLD GLITTER
- 46065GT RED GLITTER • 56065GT PURPLE GLITTER
 - 66065GT BLUE GLITTER • 76065GT GREEN GLITTER

DESCRIPTION PolyOne introduces the newest range of Glitter inks to add special effects to garment designs. These inks can be used to enhance graphics or can be used as a unique stand-alone product. These glitters have been specially formulated to give maximum coverage on dark fabrics. The glitter colors have been incorporated in the clearest, glossiest plastisol base available. The inks produce a dramatic glitter effect with excellent wash durability. Glitters can be used with coated transfer papers to produce hot split transfers. Best "transfer split" results have been achieved when using a hot-split clear as a first-down print on the paper.

RECOMMENDED SUBSTRATES 100 percent cotton, cotton blends and some synthetic fabrics. Pre-print and test all fabrics for dye bleeding, ink adhesion, wash fastness and other desired properties.

PRINTING RECOMMENDATIONS Mesh: Meshes between 25 and 40 threads/in (10-15 threads/cm) are recommended. When possible, S quality thread is suggested due to its smaller diameter resulting in a larger mesh opening. Squeegee: Best results have been achieved by using a 60/90/60 squeegee durometer. Emulsion: Direct or capillary stencils may be used. It is recommended to use a 50 to 70 micron capillary stencil film and use a compatible emulsion for adhesion to mesh.

CURING Cure Temp: 325 F (163 C). Failure to cure ink properly causes poor wash fastness, inferior adhesion, unacceptable durability and increased chance for dye migration.

MODIFIERS The inks are designed to be used straight out of the container. If you want to reduce viscosity, add up to 5 percent Reducer 11.

WASH-UP Conventional solvents or Wilflex Screen Wash.

HEALTH AND SAFETY Complete Health and Safety Data available upon request.

STORAGE Recommended storage temperature is 65-90 F (18-32 C). Avoid storing in direct sunlight or in extreme temperature conditions. It is recommended that Wilflex products be used within one year of receipt of product. Inks subjected to extreme temperatures or prolonged shelf life could thicken or expand in the container.

WILFLEX® ISYELLOW SPARKLE #15340

DESCRIPTION Wilflex Yellow Sparkle is formulated to produce subtle sparkle effects with high gloss and excellent durability.

PRINTER'S PARAMETERS

Substrates	Cottons, cotton blends and some synthetics. White and pastel colored substrates
Mesh	25-60 t/in (9-12 t/cm). When possible "S" quality thread is suggested due to its smaller diameter resulting in a larger mesh opening.
Stencil emulsion	Conventional direct, capillary films or a combination
Squeegee type	Medium durometer
Squeegee blade	Slightly rounded edge
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	10% max (by weight) Curable Reducer #10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

SPECIAL RECOMMENDATIONS

- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

PRODUCT INFORMATION BULLETIN

WILFLEX® MCV-FF METALLIC SERIES

185570MCVFF Ultra Gold Shimmer • 85370MCVFF Gold Shimmer •
15370MCVFF Silver Shimmer • 15330MCVFF Silver Glitter • 89010MVFF Gold Glitter

DESCRIPTION MCVFF Metallic inks, comprising glitters and shimmers, are formulated to produce dramatic effects with excellent durability. MCVFF Base is an optically clear base and is a suitable carrier for special flakes and particles. Shimmers and Glitters are opaque and can be printed on dark or light garments.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends and some synthetics
Mesh	25-40 t/in (10-16 t/cm) for glitters, 60-156 t/inch (24-43 t/cm) for shimmers
Tension (newtons)	25+ recommended
Stencil emulsion	Direct, indirect & capillary
Stencil thickness	50-70 microns
Squeegee type	Glitters: 75-85 duro Shimmers: (60/90/60)
Squeegee blade	Square
Squeegee angle	Steep
Squeegee speed	Hard flood, moderate-to-light pressure
Gel temp	170-190 F (75-88 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	Up to 5% (by weight) Reducer #11 or 10% (by weight) Curable Reducer 10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Produce dramatic, unique effects with excellent durability.
- Create colors with Wilflex PCs and Silver Shimmer or Glitter.

SPECIAL RECOMMENDATIONS

- MCVFF metallics re-melt at 300 F (149 C) and may be cold-peel transferred at this temperature. Conventional heat transfers can be produced on coated stock.
- Although MCV-FF Gold and Silver Shimmers were designed to be direct printed, the inks may be transferred, using a gel temperature of 170 F (77 C), a transfer press temperature of 300 F (149 C) and a cold-peel process.
- Wilflex MCV-FF is 100 percent solvent-free and cannot be air-dried.
- When printing glitter inks, care must be taken to ensure that the glitter flakes pass through the mesh during the flood stage. The glitter particles are .016" square and therefore require a large screen opening for easy passage. When possible, "S" quality thread is suggested.
- Silver Glitter and Shimmer can be tinted with Wilflex PCs at 1-2 percent pigment loading to create special colors.
- Due to the reflective properties of glitter and the heavy deposit of ink, careful evaluation of dryer setting is recommended. Dwell times may need to be lengthened.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach, iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

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PRODUCT INFORMATION BULLETIN

WILFLEX® METALLIC SERIES

8537Wilflex Silver Metallic 15055MET • Pure Gold Metallic 85065MET • Solid Gold Metallic 85075MET • Bright Copper Metallic 85085MET

DESCRIPTION

Wilflex Metallic inks are non-corroding and have excellent rub and wash resistance. The inks will cover light or dark fabrics without under-printing. Use alone or in combination with Straight-Up High Density additives to produce high density metallic effects. Metallic inks also can be used with Puff and gloss inks to create unique effects.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends & some synthetics
Bleed resistance	None
Mesh	60-125 t/in (24-48 t/cm)
Tension	25 newtons
Stencil emulsion	Direct or capillary
Capillary stencil film	50-70 microns
Squeegee type	60/90/60 triple durometer
Gel temp	220 F (104 C)
Cure temp	325 F (163 C) entire film
Extender	None
Reducer	5% max (by weight) Reducer #11
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash.
Health & Safety data	Available upon request.

FEATURES

- For use as direct print inks for textiles. (See Wilflex Transflex Shimmers for Heat Transfer application).
- Excellent adhesion to fabrics
- Excellent wash properties
- For light or dark fabric grounds

SPECIAL RECOMMENDATIONS

- Check the cure temperature at the ink surface.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, iron the printed area.

Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

Glow in the Dark

PHOSPHORESCENT INKS

GNS Phosphorescent #99900

NPF Phosphorescent #99900

(NPF Phosphorescent is a non-standard product)

**12200 Excite Yellow P.C. can be mixed with
Wilflex PC System using:**

**Finesse #10150 to produce general purpose glow-in-
dark ink**

NuPuff Base #10250 to produce glow-in-dark puff

Suggested percentages range between 10- 30%

FACTS ABOUT PHOSPHORESCENTS:

- Wilflex glow-in-dark inks are safe
- Transparent, print on white or over light colored plastisol
- Do not intermix with any inks or PCs
- Life of glow cycle is near infinity
- Meshes: 60-140 threads/in (24-55 threads/cm)
- Cure at 320 F (160 C)

STRAIGHT-UP HIGH DENSITY ADDITIVES

STRAIGHT-UP GLOSS WP220SUP • SATIN WP221SUP • SUEDE WP222SUP

DESCRIPTION Introduce your customers to the world of high density printing with Straight-Up High Density Additives. Create totally innovative, three-dimensional graphics in three unique finishes: Gloss, Satin & Suede. No need to buy a complete inventory of HD inks. By adding one of the versatile additives to your existing inks, create graphic effects with as little fuss as possible.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends
Mixing Ratio	75 parts finished ink to 25 parts additive
Mesh	60-110 t/in (24-43 t/cm)
Tension	Up to 30 newtons
Stencil emulsion	200-400 microns thick
Squeegee type	75-80 or 70/90/70 durometer
Squeegee blade	Sharp
Squeegee angle	To suit stencil & print image parameters
Squeegee speed	Reduced to ensure full flood of stencil
Off-contact	1/8"
Gel temp	175 F (79 C)
Cure temp	320 F (160 C) entire film. Higher settings may be needed for extreme deposits
Extender	None
Reducer	1-2 percent max (by weight) Curable Reducer #10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Produce high stack of ink that allows for fine-line definition & open graphic content.
- Straight-Up Satin & Suede produce prints with high opacity & dye bleed resistance.
- Straight-Up Gloss has slightly reduced opacity when used on dark fabric grounds.
- Control ink usage, color & finish.

SPECIAL RECOMMENDATIONS

- Best results have been obtained by adding Straight-Up additives to Wilflex MX Color System & Genesis inks, or POM 1000 & 4000 Series inks, including Mono System.
- To create a high density Pantone color, use the MX or Mono System with Straight-Up.
- Use the thinnest screen thread diameter obtainable. Dyed mesh has given good results.
- Extended exposure times required can result in undercutting of the image.
- When creating defined, "high wall" effects, it is important to ensure that the screen lifts away from the printed image immediately following the squeegee on the print stroke.
- Higher ink deposits & open screen meshes will increase the chance of ink spread & image distortion. A 200-micron stencil & an 86 t/in mesh (34 t/cm) will give the printer greater control, reducing rejects.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, increased likelihood of dye migration.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne's Technical Services Department prior to printing. (US - 800-735-4353).

WILFLEX® LUNA CLEAR #10022IS

DESCRIPTION Luna Clear is a clear plastisol that appears nearly invisible in daylight, but illuminates in the presence of UV blacklight. Use Luna Clear to create special effects, print secret messages or identify a printer's work by printing hidden licensing data. This ink is an excellent underbase that reduces fibrillation and brightens some colors. Luna Clear will remain bright after numerous washings and may be printed direct or transferred.

PRINTER'S PARAMETERS

Substrates	100% cotton jersey knit, polyester & blends, fleece
Mesh(Satin finish/Transfer)	110-280 threads/in (43-110 threads/cm)
Mesh(Matte finish)	305-355 threads/in (120-140 threads/cm)
Tension	+15 newtons
Squeegee type	60/90/60 durometer (hard)
Squeegee type (Transfer)	65-75 durometer (medium)
Squeegee blade	Straight edge profile
Off-contact	1/16" - Producing clean separation from screen & garment
Gel temp	170-190 F (75-88 C)
Gel temp (Transfer)	200-230 F (93-110 C)
Cure temp	320 F (160 C) entire film.
Heat press application	375 F (190 C), 7-10 seconds, 40-45 PSI medium firm pressure
Extender/Reducer	None
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Clear when overprinting designs, but illuminates under blacklight conditions
- Matte finish when printed through high meshes
- Excellent adhesion to fabrics with good elongation
- Excellent printability
- Fast flashing
- Excellent wash properties

SPECIAL RECOMMENDATIONS

- Printing sequence as: (a) Overprint clear - last color (b) Stand-alone color. For transfers: (a) First-down clear - Print as first color, gel, overprint colors, gel, heat press under standard TransFlex recommendations. (b) Stand alone color
- Luna Clear has no built-in bleed resistance.
- For invisible effect on white fabrics, add up to 1% 10110PC (Extra White PC).
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, & increased likelihood of dye migration.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing. (US - 800-735-4353)

PRODUCT INFORMATION BULLETIN

WILFLEX® NUPUFF

DESCRIPTION NuPuff is a plastisol puff ink formulated to give the relief (or the elevated surface) of similar water-based products. NuPuff has good durability and overblow resistance.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends
Bleed resistance	Marginal. A bleed-resistant white, 11010NPF Modified White, is available
Mesh (on large area)	60-86 t/in (24-34 t/cm)
Mesh (fine detail)	95-110 t/in (43-49 t/cm)
Stencil emulsion	Direct or capillary
Expansion temp	290-330 F (144-167 C)
Cure temp	320 F (160 C) entire film
Extender	Finesse #10150 may be used to lower puff height without reducing viscosity.
Reducer	10 percent max (by weight) Curable Reducer #10070. More than 10% will reduce puff height.
Caution	Excessive modification will impair puff
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Produces an elevated surface for specialty designs
- Durable, formulated to resist overblow

WHITES

- 11010NPF Modified White Bleed resistant puff white for underbasing
- 11000NPF NuPuff White

SPECIAL RECOMMENDATIONS

- Different effects may be achieved through the use of multiple passes, flash curing, thick screen stencils and overprinting standard and specialty inks.
- In multi-color printing, it is necessary to flash the puff prior to overprinting.
- If printing a large area, lightweight fabric may pucker. To alleviate puckering, print a mezzotint or dot pattern (an 80 percent solid).
- NuPuff is formulated with overblow protection so the possibility of collapse of the expanded ink is greatly reduced.
- Flexipuff Additive #10520 is available to give a raised effect when added to Wilflex General Purpose inks (GNS, MP, MX). However, the use of an additive will not give the quality of puff achieved with NuPuff.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

WILFLEX® NUPUFF APPLICATIONS CHART

Product Applications	Suggested Meshes threads/in threads/cm	Suggested Squeegees durometer
Puff design on very lightweight fabric) (NuPuff) †	86-110 34-43	60-70
Multi-color puff design 1. print neutral color or white puff, flash, overprint with GNS or MCV- FF inks.	NPF 60-86 24-34 GNS or MCV-FF 110-140 43-55	60-70 70
	2. stagger puff meshes; flash between colors	60, 86, 110 24, 34, 43
Puff design on fabric with bleeding dyes —underbase with bleed resistant white such as 11010NPF Modified White ††	60-86 24-34 —Underbase— 86-110 34-43	60-70 70

Special Notes

† use of 80 percent mezzotint will help alleviate pucker of fabric

†† proper screen tension critical when underbasing

Plastisol Puff

ART: FINE DETAIL PUFF IS BEST

- Easiest to control
- Less noticeable variance in ink deposit
- Stencil plays greater role in deposit
- Can be used to simulate embroidery

STENCIL: MAKE A THICK STENCIL

- Coat-dry-coat direct emulsion
- Use an appropriate capillary film
- Piggy-back the capillary
- Adhere the capillary with a compatible emulsion

PRODUCTION

- Ideally, print puff last
- Flash cure multi-color
- Wash-up with standard solvents
- Allow to cool before crushing puff
- Print wet-on-wet, stagger mesh counts

THE PUFF

- Good adhesion
- Excellent opacity

- Washability very good, do not dry clean

- Resilience excellent

- Hue: less than original color.

Ex: Red may go slightly pink

- Color may shift toward predominant pigment

Ex: A yellow shade red may turn orange

- Mesh marks should disappear

SUBSTRATE

- Heat sensitive substrate must withstand 320 F (160 C)

- Composition- cotton and synthetics (knitted) are fine

- Compression- the softer the better

- Texture- plastisols adhere mechanically

- Color irrelevant: Puffed colors are opaque

- Plastisol puff will trap well and adhere

NuPuff Standard Colors

11000	White	70000	Kelly	90100	Fluo. Blue
19000	Black	75300	Turquoise	90200	Fluo. Green
23800	Spice Brown	75900	Blacklight Green	90300	Fluo. Orange
40000	Scarlet	80000	Gold	90400	Fluo. Pink
50200	Purple	80100	Light Gold	90500	Fluo. Neon
60000	Navy	81000	Lemon Yellow		
62100	Light Royal	90000	Fluo. Yellow		

WILFLEX[®] SSV-FF

Fast Fusing, Low Temperature Plastisol

GENERAL DESCRIPTION Wilflex SSV-FF (Silk Screen Vinyl - Fast Fusion) is a plastisol screen printing ink formulated to fuse and cure at lower temperatures than conventional plastisol inks. SSV-FF is designed to match the popular Wilflex SSV in opacity while curing at temperatures low enough to prevent or substantially reduce shrinkage of heat-sensitive fabrics such as 100 percent acrylic. SSV-FF plastisols offer excellent durability and tensile strength. SSV-FF plastisols produce excellent conventional heat transfers when used with coated transfer paper and yield good results as an adhesive for foil.

RECOMMENDED SUBSTRATES Wilflex SSV-FF may be printed on cotton, cotton blends, acrylic, some nylon (generally open weave or mesh type) as well as other synthetic materials. SSV-FF has been used on Lycra/Spandex fabrics with good results. **Pre-print and test all fabrics for dye bleeding, ink adhesion, wash fastness, tensile strength and other desired properties.** Coated transfer paper is recommended to produce conventional transfers.

PRINTING RECOMMENDATIONS Mesh: For optimum opacity, a 63-120 threads/in (24-49 threads/cm) mesh is recommended. Finer meshes such as 125-230 threads/in (49-90 threads/cm) may be used on light colored fabrics. Emulsion: The product contains no aggressive solvents or water. Screens may be prepared with conventional direct emulsions or capillary films.

CURING Gel or Flash cure: SSV-FF may be flashed between 170-190 F (75-88 C). Due to differences in power, height above ink film, and efficiency of the flash unit, a specific dwell time cannot be given. Incorporating the use of finer mesh counts for your flash plate will decrease the dwell time needed to gel the ink, resulting in faster production speeds. Be certain to set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch. Avoid excessive overflashing, as it can result in poor inter-coat adhesion of overprint colors. Cure: Wilflex SSV-FF is 100 percent solvent-free and cannot be air-dried. For proper fusion the ink film must reach at least 270 F (132 C). SSV-FF inks remelt at 300 F (149 C) and may be cold-peel transferred at this temperature. Fusion tests should be made prior to any production run.

MODIFIERS Wilflex SSV-FF may be used straight from the container. Some stirring will help break down the false "body" that builds in plastisol inks during storage. If desired, up to 3 percent by weight of Reducer #11 can be used to thin the ink. Curable Reducer #10070 also may be used to reduce ink viscosity, in quantities up to 10 percent (by weight).

WASH-UP Mineral spirits, conventional solvent-based screen cleaners or Wilflex Screen Wash.

HEALTH AND SAFETY Complete Health and Safety Data available upon request.

STORAGE Recommended storage temperature is 65-90 F (18-32 C). Avoid storing in direct sunlight or in extreme temperature conditions. It is recommended that Wilflex products be used within one year of receipt of product. Inks subjected to extreme temperatures or prolonged shelf life could thicken in the container.

PRODUCT INFORMATION BULLETIN

WILFLEX[®] MCV-FF

11000MCVFF White • 19000MCVFF Black • 10000MCVFF Clear • 18800MCVFF Base

DESCRIPTION MCVFF Fast Fusion plastisols are formulated to cure at lower temperatures than conventional plastisols and are ideal for printing on heat-sensitive and stretch fabrics. Colors made with 18800MCVFF Base are recommended for light or pastel garments. MCVFF has similar characteristics to SSVFF but with lower opacity and higher gloss.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, acrylics, some polyesters. Light garments
Mesh	140-305 t/in (55-120 t/cm) for garments, 74-110 t/in (24-43 t/cm) for mat printing
Tension (newtons)	25+ recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	85 or triple (60/90/60) durometer
Squeegee blade	Sharp
Squeegee angle	30 degrees
Squeegee speed	Maximum
Gel temp	170-190 F (75-88 C)
Cure temp	270 F (132 C) entire film
Extender	None
Reducer	Up to 3% (by weight) Reducer #11 OR10% (by weight) Curable Reducer 10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Fast fusing - ink fuses at 270 F
- Excellent durability and tensile strength
- Ideal for printing carpet/woven mats and Lycra or stretch fabrics.
- Less opaque, more gloss than SSVFF

SPECIAL RECOMMENDATIONS

- MCVFF inks re-melt at 300 F (149 C) and may be cold-peel transferred at this temperature. Conventional heat transfers can be produced on coated stock.
- Wilflex MCV-FF is 100 percent solvent-free and cannot be air-dried.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach, iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

MCV-FF vs. SSV-FF

	MCV-FF	SSV-FF
Opacity	Low	Medium to High
Viscosity	Low	Medium to High
Elongation	Excellent	Excellent
Gloss	High	Medium
Cure	270°F/132°C	270°F/132°C
Gel/Flash	170°F/77°C	170°F/77°C
<i>Bases available for PC System</i>		
Pigment Concentrates Percentage Used in Color Matches	10% of weight of MCV-FF Base with standard PCs	10% of weight of SSV-FF base with standard PCs
	or refer to PC Base Ratio Chart in PC Manual.	*three special PCs 10770 Fast Gold 11040 Fast White 10370 Fast Red } May be used for high opacity shades
Recommended Meshes	140-305 threads/in 55-120 threads/cm	63-120 threads/in 25-49 threads/cm

WILFLEX® ONE-STEP NYLON INK

DESCRIPTION Wilflex One-Step Nylon Ink is formulated to print onto "untreated" nylon. The ink can be used like a standard plastisol ink and will not dry in the screen or harden in the container. OSN inks flash quickly to allow multi-ink production, with cure/gel temperatures of 300 F (149 C).

PRINTER'S PARAMETERS

Substrates	Untreated 100 percent nylon
Mesh (OSN White)	60-110 threads/in (24-43 threads/cm)
Mesh (OSN Colors)	110-195 threads/in (43-77 threads/cm)
Stencil emulsion	Conventional direct or capillary films
Squeegee type	60 to 90 durometer
Squeegee blade	Straight edge
Gel temp	155 F (168 C)
Cure temp	300 F (149 C) entire film
Extender	One Step Nylon Extender for process applications
Reducer	None
Caution	Do not trap or overprint on fluorescent colors
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Mineral spirits
Health & Safety data	Available upon request

FEATURES

- Excellent for printing untreated nylon fabrics ranging from coarse deniers used in backpacks and luggage to the finer deniers used in garments/umbrellas

USE OF HUGGER CATALYST

- One-Step Nylon inks should NOT be used on waterproofed satin jackets or when printing onto waterproofed nylon materials. If the nylon material has been treated to repel water, the waterproofing must be removed, and the addition to ink of Hugger catalyst at 10 percent by weight will be necessary.
- Wipe down the print area with rubbing alcohol or acetone if printing on a tightly weaved jacket material.
- The cross-link reaction between the catalyst and ink takes approximately 48-72 hours to fully bond to the fabric. Therefore, scratch testing should not be a quality criteria immediately following printing.
- The Hugger Catalyst chemistry activates upon exposure to moisture in the air. The amount of moisture exposure determines the shelf life of the mixed ink. Pot life generally ranges from 4-8 hours.
- Opened Hugger Catalyst containers should be squeezed to push air out of the bottle and then sealed tightly. If left open or loosely sealed, Hugger will crystallize and solidify in the bottle.
- Ink mixed with Hugger Catalyst must be removed from the screen immediately following printing with cleaning solvents to prevent permanent mesh damage. Squeegees and any other printing apparatus must be cleaned immediately also.
- Preprinting and testing are necessary prior to production.

SPECIAL RECOMMENDATIONS

- OSN ink will adhere to 100 percent polyester fabrics but preprinting and testing for bleed resistance are necessary to determine overall results.
- When OSN fluorescent colors are printed on top of a flashed white, there will be improved opacity and no reaction between colors. However, if white (or any non-opaque color) is printed on top of a fluorescent color, color migration will occur. To avoid this, do not trap or overprint on fluorescent colors.
- Hot cleaning solvents (containing Toluene, Xylene, and Acetone etc.) will react with this ink causing hardening in the screen.
- Due to differences in power, height above ink film and efficiency of the flash drying unit, specific dwell time cannot be given. Field testing showed significantly faster flash times than other catalyzed systems currently available.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

ONE STEP NYLON Colors

11000	White	60000	Navy Blue
19000	Black	60650	Contact Blue
23800	Spice Brown	62100	Light Royal
30200	Bright Orange	70000	Kelly Green
40000	Scarlet	80000	Gold
40700	Brock Red	80100	Light Gold
45400	Maroon	81000	Lemon Yellow
50400	Russell Purple		

ONE STEP NYLON Process Colors

19850	Process Black	69850	Process Cyan
49850	Process Magenta	89850	Process Yellow

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Wilflex® Transfer Inks

TRANSFLEX SERIES

Number 1 in the market

TransFlex Super inks for dark and light garments

TransFlex Soft inks for light and pastel garments

TRANSFLEX FOUR COLOR PROCESS

Clean, Pantone-referenced high intensity colors for process printing

10007 TransClear provides carrier for 4-color process inks

TRANSFLEX SPECIALTY INKS

TransFlex Printable Adhesive

TransFlex Tuf Puff

TransFlex Shimmers



WILFLEX® TRANSFLEX® APPLICATIONS CHART

	Application	Features/Benefits	Screen Mesh Sizes Screen Tension Squeegee Types Gel Temps * Fusing Ranges *
TF Super Opaque Inks	Cotton-Cotton Polyester-Cotton Polyester blends Polyester-Denim Drill Uncoated Lycra	Soft feel inks for use on dark and light colored fabric/garments. Durable wash properties. No white under color to achieve opacity.	60-110 mesh 10-25 newtons 60-75 squeegee 210-250 F 370-375 F
TF Soft Inks	Cotton-Cotton Polyester-Cotton Polyester blends Denim Drill Uncoated Lycra	Formulated for soft-feel-hot split (hot-peel) Inks on light or pastel colored fabric garments. Durable wash properties.	60-156 mesh 10-25 newtons 60-75 squeegee 210-250 F 370-375F
TF Tuf Puff (Transfer Puff)	100% Cotton Cotton-Polyester 100% Polyester	Formulated for hot-split (hot peel) puff transfers. Ready to use straight from the container. No need for adhesive particle powder.	60-110 mesh 10-25 newtons 60-75 squeegee 210-220 F 370-375 F
TF 4-Color Process	Cotton Cotton-Polyester 100% Polyester	Produce half-tone transfer inks. Produce hot-split (hot peel) fine line graphics and photographic reproduction transfers. Durable wash properties.	305-355 mesh 15-35 newtons 75-85 squeegee 210-250 F 370-375 F
TF Shimmers	Cotton Cotton-Polyester 100% Polyester Denim Drill	A hot-split (hot peel) shimmer ink system. Highly opaque silver shimmer can have pigment concentrate (PC) added to ink to extend color range. Highly durable wash/ink properties.	60-110 mesh 10-25 newtons 60-75 squeegee 210-250 F 370-375 F
10007 TransClear	Hot-split coating onto most uncoated papers to extend the hot-split feel properties.	Base carrier clear for 4-color process colors and fluorescent colors. Highly durable clear coat system can be used as a clear adhesive for most TF inks.	305-355 mesh 15-35 newtons 75-85 squeegee 210-250 F 370-375 F
TF Printable Adhesive 10210TF	Used as an over print or under print coating adhesive for all TF inks. Also for metallic foil adhesive.	Acts as a printable adhesive to be printed on all TF inks to enhance adhesion to garment. Hot-split or cold peel ink system.	60-86 mesh 10-25 newtons 60-75 squeegee 210-250 F 370-375 F
TF Super, Soft, Tuf Puff, 4-Color Process	Use these inks in combination with all other TF systems.	Use in a combination graphic to enhance all aspects of the transfer graphic design	60-355 mesh 10-25 newtons 60-85 squeegee 210-250 F 370-375 F

*Key for Celsius: (210-250 F=99-121 C); (340-345 F=171- 174 C); (370-375 F=188-191 C)

Not all Wilflex products are available in every country. The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your product.

WILFLEX® TRANSFLEX® SUPER

DESCRIPTION *Super Opaque Transfer Ink.* Transflex Super is a soft-feel, hot-split transfer ink formulated to give the appearance of a direct print. Transflex Super colors give excellent opaque prints on dark fabrics and also offer wide improvements in printability and transfer latitude over conventional hot-split transfer inks. Using Transflex Super ink, the printer is able to produce high definition transfers using fine screen meshes without losing opacity. Transflex Super also can be used to produce conventional cold-peel transfers

PRINTING & TRANSFERING PARAMETERS

Substrates	Knitted fabrics, cotton, linens, polyester blends & rayon. NOT recommended for woven nylon or lycra.
Mesh (std. opacity)	60-86 t/in (24-34 t/cm)
Mesh (fine line)	110-195 t/in (43-77 t/cm)
Stencil emulsion	Solvent-resistant direct emulsions or capillary films
Transfer temp	365-375 F (185-190 C)
Transfer time	5 to 7 seconds
Transfer pressure	40-45 PSI
Gel temp	195-230 F (90-110 C). Lower temps will result in a transfer with little tensile strength, and higher temps will negatively affect the "split" of the final transfer.
Extender	None
Reducer	3-5 percent max (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- For use with dark garments
- Hot-split transfer inks with a soft feel
- Excellent printability
- Hot-split or cold-peel

SPECIAL RECOMMENDATIONS

- The use of Transflex Printable Adhesive 10210TF will improve the adhesion of Transflex inks to a far wider range of substrates when cold-peeled.
- The transfer paper should be peeled immediately after transferring for optimum results. When cold-peeling, allow the transfer to cool for approximately 15 seconds before removing the paper.
- Transfer papers supplied by Wyndstone Heat Transfer Papers and Hobart-McIntosh can be used in association with this ink system. Other paper types can be used with confidence, but when evaluating inks for transfers, printers should obtain current information about coated and non-coated paper types from these manufacturers before proceeding. Wilflex Technical Services can provide more information on the use of transfer papers. See the "Transfer Papers" section in the Wilflex User's Manual for information on the care and use of transfer papers.
- Preprint, transfer, test all fabrics for desired properties before beginning production printing.
- Examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- Press blank shirt under transfer press before applying transfer to reduce moisture in garment.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

WILFLEX® TRANSFLEX® SOFT

DESCRIPTION *Semi-Opaque Heat Transfer Ink.* Transflex Soft is a soft-feel, hot-split transfer ink formulated for white or pastel substrates. This ink offers improvements in printability and transfer latitude over conventional hot-split inks. Produce four-color process transfer prints with or without a clear back-up ink, using Transflex Soft Process Colors. TF Soft inks also may be used for conventional cold-peel transfers.

PRINTING & TRANSFERING PARAMETERS

Substrates	Knitted fabrics, cotton, linens, polyester blends & rayon. NOT recommended for woven nylon or lycra.
Mesh (std opacity)	60-86 t/in (24-34 t/cm)
Mesh (fine line)	110-195 t/in (43-77 t/cm)
Stencil emulsion	Solvent-resistant direct emulsions or capillary films
Transfer temp	365-375 F (185-190 C)
Transfer time	5 to 7 seconds
Transfer pressure	40-45 PSI
Gel temp	195-230 F (90-110 C). Lower temps will result in a transfer with little tensile strength, and higher temps will negatively affect the "split" of the final transfer.
Extender	None
Reducer	3-5 percent max (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- For use with white or pastel garments
- Hot-split transfer inks with a soft feel
- Excellent printability
- Hot-split or cold-peel

SPECIAL RECOMMENDATIONS

- The use of Transflex Printable Adhesive 10210TF will improve the adhesion of Transflex inks to a far wider range of substrates when cold-peeled.
- The transfer paper should be peeled immediately after transferring for optimum results. When cold-peeling, allow the transfer to cool for approximately 15 seconds before removing the paper.
- Transfer papers supplied by Wyndstone Heat Transfer Papers and Hobart-McIntosh can be used in association with this ink system. Other paper types can be used with confidence, but when evaluating inks for transfers, printers should obtain current information about coated and non-coated paper types from these manufacturers before proceeding. Wilflex Technical Services can provide more information on the use of transfer papers. See the "Transfer Papers" section in the Wilflex User's Manual for information on the care and use of transfer papers.
- Preprint, transfer, test all fabrics for desired properties before beginning production printing.
- Examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- Press blank shirt under transfer press before applying transfer to reduce moisture in garment.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

PRODUCT INFORMATION BULLETIN

TRANSFLEX® TUF ONE PACPUFF

TUF NEUTRAL BASE #10480TUF / TUF WHITE #11000TUF /

TUF CREAM #12520TUF

DESCRIPTION Tuf One Pacpuff produces multi-dimensional graphics, either as an all-in-one puff ink or as an underprint to the standard Transflex hot-split inks. The puffed ink gives a suede feel and an embossed puff effect. Tuf One Pacpuff has tough adhesive properties, without the application of particle adhesive, to adhere the puff to the garment. The product is available as a neutral base that can be used on its own, or in combination with 5-8 percent of pigment concentrate (PC) by weight to create colored puff. Tuf White can be used as a white puff ink on its own, or as a puff back-up ink to any Transflex hot-split Ink.

PRINTER'S PARAMETERS

Substrates	100 percent cotton, cotton/polyester blends, polyester, rayon and linen.
Color Range	Base, white & cream. Make puff colors by adding 5-8 percent by weight Wilflex PC.
Mesh	74-86 threads/in. (24-34 threads/cm)
Stencil emulsion	Conventional direct emulsions and capillary films
Transfer temp	365-375 F (185-190 C)
Transfer time	5 to 7 seconds
Transfer pressure	40-45 PSI
Gel temp	190-215 F (88-102 C). Be sure not to "over gel" the puff ink on the transfer paper.
Extender	None
Reducer	1-3 percent by weight Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Hot-split transfer inks with a soft feel
- For use with dark garments
- Excellent printability
- Hot-split or cold-peel

SPECIAL RECOMMENDATIONS

- Be sure not to "over gel" the puff ink on the transfer paper. The "hot" release of the puff ink from the transfer paper, at the transfer heat-pressing stage and the adhesion properties when applied to the fabric, will be significantly reduced. The puff ink following gelation should feel smooth to touch. If the ink surface feels coarse and the puff has embossed on the paper, then the gel temperature should be reduced.
- To give the puff transfer extended stretch and wash durability, print 10007TF TransClear first down using a 305 screen mesh. Heat press at 375-385 F for 5-7 seconds, 40-45 psi for a hot-peel transfer.
- The transfer paper should be peeled immediately after transferring for optimum results. When cold-peeling, allow to cool for approximately 15 seconds before removing the paper.
- Transfer papers supplied by Wyndstone Heat Transfer Papers and Hobart-McIntosh can be used in association with this ink system. Other paper types can be used with confidence, but when evaluating inks for transfers, printers should obtain current information about coated

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and non-coated paper types from these manufacturers before proceeding. Wilflex Technical Services can provide more information on the use of transfer papers. See the "Transfer Papers" section in the Wilflex User's Manual for information on the care and use of transfer papers.

- Preprint, transfer and test all fabrics for desired properties before beginning production printing.
- Examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- It is advisable to press the blank shirt under transfer press before applying transfer to reduce moisture in garment.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

WILFLEX® TRANSFLEX® PROCESS INKS

DESCRIPTION Wilflex Transfer Four Color Process inks have been specially formulated to produce 4-color process heat release transfers that exhibit superb color when used with full photographic, airbrush and spot process quality graphics. The carrier for the Pigment Concentrates (PCs) is the 10007TF TransClear.

PRINTER'S PARAMETERS

Substrates	Cotton, cotton blends, rayon, linen and lycra. NOT recommended for nylon or satin.
Mesh	160-355 t/in (64-140 t/cm). Depends on the graphic reproduction required and film separation designation.
Stencil emulsion	Solvent-resistant direct emulsions or capillary films
Transfer temp	375 F (190 C)
Transfer time	7 to 10 seconds
Transfer pressure	45 PSI
Gel temp	210-260 F (99-127 C). Lower temps will result in a transfer with little tensile strength, and higher temps will negatively affect the "split" of the final transfer.
Extender	None
Reducer	3-5 percent max (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

ORDER INFORMATION 19000TF Black, 49858TF Process Magenta, 69858T Process Blue, 89858TF Process Yellow, 10007TF TransClear

FEATURES

- Excellent color vibrancy
- Softhand, hot peel inks
- The inks have good elongation and wash properties
- Super halftone (dot) control
- Compatible with all other Transflex transfer ink systems

WHERE TO GET THE COLOR VALUES Process color values for Wilflex inks are available on the Wilflex User's Manual CD-ROM, or download from the Wilflex's web site: www.wilflex.com.

SPECIAL RECOMMENDATIONS

- A standard printing sequence for the process colors is as follows: 1) Black, 2) Blue, 3) Magenta, 4) Yellow. If the TransClear 10007TF is used as the hot-peel coat, be sure that the TransClear is printed FIRST on the paper. The process colors are then printed on top of the first-down TransClear. The recommended screen mesh for the first-down TransClear is 305-355 t/in (120-140 t/cm).
- The majority of the standard transfer papers can be used with confidence. If a softer feel transfer is required, an uncoated transfer paper is suitable, especially if TransClear is printed on the paper first. In most cases, a hot-split/hot-peel transfer paper will be required. See the "Transfer Papers" section in the Wilflex User's Manual for information on the care and use of transfer papers.
- Preprint, transfer and test all fabrics for desired properties before beginning production printing.
- Examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

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PRODUCT INFORMATION BULLETIN

WILFLEX® TRANSFLEX® ULTRA GOLD SHIMMER #85570TF SILVER SHIMMER #15370TF

DESCRIPTION Transflex Shimmer inks are soft-feel, hot-split transfer inks especially formulated to print on most substrates. Transflex Shimmer inks offer improvements in printability and transfer latitude over conventional hot-split inks and produce superb shimmer-shine hot-split transfers on dark fabric. Transflex Shimmer inks may also be used for conventional cold-peel transfers. Wilflex PCs can be added to the Silver Shimmer to create interesting shimmer colors.

PRINTER'S PARAMETERS

Substrates	Knitted fabrics, cotton, linens, polyester blends & rayon. NOT recommended for woven nylon or lycra.
Mesh	60-86 t/in (24 -34 t/cm)
Stencil emulsion	Solvent-resistant direct emulsions or capillary films
Transfer temp	365-375 F (185-190 C)
Transfer time	5 to 7 seconds
Transfer pressure	40-45 PSI
Gel temp	195-230 F (90-110 C). Lower temps will result in a transfer with little tensile strength, and higher temps will negatively affect the "split" of the final transfer.
Extender	None
Reducer	3-5 percent max (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Hot-split transfer inks with a soft feel
- Excellent printability
- Hot-split or cold-peel

SPECIAL RECOMMENDATIONS

- The use of Transflex Printable Adhesive 10210TF will improve the adhesion of Transflex inks to a far wider range of substrates when cold-peeled.
- The transfer paper should be peeled immediately after transferring for optimum results. When cold-peeling, allow the transfer to cool for approximately 15 seconds before removing the paper.
- Transfer papers supplied by Wyndstone Heat Transfer Papers and Hobart-McIntosh can be used in association with this ink system. Other paper types can be used with confidence, but when evaluating inks for transfers, printers should obtain current information about coated and non-coated paper types from these manufacturers before proceeding. Wilflex Technical Services can provide more information on the use of transfer papers. See the "Transfer Papers" section in the Wilflex User's Manual for information on the care and use of transfer papers.
- Preprint, transfer and test all fabrics for desired properties before beginning production printing.
- Examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- It is advisable to press the blank shirt under transfer press before applying transfer to reduce moisture in garment.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353)

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PRODUCT INFORMATION BULLETIN

TRANSFLEX® #10007TF TRASCLEAR

The Clear Choice for Extending Your Transfer Ink Capabilities

Use 10007TF TransClear as a clear backer to all the Transflex inks to extend the wash and durability of every transfer.

Use 10007TF Clear as a first down print for transfer four color process transfers. This clear gives superb color contrast and keeps the half-tone dot in definition.

Use 10007TF Clear as a first down or last down print for Transflex One PacPuff. It extends the stretch and wash durability of the puff.

When using 10007TF Clear as a first down print for Transflex colors, four color process and One PacPuff transfers, be sure to use a 355-365 half-tone screen mesh.

WILFLEX® TRANSFLEX® PRINTABLE ADHESIVE #10210TF

Enhances Adhesion to Substrates and Metallic Foils

Transfers backed up with Transflex Printable Adhesive will have excellent adhesion to a wide range of substrates, improved stretch and washability to 204 F (95 C). Printable Adhesive is printed last over all Transflex colors in a screen printed design to enhance adhesion.

Transfers backed with Transflex Printable Adhesive will have excellent latitude and can be transferred at temperatures between 350 and 400 F (175 and 200 C). Transflex Printable Adhesive will gel at temperatures between 212 and 245 F (100 - 120 C).

Transfer Adhesive powder is also available. Powder can be sprinkled on back of wet ink surface to promote better adhesion of the inks onto fabrics.

WILFLEX® TRANSFLEX® LITHOPRINT WHITE #11620TF

DESCRIPTION Transflex Lithoprint White is a plastisol screen printing ink formulated as an overprint white ink for offset lithographic four-color process transfers. Lithoprint White provides the litho process decal inks with excellent cross-linking properties, color and adhesion strength as well as washfastness. TF Lithoprint White can be heat transferred using a conventional heat-press and standard cool/cold-peel method of transfer application.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, polyester, rayon, linens. Not recommended for woven nylon or Lycra fabrics.
Mesh	76-86 t/in (24-34 t/cm)
Stencil emulsion	Direct, indirect & capillary
Squeegee type	70 durometer
Squeegee blade	Slightly rounded
Gel temp	220-260 F (104-127 C)
Transfer temp	350-375 F (180-190 C)
Transfer time/pressure	10-12 seconds at 40 PSI
Extender	None
Reducer	3-5 percent (by weight) Reducer #1
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Excellent cross-linking properties
- Good color and adhesion strength
- Cold-peel transfer

SPECIAL RECOMMENDATIONS

- The use of TF Printable Adhesive as an additional print will improve adhesion of the litho back white on stretchable fabric surfaces
- The user should examine the fabric type and color before and after the application of the transfer, as color distortion of the garment may occur due to the introduction of heat to sensitive fabric types and dye-stuffs inherent in the garment.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

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TRANSFLEX

TROUBLESHOOTING

NO OPACITY:

- Ink deposit too thin
- Color not opaque
- Ink over-gelled
- Too much press:
 - Time
 - Temperature
 - Pressure

PENETRATION:

- Too much application time/temperature
- Ink viscosity too low
- Fabric very thin
- Over or under gel

NO ADHESION:

- Ink over-gelled
- Pressure too low
- Application time/temp too low
- Weave too tight
- Synthetic weave
- Try Transflex Adhesive
- Check paper type
- High moisture content in transfer release paper

NO ADHESION AT

ONE OR MORE EDGES:

- Transfer press too small
- Image too close to edge
- Pressure is marginal
- Ink too thick at edge
- Delay before peeling
- Check paper type

COBWEBBING-STRINGING:

- Inadequate ink flow
- Delay before peeling
- Image edges sawtoothed
- Application time, temp., pressure low

HARSH HAND:

- Ink deposit too thick
- Poor stencil quality
- Ink too thick when printing
- Check paper type
- Delay before peeling

POOR TRAPPING:

- Keyline deposit too thin
- Squeegee edge too sharp
- Squeegee durometer too high

BLURRING SECONDARY COLORS:

- No space between colors
- Printing on contact
- Printing on soft surface
- Squeegee pressure too high
- Ink deposit too heavy

UNEVEN OR PARTIAL SPLIT: LOW PRESSURE

- Remove moisture from fabric
- Application time/temperature too low
- Cool spot on platen
- No ink flow
- Marginal overcure
- Delay before peeling
- Overall faulty press, ink on heat plate
- Check paper type

POOR SHELF LIFE OF PRINTED TRANSFERS:

- Paper absorbing plasticizer
- Transfer over gelled
- Transfers stored in extreme temps
- Transfer under gelled
- Check paper type

SUBSEQUENT SHIRTS IMPROVE:

- Pre-heat transfer press

MIS-REGISTER:

- Paper not pre-shrunk/shrink @ 260 F/132 C
- Excess off contact
- Changed grain direction
- Varying gel temperatures
- Humidity change in stock paper

CAN'T HOLD DETAIL:

- Mesh too coarse
- Stencil low quality
- Excess squeegee pressure
- Ink too fluid
- Paper movement
- Inadequate off-contact

There are many variables affecting the resulting deposit of Transflex ink, including: screen tension, emulsion/stencil preparation, squeegee durometer, squeegee angle & printing speed. Please contact your Wilflex representative, Technical Services or the Transflex Product Manager for further information.

TRANSFLEX SUPER Standard Colors

11000	Super White	67040	Super Bright Blue
11010	Premium White	67050	Super Royal
30402	Super Dolphin Orange	70501	Super Dallas Green
34802	Super Clockwork Orange	75301	Super Turquoise
40500	Super Red	75601	Super Spring Green
42270	Super Drake Red	80101	Super Light Gold
47030	Super Fuchsia	87020	Super Lemon Yellow
57010	Super Purple		

TRANSFLEX SOFT Standard Colors

14600	Soft Dark Grey	68500	Soft Winter Blue
19000	Soft Black	70000	Soft Kelly
20100	Soft Dark Brown	70500	Soft Dallas Green
23800	Soft Spice Brown	75300	Soft Turquoise
30200	Soft Bright Orange	80100	Soft Lt. Gold
30400	Soft Dolphin Orange	81000	Soft Lemon Yellow
40000	Soft Scarlet	90000	Soft Fluo. Yellow
40160	Soft Panther Pink	90100	Soft Fluo. Blue
45800	Soft Russell Cardinal	90200	Soft Fluo. Green
50200	Soft Purple	90300	Soft Fluo. Orange
60000	Soft Navy	90400	Soft Fluo. Pink
60650	Soft Contact Blue	90600	Soft Fluo. Rocket Red
62100	Soft Light Royal	90700	Soft Fluo. Magenta

TRANSFLEX SOFT Standard Process Colors

19000	Black	69858	Process Blue
49858	Process Magenta	89858	Process Yellow

TRANSFLEX SHIMMER Standard Colors

15370	Silver Shimmer	85370	Gold Shimmer
85570	Ultra Gold Shimmer		

TRANSFLEX LITHOPRINT White

11620	Lithoprint White
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TRANSFLEX BASE AND CLEAR

10440	TF Base	10007	TransClear
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TRANSFLEX TUF ONE PACPUFF Colors

11000	TF Tuf Puff White	10480	TF Tuf Neutral Base
12520	TF Tuf Puff Cream		

TRANSFLEX PRINTABLE ADHESIVE

10210	TF Printable Adhesive
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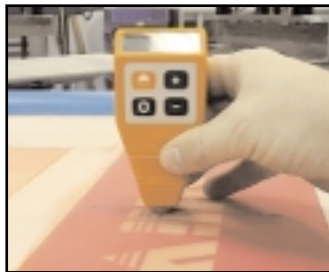
MESH, STENCIL & MEASUREMENT

TEST BEFORE GEL:



Measure wet ink film thickness before curing the print. You will need an average ink film deposit (Ex: 3 mils for TF Super Opaque inks) to achieve hot-split opacity on dark fabric using an 83 mesh screen.

TEST AFTER GEL:



Use a Micrometer or Dial Indicator to measure dry ink film thickness. Don't forget to subtract the thickness of the paper.

	
TRANSFLEX DRY INK DEPOSIT RANGE	
2 MILS & UP — TRANSPARENT SUPER SOFT-HAND (TRANSFLEX SOFT)	
5 TO 12 MILS — OPACITY AND ULTIMATE LATITUDE (TRANSFLEX SUPER)	

TRANSFLEX REGISTRATION

HELPFUL HINTS TO SPEED PRODUCTION

- PRE-SHRINK paper stock then keep out moisture. See the "Transfer Papers" section in the Willflex User's Manual for information on paper care and storage.
- When using multiple ink colors with **hot-split inks**, be sure to butt-register, rather than overlay ink on ink. If ink overlay occurs, ink/color strength will be impaired when the transfer is heat fused onto the garment.
- Pre-heat paper in a dryer to 260 F (132 C), then print immediately to maintain registration, or cover with plastic sheeting. The paper also may be stacked in a temperature controlled oven. Oven temperature should be set in the region of 100 F (38 C).
- When printing transfer graphics that have disciplined registration, it is important that all moisture is removed from the paper before the print run commences. Failure to achieve this will result in poor graphic registration as the print run continues. Remember to continue to keep the transfer paper in plastic wrapping or in a temperature controlled oven, as moisture will invariably be absorbed by the paper between each printed color.

TRANSFER PAPERS

Care and Use of Transfer Papers

Plastisol heat transfers are mostly printed on specially prepared transfer papers. There are only a handful of specific papers for this process, and they are usually available from your local screen print supply company.

Transfer papers should have good release characteristics to allow the ink to release from the paper during application. They also should have good hold-out characteristics to keep the ink from absorbing into the paper during storage. (10007TF TransClear can be used as a paper release coating.)

Transfer papers must be very stable when exposed to moisture and heat. Poor quality papers may shrink, expand or curl when exposed to these elements, causing poor registration.

Transfer papers are usually supplied for hot-split (hot-peel) or cold-peel transfer inks. When printing hot-split inks onto uncoated or semi-release coated papers, the majority of the ink is heat-pressed onto the garment while some ink stays on the paper.

For cold-peel transfers, when the transfer is heat-pressed onto the garment, the transfer is allowed to cool and the transfer ink is peeled totally from the paper, leaving 100 percent of the ink on the garment.

Storage of Heat Transfer Papers

- Keep paper in original wrappers and cartons until ready to use.
- Do not stack cartons or wrapped reams on cement floors. Use pallets.
- Keep all mill information from cartons or skid wrappers (lot#, run#, date, order#, etc.) for proper identification, in case of a problem or claim.
- Store paper away from heating pipes, overhead water pipes or any area that would add or subtract moisture.
- Don't allow paper to sit on the loading dock, exposed to temperature, humidity and possible damage.

Storage of Finished/Printed Transfers

- Finished/printed transfers should be kept in an environment that is not hot or cold. Continual temperatures of 100 F (38 C) or more may result in the transfer ink not easily releasing from the paper. Freezing temperatures result in transfers that will impair the ink's release from the paper.

For information on testing the shelf life/aging of printed transfers, see the "Evaluating Plastisol Inks" section in the Wilflex User's Manual. For further information on the care and use of transfer papers, call PolyOne Technical Services.



Wilflex® White Inks

ARTIST 11122WHT

Fast flashing cotton white, low after-tack, superior printability

ATHLETIC TROPHY 11003WHT

Mat-Down, durability, coverage

BRIGHT TIGER 11480HT

Optically bright, superb printability, excellent fiber mat-down

EPIC COTTON WHITE 11001PFW

Non-phthalate cotton underbase white

MVP WHITE 11195MVP

Low-bleed, high opacity white

MX WHITE 11888MX

Wet-on-wet, highlight white

NUPUFF WHITE 11000NPF

Puff white

OLYMPIA PLUS 11135WHT

Opaque underbase and highlight white for 100% cotton

OPM WHITE 11973OPM

Wet-on-wet, highlight white

PENNANT 11000PEN

For nylon, micromesh & dazzle cloth athletic uniforms

PHANTOM 11555WHT

Fast flash, low-tack white

POLYWHITE 11117WHT

Bleed resistance on polyester

POP 11123HT

Optically bright, superb printability, smooth surface

SSVFF 11000SSVFF

Fast fusion white for super elongation

XTREME 11999XW

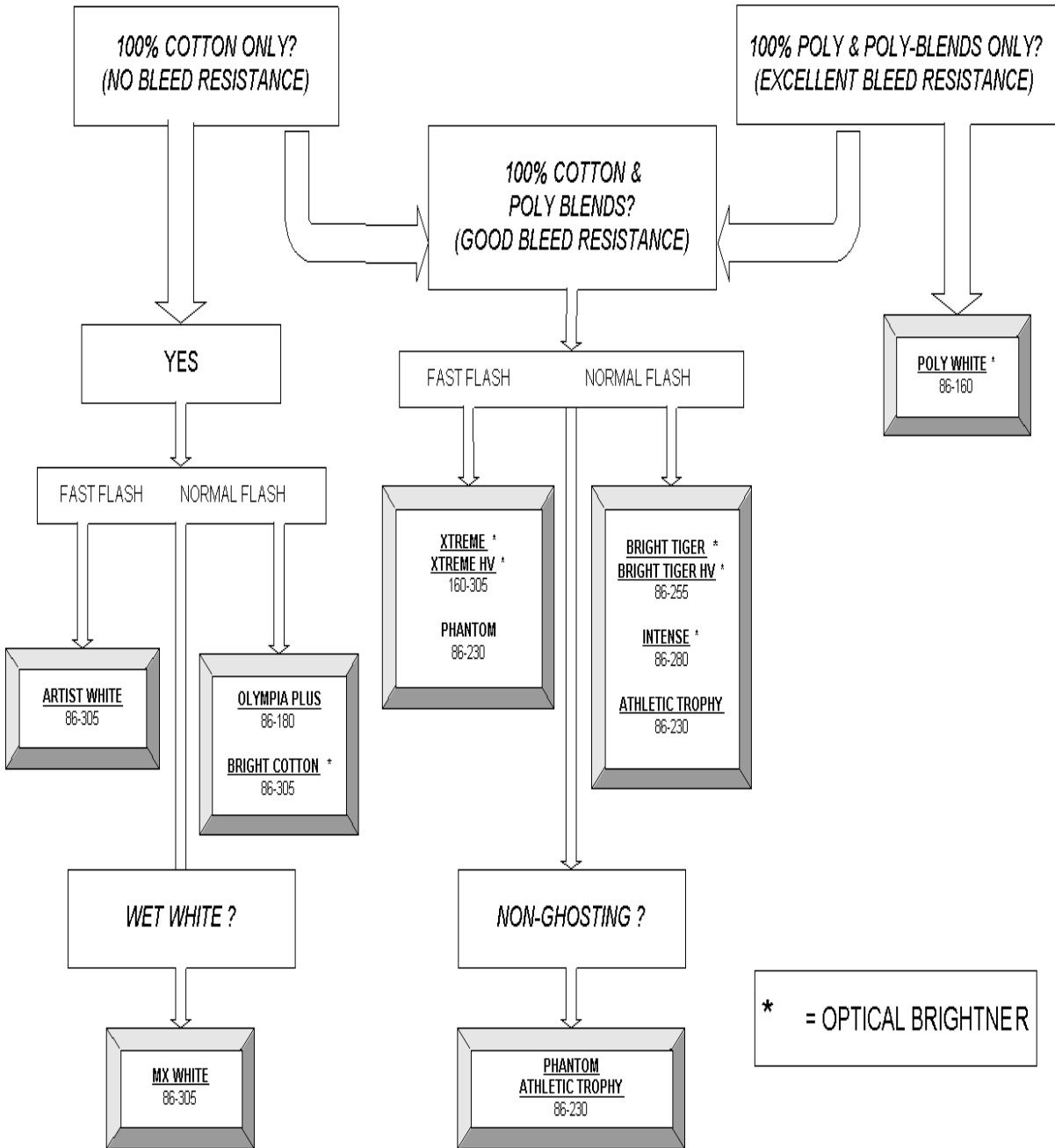
Super smooth, fast flashing, no after-tack



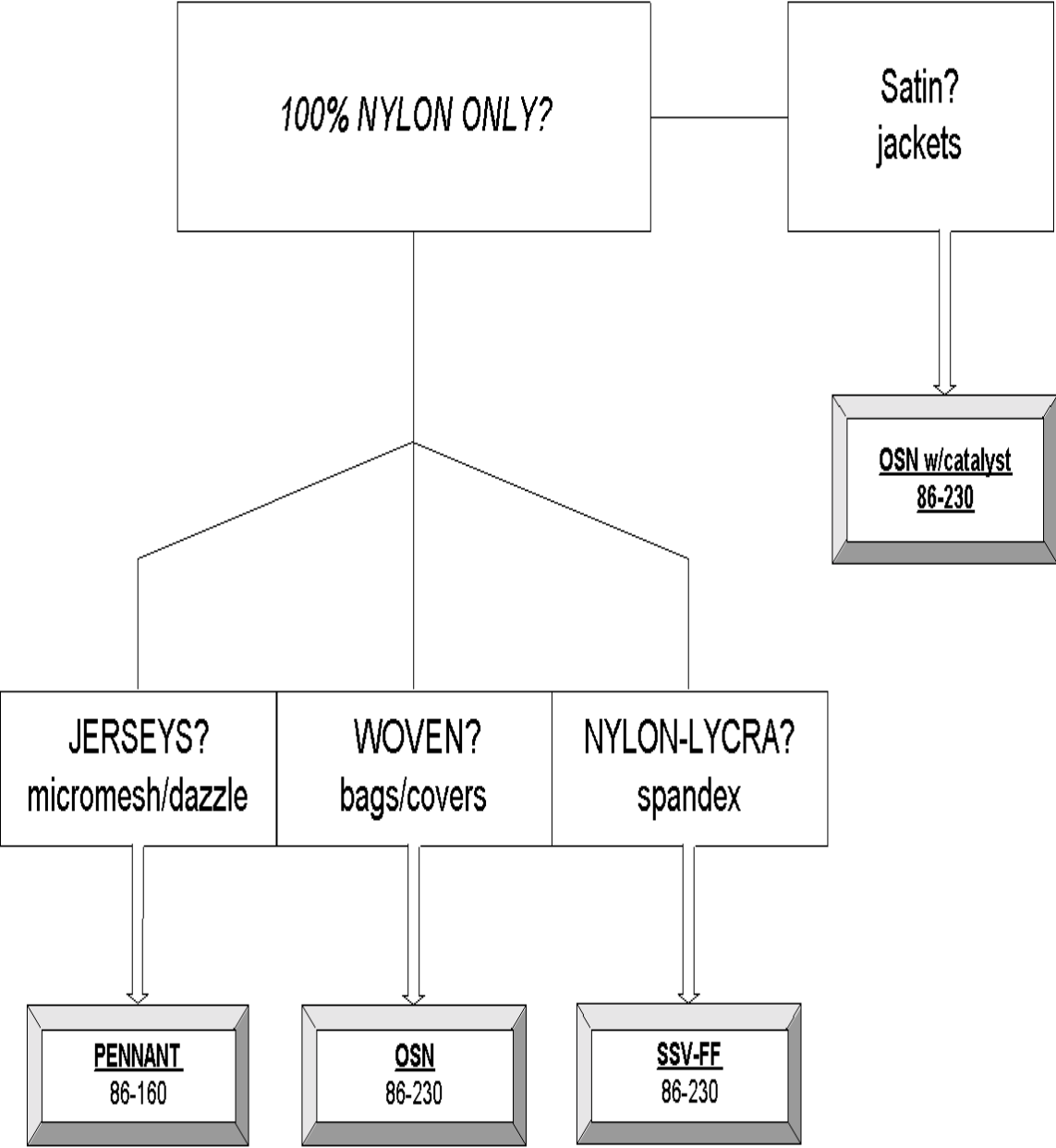
WILFLEX WHITE INK APPLICATIONS CHART

White Ink Designation	Application	Comments	Bleed			Matte			Print-ability	Mesh Count Recommended	Mesh Count (threads/cm)	Odor	Optical Brightener
			Resistance	Opacity	Down	Flash	Gloss						
Artist White 11122WHT	General Purpose 100% Cotton only	Economical 100% Cotton only	1	G	VG	G	M	10	110-305	43-120			
Athletic Trophy 11003WHT	Superb Bleed Resistance White	Athletic Prints Poly/ Poly blends	9	E	E	E	M	5	60-180	24-68	X		
Bright Cotton 11345WHT	Opacity Mat-down	General Purpose 100% Cotton only	1	E	E	E	M	9	60-160	24-61		X	
Bright Tiger 11480HT	Printability Optically Bright	GP Underbase solid areas	8	E	E	VG	L	9	86-255	34-100		X	
Bright Tiger HV 11487HVB	Printability Optically Bright	GP Underbase more opacity	8	E	E	VG	L	9	86-230	34-90		X	
Epic Cotton White 11001PFW	Non-Phthalate 100% Cotton only	Underbase & Highlight	1	G	VG	G	M	10	110-305	43-120			
Intense White 11911HT	Printability Optically Bright	GP Underbase more opacity	8	E	E	VG	L	9	86-255	34-100		X	
Lithoprint 11620	Back-up Offset Litho Transfers		8	VG	G	NA	M	10	76-86	30-34		X	
MCV-FF White 110000MCVFF	Heat Sensitive Stretch Lights	Spandex	1	G	VG	Fair	H	10	140-305	54-120			
MVP White 11195MVP	Low-Bleed Athletic	Poly/ Poly blends	9	E	E	E	M	5	60-230	24-90	X		
MX White 1188MX	Wet-on-wet Highlight White	Mixing and hi-lite 100% Cotton only	1	G	G	Fair	L	10	110-305	43-120			
NuPuff White 11000NPF	Premium Puff White		5	E	G	G	L	6	60-110	24-43			
Olympia Plus 11135WHT	Opacity Mat-down	General Purpose 100% Cotton only	1	E	E	E	M	9	60-160	24-61			
Omega Flash 11175WHT	Fast-Flash White 100% Cotton	General Purpose 100% Cotton only	1	VG	VG	E	L	9	60-130	24-51			
OPM White 11973OPM	Wet-on-wet Highlight White	Mixing and hi-lite 100% Cotton only	1	G	G	Fair	L	10	110-305	43-120			
OSN White 11000OSN	Nylon Printing	For textured bags, boat covers, etc.	1	E	E	G	H	5	60-160	24-64			
Pennant White 11000PEN	Athletic Nylon Dazzle cloth		1	E	G	Fair	H	5	60-160	24-64			
Phantom White 11555WHT	General Purpose White	General Purpose Poly/ Poly blends	9	E	E	E	M	5	60-195	24-77	X		
PolyWhite 11117HT	Premium Bleed Resistance	Athletic Prints 100% Polyester	10	E	VG	Fair	M	4	60-130	24-51		X	
Pop White 11123HT	Printability Optically Bright	smooth surface Underbase	7	VG	E	E	M	10	110-280	43-110		X	
Premium Transflex 11010TF	Bleed Resistant Transfer White	Hot Split Transfer	7	E	VG	VG	L	7	60-195	24-77			
Print White	Low Cost White		6	VG	G	VG	L	8	86-230	34-90			
SSV-FF White 11000SSVFF	Athletic low- cure garments	Dark spandex, better opacity	1	G	F	G	H	9	63-255	25-100			
Transflex White 11000TF	General Purpose Hot Split Transfer		5	VG	G	E	L	9	60-195	24-77			
Tuf White 11000TUF	Hot Split Transfer Puff		5	E	G	G	L	6	60-110	24-43			
Xtreme White 11999XW	Fast Flash, No after-tack	Excellent for Simulated Process	8	E	E	E	M	10	160-305	64-120		X	
Xtreme White HV 11777HWXW	Fast Flash, No after-tack	Xtreme with better opacity	8	E	E	E	M	10	110-305	43-120		X	

Choosing the Right White



Choosing the Right White



WILFLEX® ARTIST WHITE #11122WHT

DESCRIPTION Artist White is an opaque base and highlight white specifically formulated for non-bleed garments. Its fast flash time and superior low after-tack also enables the ink to be used as a flash white. The matte appearance, excellent fiber mat-down and bright appearance ensures Artist White is an excellent all round, general-purpose white ink.

PRINTER'S PARAMETERS

Substrates	100 percent cotton, non-bleed fabrics ONLY
Bleed resistance	None
Mesh (underbasing)	60-195 threads/in (24-77 threads/cm) for optimum opacity
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	60-90 dual or triple durometer squeegees
Squeegee blade	Sharp
Squeegee angle	45 degrees
Squeegee speed	Maximum
Gel temp	200-210 F (93-99 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	5 percent max (by weight) Curable Reducer #10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- For use on 100 percent cotton garments
- Fast flashing
- Low after-tack
- Prints through fine meshes
- Use as a first-down, underbase flash white or an overprint stand-alone white.
- Odorless
- Excellent opacity
- Matte appearance, excellent fiber mat-down

SPECIAL RECOMMENDATIONS

- Due to differences in power, height above ink film and efficiency of the flash drying unit, specific dwell time cannot be given
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

ATHLETIC TROPHY WHITE #11003WHT

DESCRIPTION Willflex Athletic Trophy White is a high viscosity plastisol screen printing ink formulated to give ultimate opacity and bleed resistance along with excellent mat-down characteristics. Though designed for direct printing on fabrics subject to dye bleeding and/or sublimation, Athletic Trophy White is a premium ink useful to those printers who wish to use one ink for most jobs.

PRINTING RECOMMENDATIONS

Substrates	Cotton, cotton blends, polyesters, some nylons (generally open weave or mesh types) and other synthetics. On some types of fabric, dye migration may occur.
Bleed resistance	Good
Mesh (on darks)	60-120 t/in (24-49 t/cm)
Mesh (fine line)	120-200 t/in (49-81t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Conventional direct emulsions or capillary films.
Squeegee type	75 or a triple durometer 60/90/60 (auto), 75 durometer (manual)
Squeegee blade	Slightly rounded (auto), square (manual)
Squeegee angle	35 degrees (auto), 45 degrees (manual)
Gel temp	170-189 F (76-87 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	Miracle Clear #10160 or 5 percent max (by weight) Curable Reducer #10070
Caution	Excessive modification will reduce bleed resistance and may cause problems in curing or flash curing.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Willflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Fast flashing
- Excellent mat-down with little or no after-flash tack
- Versatile, athletic white
- Excellent opacity and brightness
- Good bleed resistance

SPECIAL RECOMMENDATIONS

- Use consistent, high tensioned screen mesh to optimize performance properties.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Willflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

The information in this publication is based on information and experience believed reliable. Since many factors may affect processing for an application, processors must carry out their own tests and experiments to confirm suitability for intended use. You must make your own determination of suitability for your intended use and environmental acceptability, the safety and health of your employees, and purchasers of your products. PolyOne 800-326-0226 or 770-590-3500.

WILFLEX® BRIGHT TIGER™ #11480HT

DESCRIPTION Wilflex 11480HT Bright Tiger is an extremely true, optically bright white ink formulated to give excellent printability across a range of screen printing applications. Bright Tiger's excellent opacity, fiber mat down, low gloss level, and good flash properties permit it to be utilized as both a stand-alone and an underbase white.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	Good
Mesh (on darks)	86-125 t/in (34-48 t/cm)
Mesh (underbasing)	140-230 t/in (55-90 t/cm)
Mesh (fine line)	195 to 305 t/in (77-120 t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	60-80 durometer. Dual (70/90) or triple (70/90/70)
Squeegee blade	Slightly dulled (coarse mesh), sharp (fine mesh)
Squeegee angle	Avoid excess pressure
Squeegee speed	Maximum
Gel temp	160-180 F (71-82 C)
Cure temp	320 F (160 C) entire film
Reducer	5 percent max (by weight) Curable Reducer #10070
Caution	Do not stack hot
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Optically bright white, matte finish
- Prints through fine meshes
- Use as a first-down, underbase flash white or an overprint stand-alone white.
- Good bleed resistance

SPECIAL RECOMMENDATIONS

- Pre-test Bright Tiger on light colored or stone washed garments. Avoid stacking printed garments hot because such colors are more prone to color distortion. Fabric and dye characteristics can vary between manufacturers and from dye lot to lot. Bright Tiger is a low-bleed, NOT a non-bleed ink.
- A heavy pressure flood stroke that fully fills the open areas of the stencil with ink is recommended.
- For one-hit opacity through coarse meshes, use a coating procedure that builds a thick, even stencil to ensure a good column height of ink.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability and increased likelihood of dye migration.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing

WILFLEX® MVP WHITE #11195MVP

DESCRIPTION Wilflex MVP White is a low-bleed, creamy plastisol screen printing ink formulated to give excellent opacity, brightness and dye bleed resistance. The ink has fast flashing properties that provide excellent mat-down with little after-tack. MVP White is a versatile ink and can be used by most printers who want to use one ink for a variety of print jobs.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, polyester
Bleed resistance	Very Good
Mesh (on darks)	60-120 t/in (24-49 t/cm)
Mesh (fine line)	120-200 t/in (49-81t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	75 or a triple durometer 60/90/60 (auto), 75 durometer (manual)
Squeegee blade	Square
Squeegee angle	35 degrees (auto), 45 degrees (manual)
Gel temp	170-189 F (76-87 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	Miracle Clear #10160 or 5 percent max (by weight) Curable Reducer #10070
Caution	Excessive modification will reduce bleed resistance or problems in curing or flash curing.
Storage receipt.	65-90 F (18-32 C). Avoid direct sun. Use within one year of
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Very good bleed resistance
- Excellent mat-down
- Excellent opacity and brightness
- Fast flashing with little after-flash tack
- Easy to print

SPECIAL RECOMMENDATIONS

- When processed properly, MVP White will not ghost on 100 percent cotton garments.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

WILFLEX® OLYMPIA PLUS #11135WHT

DESCRIPTION Olympia Plus White is an opaque highlight white specifically formulated for non-bleed garments. Its fast flash time and superior low after-tack also enables the ink to be used as a flash white. The matte appearance and excellent fiber mat-down ensures Olympia Plus White is an excellent all round, general-purpose white ink.

PRINTER'S PARAMETERS

Substrates	100 percent cotton, non-bleed fabrics ONLY
Bleed resistance	None
Mesh (underbasing)	60-125 threads/in (24-48 threads/cm) for optimum opacity
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	60-80 dual or triple durometer squeegees
Squeegee blade	Sharp
Squeegee angle	45 degrees
Squeegee speed	Maximum
Gel temp	200-210 F (93-99 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	5 percent max (by weight) Curable Reducer #10070
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- For use on 100 percent cotton garments
- Fast flashing
- Low after-tack
- Prints through fine meshes
- Use as a first-down, underbase flash white or an overprint stand-alone white.
- Odorless
- Excellent opacity
- Matte appearance, excellent fiber mat-down

SPECIAL RECOMMENDATIONS

- Due to differences in power, height above ink film and efficiency of the flash drying unit, specific dwell time cannot be given
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

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WILFLEX® PENNANT WHITE #11000PEN

DESCRIPTION

Wilflex 11000 Pennant White is a specialty plastisol ink designed for direct printing of athletic uniforms. Pennant White is an excellent choice when printing on to nylon micro-mesh, port-hole and dazzle cloth nylon game jerseys. Best results will be obtained when the printer uses the recommended screen tension and squeegee choice.

PRINTER'S PARAMETERS

Substrates	Nylon mesh (micro & porthole), dazzle cloth and other athletic uniforms.
Bleed resistance	None
Mesh	60-110 t/in (24-43 t/cm)
Tension	In excess of 15 newtons per centimeter
Stencil emulsion	Conventional direct, capillary or both
Squeegee type	Single 65-75 durometer, medium hard
Squeegee blade	Straight edge
Gel temp	156 F (69 C)
Cure temp	300 F (149 C) entire film
Extender	None
Reducer	None
Pallet	Semi-soft, NOT metal
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- High gloss finish
- Excellent adhesion to fabrics
- Excellent printability
- Fast flashing
- High opacity on dark fabrics
- Non-migrating pigment
- Super elongation on nylon
- Excellent wash properties

SPECIAL RECOMMENDATIONS

- When printing, allow one flood followed by two print applications. Printing properties will be determined by manual or automatic printing applications.
- Perform fusion tests before production. Check the cure temperature at the ink surface. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Preprint and test all fabrics for dye migration. Pennant White has no built-in bleed resistance, and it should not be printed onto any nylon that is prone to bleeding.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

WILFLEX® PHANTOM WHITE #11555WHT

DESCRIPTION Wilflex Phantom White is a fast-flashing, creamy plastisol screen printing ink formulated to give excellent opacity, brightness and dye bleed resistance. The ink has super fast flashing properties that provide excellent mat-down characteristics with little or no after-tack. Phantom White is a versatile ink and can be used by most printers who want to use one ink for a variety of print jobs.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends
Bleed resistance	Good
Mesh (on darks)	60-120 t/in (24-49 t/cm)
Mesh (fine line)	120-200 t/in (49-81t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	75 or a triple durometer 60/90/60 (auto), 75 durometer (manual)
Squeegee blade	Slightly rounded (auto), square (manual)
Squeegee angle	35 degrees (auto), 45 degrees (manual)
Gel temp	170-189 F (76-87 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	Miracle Clear #10160 or 5 percent max (by weight) Curable Reducer #10070
Caution	Excessive modification will reduce bleed resistance and may cause problems in curing or flash curing.
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Fast flashing
- Excellent mat-down with little or no after-flash tack
- Versatile, multi-purpose white
- Excellent opacity and brightness
- Good bleed resistance

SPECIAL RECOMMENDATIONS

- Use consistent, high tensioned screen mesh to optimize performance properties.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing.
- Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing (US - 800-735-4353).

WILFLEX® POLYWHITE #11117WHT

DESCRIPTION Wilflex PolyWhite is a plastisol ink specifically formulated to address dye migration problems on a variety of specialty substrates.

PRINTER'S PARAMETERS

Substrates	Cotton blends, 100% polyester
Bleed resistance	Excellent
Mesh	60-130 threads/in (24-51 threads/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	60-80 durometer, straight edge
Squeegee blade	Hard, square
Squeegee angle	Low angle
Squeegee speed	Hard flood, slow speed
Gel temp	200 F (94 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	None
Storage year	65-90 F (18-32 C). Avoid direct sun. Use within one of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Works well on heavy, colored aprons, dark athletic meshes & heavy dye load caps.
- Use as a first-down, underbase flash white or an overprint stand-alone white.
- Excellent bleed resistance, odorless
- High opacity, good coverage

SPECIAL RECOMMENDATIONS

- To optimize bleed resistance, set the dryer belt at the highest possible speed while still ensuring that the ink film reaches 320 F. This ensures that the ink's heat exposure is minimal.
- Suggestions for automatic printing of PolyWhite: First print 130 mesh screen -- flash -- second print 86 mesh screen.
- On rare occasions, dye migration may occur. To determine a material's bleed potential, please reference the testing procedures outlined in the Wilflex User's Manual.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.

WILFLEX® POP WHITE #11123HT

GENERAL DESCRIPTION Wilflex Pop White is an optically bright white ink formulated to give excellent printability through a wide range of meshes. Pop White's excellent opacity, fiber mat down, low gloss level, and good flash properties permit it to be utilized as both a stand-alone and an underbase white.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	Good
Mesh (on darks)	86-125 t/in (34-48 t/cm)
Mesh (underbasing)	140-255 t/in (55-100 t/cm)
Mesh (fine line)	195 to 280 t/in (77-110 t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	60-80 durometer. Dual (70/90) or triple (70/90/70)
Squeegee blade	Slightly dulled (coarse mesh), sharp (fine mesh)
Squeegee angle	Avoid excess pressure
Squeegee speed	Maximum
Gel temp	160-180 F (71-82 C)
Cure temp	320 F (160 C) entire film
Extender	None
Reducer	5 percent max (by weight) Curable Reducer #10070
Caution	Do not stack hot
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety	Available upon request

FEATURES

- Prints through fine meshes with matte finish
- Optically bright white with fast flash
- Good bleed resistance
- Use as a first-down, underbase flash white or an overprint stand-alone white.

SPECIAL RECOMMENDATIONS

- Pre-test Pop White on light colored or stone washed cotton garments. Avoid stacking printed garments hot because such colors are more prone to color distortion. Fabric and dye characteristics can vary between manufacturers and from dye lot to lot. Pop White is a low-bleed, NOT a non-bleed ink.
- A heavy flood stroke that fully fills the open areas of the stencil with ink is recommended.
- For one-hit opacity through coarse meshes, use a coating procedure that builds a thick, even stencil to ensure a good column height of ink.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability and increased likelihood of dye migration.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing

WILFLEX® XTREME WHITE #11999XW

DESCRIPTION Wilflex 11999XW Xtreme White is a super smooth, creamy white ink that flashes fast and prints through fine meshes. Xtreme White takes your production processes to the extreme by cutting flash times dramatically and producing a fiber-lock matte finish on color overprints.

PRINTER'S PARAMETERS

Substrates	100% cotton, cotton blends, some uncoated synthetics
Bleed resistance	Good
Mesh (on darks)	86-125 t/in (34-48 t/cm)
Mesh (underbasing)	140-300 t/in (54-120 t/cm)
Mesh (fine line)	195 to 300 t/in (77-120 t/cm)
Tension (newtons)	15-20 acceptable, 25-35 recommended
Stencil emulsion	Direct, indirect & capillary
Squeegee type	Dual (70/90) or triple (70/90/70)
Squeegee profile	Sharp blade, 45 degree angle, maximum speed
Gel temp	160-180 F (71-82 C)
Cure temp	330 F (166 C) entire film
Reducer	5 percent max (by weight) Curable Reducer #10070
Caution	Do not stack hot
Storage	65-90 F (18-32 C). Avoid direct sun. Use within one year of receipt.
Wash-up	Wilflex Screen Wash
Health & Safety data	Available upon request

FEATURES

- Super smooth, creamy texture and viscosity, odorless
- Fast flashing with good bleed resistance
- Prints through fine meshes
- Use as a first-down, underbase flash white or an overprint stand-alone white.
- Superior ink flow properties. Flows easily from the bucket and in the screen printing operation. Speed up production without losing definition.
- Competitively priced for a top-value ink

SPECIAL RECOMMENDATIONS

- Pre-test Xtreme White on light colored or stone washed garments. Avoid stacking printed garments hot because such colors are more prone to color distortion. Fabric and dye characteristics can vary between manufacturers and from dye lot to lot. Xtreme White 11999XW is a low-bleed, not a non-bleed ink.
- Use consistent, high tensioned screen mesh to optimize performance properties.
- To increase production speeds, use finer mesh counts for the flash plate to decrease gel time. Set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch.
- Avoid overflashing, as it can result in poor inter-coat adhesion of overprint colors.
- Perform fusion tests before production. Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability, and increased likelihood of dye migration. Testing procedures for plastisol fusion are outlined in the Wilflex User's Manual.
- Stir plastisols prior to printing. Do not dry clean, bleach or iron the printed area.
- Any application not referenced in this product information bulletin should be pre-tested or consultation sought with PolyOne Technical Services Department prior to printing

SCREEN PRINTING

ART WORK

SCREEN-MAKING

(1) Screen Frames (2) Mesh
(3) Screen Tension (4) Stencil System

SUBSTRATE

APPLICATION

(1) Squeegees (2) Platen Surface
(3) Off Contact Distance (4) Ink Selection

CURING



Shirts courtesy of Abracadabra, United Kingdom

A blue decorative graphic in the top-left corner of the page, consisting of a solid blue shape with a scalloped, irregular edge.

Screen Printing

Introduction

All ingredients — art, stencil, mesh, print parameters, etc. —interrelate. It is the entire recipe, not just one ingredient, that establishes high quality and production rates.

Without organization between departments, the focus of each area will be on only one ingredient, not the entire recipe. The screen printing process can be distorted to accommodate practically any one ingredient, but this is the proverbial “tail wagging the dog” approach. It is much better to evaluate the entire process.

In general, the merchandising department, art department, screen printing, and warehouse groups need to have a good working knowledge of their contribution to the entire process. Education and cross-training is one way to help each department realize its contribution to the overall picture. By this method employees see first-hand how their work directly influences other departments and the quality of the finished product. The relationship between the screen mesh, stencil systems, screen exposure, tension, squeegee parameters, ink transfer to different materials, etc., is important to the quality of the finished product.

It is our hope that this manual will give you some insight into our products and assist you in seeing the “big picture” of the screen printing process.



Although there are many ways to create art, the artist should know some basic information about creating art for screen printing. Some of the questions the artist should ask include:

- o What is the substrate? (color? type of garment? material content?)
- o What type of print? (process? spot?)
- o What size does the art need to be? (child? adult? left-chest?)
- o What are the ink opacity requirements? (bright? muted? glossy? matte?)
- o Is an underlay needed? (bright ink on darks? specialty inks?)
- o What are the registration requirements? (butt? trap? overprint?)
- o What are your production capabilities? (auto? manual? number of colors?)

ART CREATION

The three most common forms of art created for screen printing are hand-drawn art, computer-generated art and art replicated from fine paintings or photographs.

Hand-drawn Art

Hand-drawn art comes in many forms. An artist can create a keyline (an outline of the design) by drawing it on paper with an opaquing pen, shooting it on a camera or scanning it into a computer. Art can be created from a hand-drawn keyline provided the image is loaded into a scanning program, converted into paths and then placed into an art program. With the image in a format that can be manipulated, the artist can clean it up, change its size and position, add text and place color in selected areas. Another option is to draw directly onto vellum or onto a coated screen. This method is not recommended, but it is effective for simple one-color designs.

Computer-generated Art

Computer-generated art is conceived and designed on a computer through a variety of design programs. The most common programs in the screen printing industry are [PhotoShop](#), [Illustrator](#), [Freehand](#) and [Corel](#). Designs created on a computer are then separated with the computer's separation program.



Replications

Replications of fine art or photographs are most successful when they are shot with a digital camera or scanned into a computer. The artist can then utilize an advanced color separator program. The artist also can separate replications by hand through a series of hand-cut overlays.

ART SEPARATIONS

After creation, art must be converted into final separations. The goal of separation is to create individual films, either acetate or vellum, in which the print areas block UV light rays and the negative areas allow UV light to pass through. The most frequently used methods involve separating by hand, camera and computer.

Hand Separations

An artist can achieve hand separations in several ways. Hand-cut positives are created by cutting Photomasking film, or rubylith, into the shapes or letters needed. Then the artist peels away the negative unwanted portion, leaving rubylith in the areas to be printed.

Overlays are color separations created by the use of acetate or rubylith overlaid on a keyline, to create positives. By cutting, drawing, applying adhesive dot patterns, and using acetate or burnishing letters, the artist can build each color (as well as additional colors with dot pattern overlays).

Hand-drawn separations are created by tracing the design directly onto the acetate or vellum. Starting with a keyline of the design, the artist overlays each color one at a time and traces until all of the separations are completed.

Camera Separations

Camera separations are created by the use of a camera or other exposing equipment, such as a contact frame, to create acetate positives. An artist may use the camera to shoot separations from a laser jet printer or a hand-drawn keyline, as mentioned earlier. An acetate keyline from the camera then could be used as the basis for the hand-cut separation, utilizing rubylith (as mentioned earlier), to achieve the trap method of printing. The **trap method** is simply when colors slightly overlap where they meet on a design. Using basically the same method, after cutting the rubylith, instead of peeling off the negative areas, the artist peels off the positive areas, leaving the print areas clear. The artist then takes this overlay (still attached to the keyline), and exposes it to reversal film on the contact frame. The end result is a perfect butt registration (or perfect dropout) of the separated color.

An artist also can utilize the camera to create "user friendly" separations for the Production Department. **Choking** a color means that the artist produces a slightly smaller color separation, as if there is a hairline space between the separation and its adjacent color. Choking allows easier registration of overlay colors (if the choked color is a white underlay), and helps stop colors from bleeding into each other by creating a slight barrier of fabric. To choke a color, simply place acetate sheets between the art and the film. The light will naturally expose inside the edges, creating a slightly smaller image on the film. To create a white underlay, an artist can register the film separations together on a contact frame and expose them onto dupe film. This method automatically chokes the plate. This method is also useful in creating transfers because it is critical to butt-register all transfer colors.



Computer Separations

Computer separations usually are rendered from art created in a computer graphics program. Other art can be separated with the use of a computer, but first it must be scanned or converted digitally before it can be manipulated in a graphics program.

A piece of art created in a vector program is separated easily because the color usage is controlled during the creation of the art. The program will render separations per color and will print out exactly what the artist needs.

Fine art or photographs can be separated by computer provided the artist has access to a large format scanner, a drum scanner or a digital camera. (If the Art

Department doesn't own any equipment, a service bureau can be paid to scan these images.) For best results, the image should be scanned at about 300 DPI in an RGB mode and saved as a TIFF file. Once the piece of art is converted digitally, it can then be introduced into a design program, like PhotoShop.



When a design is in this type of program, it can render process separations or areas of color can be selected to create individual channels for each color, producing spot plates. The use of PhotoShop plug-ins can decrease time spent creating spot color channels.

To calculate line counts for halftone screens, simply divide the mesh count by four. The result will equal the highest line count that should be used. The artist must have an understanding of mesh counts and their effect on the press. For instance, when a fade is needed in a design, the artist may be tempted to put it in a high mesh. However, if that same color also consists of large, open print areas, the printer will require a mesh in a lower count. In this instance, the artist should calculate the halftone line based on the lower mesh. To determine the best resolution for a design, multiply line count by 2.5. Example: 55 lines = 137.5 resolution. This should prevent the program from producing undersized dots in the lower percentage halftone areas.

When the design is ready to be separated, it may be printed directly from the program or you may split the channels to create individual files to be printed later. The program creates individual files for each color, giving the artist the option to go back and change a color individually if the print performance is not satisfactory.

It is important to label each color and to make sure that each piece of film is complete with registration marks. Most programs offer these options on the separation screen, but some programs require the artist to incorporate the color names and registration marks with his or her designs. The artist must type each color name in its own color and color the registration marks with the "registration" color option.



Image output refers to the method in which a computer prints art or separations. One way of printing separations is on a laser jet printer. An artist may choose to print out directly on vellum, which exposes well, or on paper, which is then shot by a camera to render the films. In addition to laser jet printers, an image setter may be used to output separations. This equipment enables the artist to print out his or her art

directly onto film (and can totally replace a darkroom).

It is a good idea to have a color "mock-up" of the design to accompany the separations to production. This ensures that everyone from the screen room through packing are on the same page.

Artists must understand the limits and advantages of screen printing. They must react to the needs of the customer as well as those of the production department. The bottom line is achieving communication between the departments to ensure a predictable, repeatable product.

Mesh Thread Diameter

Mesh Thread Diameter—In certain mesh counts there is a selection of thread diameters: S—○ T—○ HD—○

For the best results consider these thread diameters:

S-thinnest diameter-permits higher squeegee speeds-requires quality stencils.

Mesh for glitters: 25-53 threads/in, 10-21 threads/cm

Mesh for metallics: 60-110 threads/in, 24-43 threads/cm

T-medium diameter-soft hand printing as well as wet on wet on darks

Mesh for Soft-Hand: 140-305 threads/in, 55-120 threads/cm

Mesh for Underbase: 110-230 threads/in, 43-90 threads/cm

Mesh for wet-on-wet over underbase: 195-355 threads/in, 77-140 threads/cm

Mesh for halftones: 305-355 threads/in, Mesh for halftones: 120-140 threads/cm

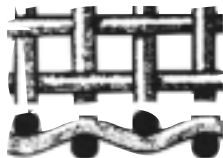
HD-thickest diameter-requires a slower speed, thicker stencil and a dull edged squeegee

Mesh for athletic numbering & flocking: 51-95 threads/in, 20-38 threads/cm

Mesh for opaque hot-split transfers: 51-86 threads/in, 20-34 threads/cm

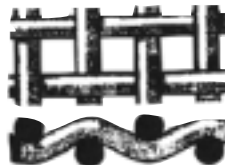
Mesh for maximum puff height: 74-125 threads/in, 29-49 threads/cm

Mesh Conversion Chart					
threads/in	threads/cm	threads/in	threads/cm	threads/in	threads/cm
25	10	123	48	280	110
37	15	137	54	305	120
54	21	156	61	330	130
63	25	173	68	355	140
83	32	195	77	381	150
85	34	206	81	409	161
96	38	230	90	457	180
110	43	254	100	508	200



Light grade "S" with comparatively thin diameter threads and a large open area.

Medium heavy grade "T"



Heavy grade "HD" (Heavy Duty) thick diameter thread and a small open area.

Screen Frames

The purpose of the screen frame is to hold the screen mesh at proper tension for print production. Therefore, the screen frame must have the stability and strength to withstand the desired screen tension.

Screen frames are made from wood or metal. Metal frames are either fixed or moveable and retensionable. Screen frames must be resistant to the chemicals and inks used during printing and cleaning-up. The surface of the frame where the screen fabric is to be attached must be flat and free of foreign substances.

Screen Tension

Experience has proven that proper screen tension will improve screen performance, which means it will provide high resistance, firm adhesion of the stencil, suitable elasticity for off-contact printing and proper ink flow. It is important to have proper screen tension, but it is just as important to have consistent tension levels throughout a job. Screen tension is one of the most critical factors in producing screens mainly because screen tension directly influences printing results.

Printing parameters improved by proper screen tension include:

- registration accuracy
- line sharpness or acutance due to improved performance of stencil system
- “snap-off” and low off-contact distances
- ink deposit—uniform and consistent
- ink color consistency
- less ink penetration resulting in higher opacity on dark substrates
- less ink build-up on backs of screens
- run of squeegee—less squeegee pressure required; no crimping of mesh, which causes smudged prints
- screen life—stencil life and mesh life
- ink flow—due to shear from screen mesh
- print quality and consistency throughout production run

As these print parameters are improved, overall productivity is improved. Specific areas of improvement include faster set-up time for multicolor work, faster printing speeds and higher number of quality prints.

With this evidence indicating the importance of proper screen tension, screen stretching or tensioning methods need to be considered.

Stretching/Tension Methods

To begin the stretch or tension process, screen mesh must be positioned carefully. Eighty percent of screen accuracy is due to mesh position. In most cases, correct mesh position aligns fibers at right angles.

Devices used to apply tension to screen mesh are basically either mechanical or pneumatic.

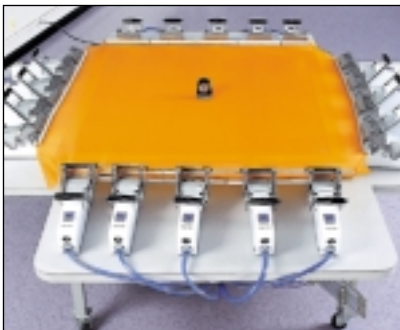
1) Mechanical devices operate with tensioning gear and crank or wheel.



Measurement of tension may be recorded as degree of mesh expansion or through use of a tension meter. Once mesh reaches desired tension, mesh is attached to frame with every effort to maintain tension.

Disadvantages of this method include limited ability to reduce mesh tension in corners, limited ability to adapt to various frame sizes, and loss of tension when mesh is attached to frame.

2) Pneumatic devices use a number of relatively small clamps operated with air pressure.



The small clamps allow even tension over mesh area and controlled tension in corners to prevent mesh distortion. In most pneumatic systems, clamps are calibrated to provide equalized tension on mesh. The small clamps move laterally to minimize mesh distortion. Again measurement of tension may be recorded as a degree of mesh expansion or through use of a tension meter.

With mechanical and pneumatic stretch devices final screen tension may be enhanced by use of a frame with sides slightly bent in the concave direction. Once mesh is attached to this type of frame, the mesh tension and the frame oppose each other. Although this method enhances tension, it is difficult to control.

3) Re-tensionable frames provide an accurate stretch device as well as a frame. Screen mesh is attached to screen frame prior to stretching. The screen frame is then rotated and locked into position to provide tension. These frames provide even, continuous fabric tension and minimize mesh distortion allowing precision printing and registration within one thousandth of an inch. Retensionable frames address the hardening characteristic of polyester mesh. Polyester fibers of screen mesh brought under tension harden or re-align fiber molecules by breaking and reforming hydrogen and Van der Waals bonds. Retensionable frames may be used to bring fabric to ideal tension before, during and after printing. These frames allow the use of extremely high screen tension (when compared to other types of frames and tensioning devices). These frames can provide constant tension and reduce off-contact requirements while maintaining screen snap-off behind squeegee enhancing print quality. Measurement of tension should be recorded with a tension meter.

Recent developments in mesh technology have produced special polyester filaments that will withstand increased tension and may change the thread diameter recommendations. High tension meshes are particularly desirable when printing process colors and are helpful when printing white inks. For further information please consult your mesh supplier.

In all cases, high screen tension enhances the printability of Wilflex inks.

Mesh tension on a screen should never be left to chance. The whole process should be kept under constant control.

Mesh tension is measured in Newtons/Centimeter. A Newton is a unit of force referring to the amount of mesh deformation ($1\text{N}=102\text{g/cm}^2$). The need for quality and consistency in the printing process requires the printer to use measurement devices to record and control screen tension.

Although Wilflex inks are designed to perform well on screens with various levels of tension, proper high tension will help to optimize ink performance.

*For further information, please consult your mesh and frame representatives and other reference materials on the screen printing process.

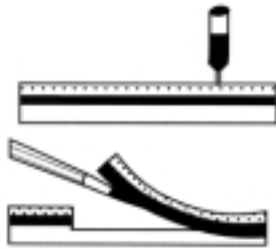
Stencil Systems

The purpose of the stencil system is to provide a method for accurate transfer of artwork to substrate. Artwork should be designed within the parameters of the ink, substrate and stencil system used.

Prior to preparing stencil system, screen mesh is normally roughened on the stencil side of the screen. The purpose of roughening is to provide more surface area for stencil adhesion. Several preparations are available, consult your stencil supplier for further information.

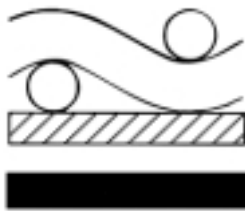
Screen mesh should also be degreased. Degreasing refers to removing any contaminates or dust from mesh. Degreasing chemicals should be handled carefully, using proper industrial hygiene.

There are basically five different types of stencil systems.



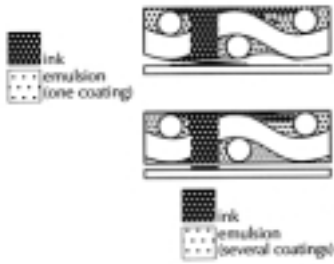
1. Hand-cut stencils—Hand-cut stencils are produced by cutting the design into an emulsion film which is backed by a support film. This stencil method is usually used only with simple designs, as cutting away emulsion requires patience and skill. Once the cut area (area to be printed) has been removed, the film is mounted on the screen mesh. The stencil film is wet with suitable adherent, blotted and allowed to dry. Once

the hand-cut stencil has dried thoroughly the support film may be peeled away.



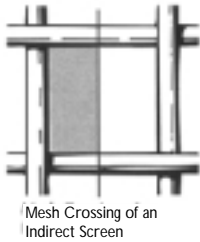
2. Indirect Photostencil. The indirect photo stencil consists of a stable film coated with a presensitized emulsion, gelatin or synthetic polymer. Processing the stencil is done prior to adhering the stencil to the screen mesh, hence the name "indirect." The emulsion film is exposed with the art positive, then chemically hardened. The unexposed emulsion is rinsed away with water. The emulsion film is mounted

on mesh and allowed to dry. After emulsion is dry, the support film may be peeled away. Indirect systems give high definition prints for medium print runs.

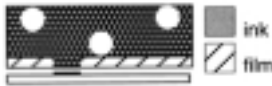


3. Direct Photostencil—Direct photo stencil systems are processed with the stencil system on the screen mesh. The emulsion is a photo-sensitive liquid that is applied to mesh to embed mesh with emulsion. Several coats of emulsion will help produce a higher resolution print. After the mesh is coated and allowed to dry, the emulsion is exposed with the art positive in contact with the emulsion.

After proper exposure the unexposed emulsion is washed out. Direct stencils are durable but can allow some ink spread due to poor edge definition.

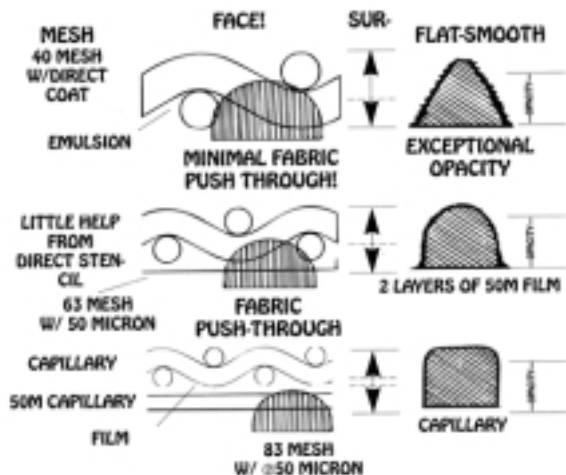


4. Direct/Indirect Photostencil—The direct/indirect photo stencil combines methods and advantages associated with direct and indirect systems. A film consistency of an unsensitized emulsion on a support film is placed in contact with dry screen mesh. A sensitized liquid emulsion is then squeegeed on inside of screen mesh to adhere emulsion film and sensitize it.



The emulsion is dried and the support film is peeled away. The emulsion is exposed with the art positive in contact with the emulsion. After washing away unexposed emulsion, the screen is allowed to dry. The direct/indirect stencil system provides high resolution prints and durability to withstand long production runs.

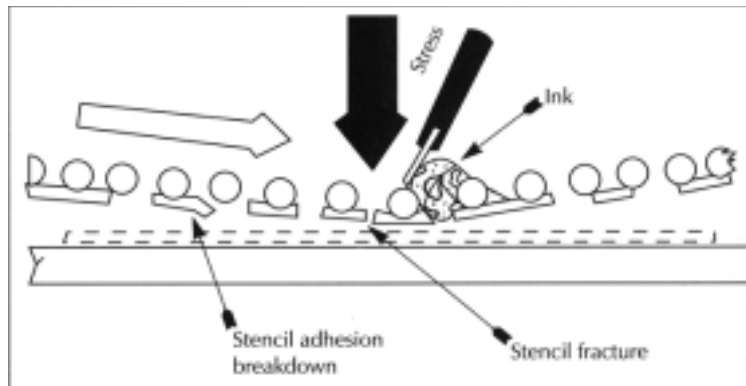
5. Capillary Stencils—Capillary stencils are made of a presensitized emulsion coated on a support film. The emulsion film is adhered to screen mesh with water. Excess water is removed and emulsion is dried, then the support film is removed. The emulsion/screen is exposed with art positive held in contact



by vacuum frame. Unexposed emulsion is washed away and the screen is allowed to dry. For extra durability, a sensitized emulsion may be used for adhesion instead of water. Capillary stencil systems are convenient and fast to process. They also provide high resolution prints even with thick film coating.

Note: Care should be taken to properly expose emulsions. Exposure units and methods should be monitored and recorded. Proper exposure is critical for durability of stencil system. Exposure calculators are available to assist in determining proper exposure requirements.

For further information, please consult your stencil system supplier.



Squeegees

Squeegees are designed to help the ink flow through the screen mesh. The squeegee should have an edge to correspond to the screen mesh used. The squeegee pressure should be kept to a minimum to allow the ink to be applied to the surface of the substrate.

USE THE LEAST AMOUNT OF SQUEEGEE PRESSURE TO:

- ✓ PUT THE MESH INTO CONTACT WITH THE SUBSTRATE.
- ✓ CLEAN THE INK FROM THE NON-IMAGE AREAS.

The squeegee durometer or hardness may be changed to suit ink and print. However, a 70-85 durometer squeegee may be used for most printing.

Composite squeegees or squeegees with multiple durometer rubber allow for more control.

Composite squeegee rubber utilizes the strength of high durometer rubber to maintain proper stiffness and durability while using lower durometer rubber for the edge which contacts the screen and ink.

Less radius = less ink deposit

More radius = more/heavier ink deposit

***THE EDGE OF THE SQUEEGEE
NEEDS TO MATCH THE MESH!***

NEWMAN
CONSTANT
FORCE
SQUEEGEE

TRIPLE

DOUBLE

SINGLE



Substrates

Substrates for plastisol inks vary dramatically, floor mats, tote bags, to T-shirts. In each case, a Wilflex® ink may be used to produce a quality print. Certain characteristics of each substrate should be considered: 1) fabric content, 2) color, 3) fabric mass, 4) heat stability, and 5) end use. Consult data sheets on Wilflex inks for choosing ink for each substrate.

FABRIC CONSTRUCTION OF YOUR GARMENT AFFECTS THE PRINTING PROCESS

PERCENT
FABRIC MASS

REMEMBER
YOU CAN'T PRINT ON AIR!

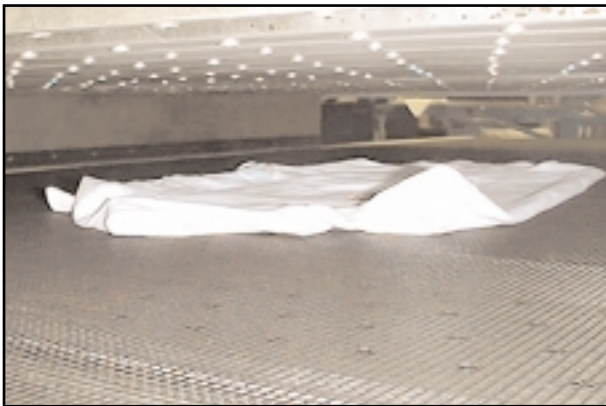
90% WOVEN GOODS;
80% HIGH END FLEECE;
70% LOW END FLEECE;

60% HIGH END HEAVY WEIGHT TEES;
50% LOW END HEAVY WEIGHT TEES;
40% 50/50 REGULAR WEIGHT TEES

For low fabric masses, we suggest:

- finer detailed artwork
- avoid color on color printing
- higher screen tension
- small radius, short height, low durometer squeegee
- slower squeegee speed
- reduced squeegee pressure
- capillary film, piggybacked or adhered with compatible emulsion
- mist-type spray adhesive like Duo-Tak.

The higher the fabric mass the easier it is to print.



Always pre-print and test new substrates. For assistance, see "Evaluating Plastisol Inks" in the Wilflex User's Manual or call Technical Service.

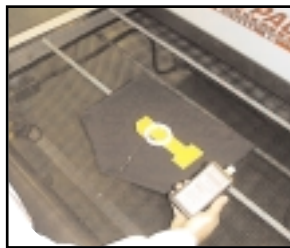
Curing

1. GET THE ENTIRE INK FILM TO THE RECOMMENDED CURING TEMPERATURE
2. MONITOR THE HEAT
3. USE THE WASH TEST TO EVALUATE CURE

To cure plastisol inks the ink film must reach appropriate cure temperature. A heat history includes time and temperature used to reach total fusion or cure in ink. This cure or fusion is instantaneous once the entire ink film hits the cure temperature (320°F/160°C, except FF inks- 270°F/132°C).

Use Thermo-probe to monitor temperatures. Always test for cure with wash tests.

MAPPING OVEN TEMPERATURE



Step 1: Place the donut with the crosshairs in the ink film.



Step 2: Record the temperature at five-second intervals.

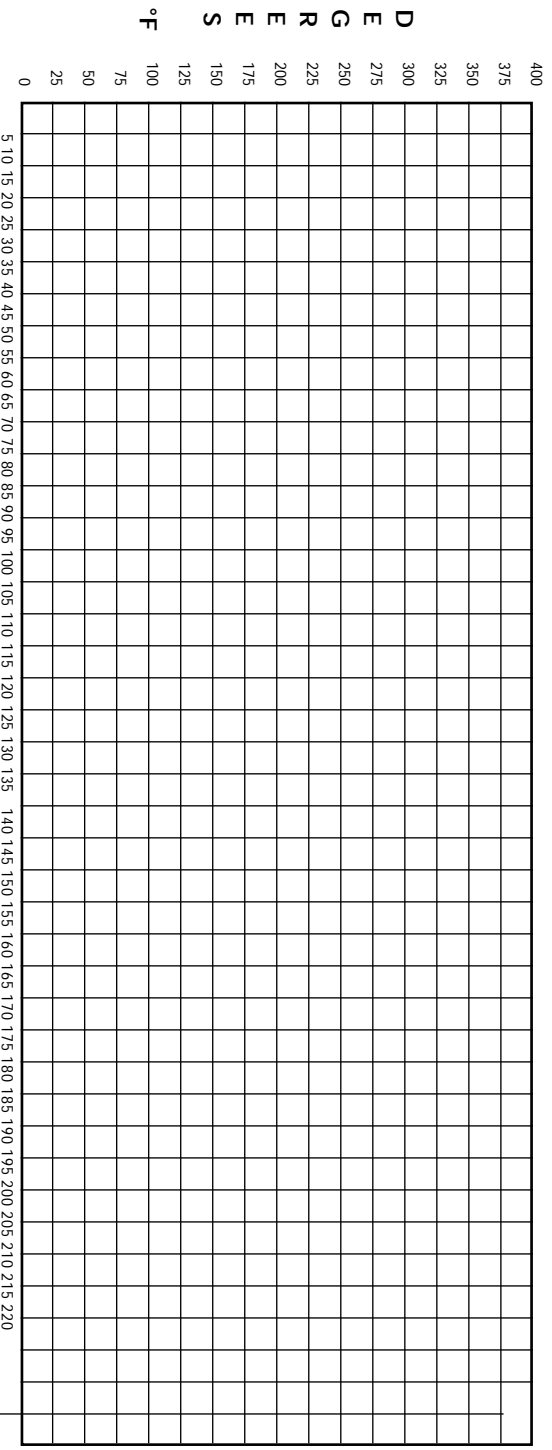


Step 3: Using the graph provided in the User's Manual, plot time and temperature points.



Step 4: Connect points to determine temperature curve. Map the dryer in the morning and in the evening to account for changes in the environment.

DRYER HEAT HISTORY



DRYER SETTINGS

Belt Speed _____ Heating Chamber _____
 Intra Red _____ Flash Temp _____
 Forced Air _____ Platen Temp _____
 Dryer Length _____

DATE _____ TIME _____

DATA LOG
 5 SECONDS - _____
 10 SECONDS - _____
 15 SECONDS - _____
 20 SECONDS - _____
 25 SECONDS - _____
 30 SECONDS - _____
 35 SECONDS - _____
 40 SECONDS - _____
 45 SECONDS - _____
 50 SECONDS - _____
 55 SECONDS - _____
 60 SECONDS - _____
 65 SECONDS - _____
 70 SECONDS - _____
 75 SECONDS - _____
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 210 SECONDS - _____
 215 SECONDS - _____
 220 SECONDS - _____

OVEN TEMP. CHART

Evaluation of Plastisol Inks

It is important to always pre-test plastisol inks before commencing production runs.

Printability or Processing in Screen

Every effort is made to manufacture Wilflex inks to be easily printed under a variety of screen printing conditions. However, quality printing equipment and processes allow Wilflex inks to perform at their best. See the "Screen Printing" section of the Wilflex User's Manual for further details on screen tension, squeegee selection, art work and printing conditions.

Final Print

In addition to printability in the screen, the finished print must meet specific criteria and should always be evaluated. The evaluation should be tailored to the type of print. For example, the testing procedure for evaluation of an athletic uniform print would differ from that of an infant wear print. The tests below are provided for your convenience and cover general print applications only. Please contact Wilflex Technical Services for additional information.

Wash Testing Plastisols for Cure

Failure to cure ink properly can result in poor wash fastness, inferior adhesion, unacceptable durability and increased likelihood of dye migration. Maximum ink tensile strength and elongation is accomplished by ensuring total fusion of the ink film. Testing procedures include wash testing and testing with solvent, with wash testing being the more reliable method.

A wash test ensures that printed samples are subjected to standard home laundering practices to determine state of cure on ink film.

Apparatus and materials include:

- Large Capacity 21.7 gal Washer
- Large Capacity 240 Volt Dryer
- Three Large heavy weight bath size towels.

Procedure

1. Cut printed sample to be tested in half.
2. Place half of the sample in washer with the three large bath towels.
3. Wash settings:
 - Medium load 16.7 gallons
 - Hot Wash/Cold Rinse

Normal /Reg. @ 10 minutes

90ml of concentrated detergent

4. After washing is complete, place sample and towels into the dryer.
5. Dryer Settings: Cotton / High (105°F/40°C) / Timed Dry 30 minutes
6. Perform two to five complete wash and dry cycles.
7. Compare washed half of sample with unwashed portion.

Evaluation and Classification

Failure

The ink film is not cured when:

1. Severe cracking of the ink is noted.
2. Partial or total loss of the ink film from the garment.

Pass

The ink is cured if none of the above is seen. Slight loss of color intensity (AATCC Gray Scale for evaluating change in color 4-5), and slight nap show through are normal for cured ink films after washing.

Solvent Cure Test

Solvent testing is only the second most reliable method for testing plastisol cure. The most reliable method is wash testing. If solvent testing is chosen to evaluate cure, follow these steps:

Method #1:

1. Apply two or three drops of 99 percent ethyl acetate to the surface of the ink layer being tested. Warning! Ethyl acetate is poisonous and flammable. Always wear butyl or nitrile (not latex) rubber gloves and goggles when handling this chemical. Do not pour directly from the container onto the fabric. Use a glass eyedropper.
2. Fold the T-shirt so that the area of the ink film that has been treated with the solvent is pressed against an unprinted area of the T-shirt.
3. Firmly press the two layers of fabric together with a small C-clamp or similar clamping device for two minutes. If any ink transfers from the printed area to the unprinted area, it is an indication that the ink film is not completely cured.

Method #1 may give false positive results (the test indicates that the ink is completely cured but it is not) if the ink layer is extremely thick. If the ink layer is thick, use Method #2 when testing with solvent.

Method #2: Use for Thick Ink Film

1. Apply two or three drops of solvent to the fabric on the inside of the

T-shirt, behind a printed area.

2. Fold the shirt so that you can press the ink layer that has been treated with the solvent against an unprinted area of the shirt.
3. Firmly press the two layers of fabric together with a small C-clamp or similar clamping device for two minutes. If any ink transfers from the printed area to the unprinted area, the ink film may not be completely cured.

The ethyl acetate test is described in more detail in "The Solvent Test For Cure" in the April 1995 issue of Screenplay. This article is available as a reprint through ST Publications Inc.

Bleed Test

Since dye lot variation is very common, it is imperative to test a garment's propensity for dye migration. Historically, fabrics containing polyester are more likely to bleed than any other fabrics whereas nylon and cotton much less likely to bleed. However, it is suggested that all dark fabrics that will be printed with white or light colored inks should be evaluated for bleeding.

The bleeding phenomena occurs due to a reaction between the ink and the dyes of the fabric. The following is a test method evaluating the bleed potential of ink printed on a given fabric:

1. Bleed resistance (or the resistance of an ink to accept the dyes from polyester fabric) is determined by the chemistry of the ink, complete ink cure and by the ink deposit. Choose the screen mesh that duplicates the planned use of the white ink as well as two other possible combinations.
2. Print just the white ink on appropriate fabric swatches and hold for three weeks. After three weeks, visually evaluate the prints for whiteness. (You may choose to try accelerating this evaluation by holding the prints at 105 F/ 40 C for 2 to 5 days.)

Additional information on synthetic polyester dye migration and sublimation is detailed in the Screen printing and Graphic Imaging Association (SGIA) Technical Guidebook.

Fabric Discoloration Test

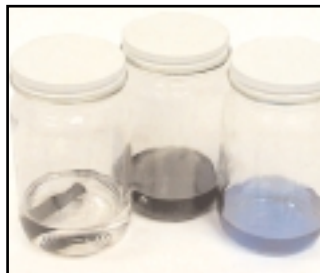
It is extremely important to pre-test on light colored or stone washed garments. Avoid stacking hot, because such colors are more prone to color distortion due to the dye stuffs inherent in the garment. Fabric and dye characteristics can exhibit variance between manufacturers and from dye lot to lot. The following test will determine if the fabric dyestuffs are prone to discolor:

1. Print ink onto suspect fabric and fuse.
2. Cover the print area with a piece of the suspect fabric (sandwiching the print) and set in a heat press.
3. Set the heat press to 200 F and 5 PSI.
4. Close the transfer press and let sit for four hours before visual evaluation.

If material is prone to discoloration, you will see a “ghost” image of your printed image on the material that was covering the printed area.

Transfer Release Test

It is important to conduct accelerated age tests in your plant, which will indicate how a transfer will release from the transfer paper after six months to one year “on the shelf.” Accelerated aging tests can be performed by placing the printed transfer in a hot box or hot room, at 100 hours at a temperature of 120 F. This will simulate one year of shelf life. Tests conducted in your plant will help keep your transfer/garment reject risk to a minimum.



**Call PolyOne Tech Services
for more information on
pre-test procedures**

1-800-735-4353

Flash Curing

Plastisol inks gel or reach an intermediate point between liquid and total fusion. This gelled state is tack-free and allows another layer of plastisol to be printed over gelled ink without distortion of print. When flash curing, it is important to monitor temperature with a Thermo-probe, heat tapes or crayons. Due to differences in power, height above ink film, and efficiency of the flash unit, a specific dwell time cannot be given. Incorporating the use of finer mesh counts for your flash plate will decrease the dwell time needed to gel the ink, resulting in faster production speeds. Be certain to set flash dwell times on heated pallets to simulate production. Adjust your settings so that the ink is just dry to the touch. Avoid excessive overflashing, as it can result in poor inter-coat adhesion of overprint colors.



WHEN TO FLASH?

ARTWORK

- Large solids of coverage
- Color on color
- More than 1 predominant color
- More than 1 "problem" color

STENCIL

- Meshes too fine
- Stencil too thin

INK

- Color not high opacity
- Color not bleed-resistant
- High chroma colors
- Soft hand inks on darks

SUBSTRATE

- Order including lights & darks
- Dark garments/bad bleeders

Consult data sheets on Wilflex® inks for recommended gel or flash temperatures.

Products especially suited for flashing include:

*Bright Tiger #11480HT
Olympia Plus White #11135WHT
Athletic Trophy White #11003WHT
Xtreme White #11999XW
Phantom White #11555WHT*

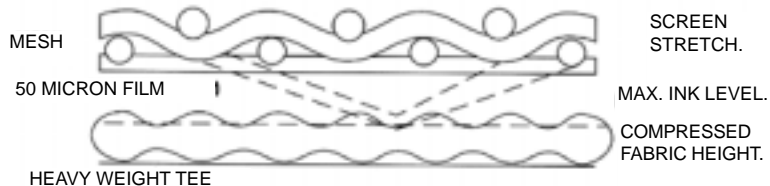
NOTES ON OFF-CONTACT

Definition:

Distance the screen is above the substrate before the print stroke.

Key Point:

The point of contact with print surface is limited to edge of squeegee and occurs only at time squeegee passes over surface of screen. Quality and resolution are greatly affected at the point of contact.



Advantages:

- 1.) **Sharp Print.** The correct amount of off-contact can reduce impact of viscous, cohesive ink. Plastisol ink with its cohesive quality can cause slurring or loss of definition and sharpness. This occurs when the screen sticks to the printed garment, and during the shearing process, the print slides.
- 2.) **Reduction of ink build-up.** Because the off-contact causes momentary contact with surface, the contact is quick enough to overcome the cohesive nature of ink.
- 3.) **Increased printing speed.** Ink shears at contact point, therefore, stroke can be faster than printing on contact.

Considerations:

- 1.) **SCREEN TENSION** The higher the tension, the less off-contact distance is needed.
- 2.) **FREE MESH AREA** This is the distance between ends of squeegee and inside of screen frame. The smaller the free mesh area, the less off-contact is possible.
RECOMMENDATION: Free mesh area 2 1/2 inches at each end of squeegee and 4 inches for color well at top and bottom.
- 3.) **PALLET SURFACE:** The harder the surface, the less contact is needed.

Off-Contact Rule:

With properly tensioned screens (16 Newtons and above) and free mesh area of 2 1/2 inches on each end of squeegee, the off-contact distance should be no more than 1/16 inch, ideally 1/32 inch.

With wooden frames, a suggested off-contact distance should be 1/16 to 1/8 inch.

General Rule: Off-contact distance should always be less than 1/8 inch.

GREATER OFF-CONTACT DISTANCE = GREATER SQUEEGEE PRESSURE

THIS LEADS TO: • PINHOLING • STENCIL BREAKDOWN • LOSS OF REGISTER • LONGER SET-UP TIME • INK PICK-UP.

Each screen should be low enough to allow minimum squeegee pressure to put the stencil into contact with the substrate, and high enough to keep the mesh from resting in the wet layers of ink.

Fibrillation or Washout?

Fibrillation is a condition that occurs when substrate fibers break loose from the ink film due to washing and drying. As the fibers break through the ink film, high contrast between loose fiber ends and the ink film cause a faded appearance. The apparent color loss is not the result of plastisol inks washing out.

What is the difference between fibrillation and washout?

Fibrillation

Ink color looks washed out or faded in an *even* manner over the entire print
Inks are cured
Most often occurs with 100% cotton



Washout

Ink is faded in spotty, uneven patterns
Occurs when inks are undercured
Can occur on any substrate



How does fibrillation occur?

Washing and drying create a rubbing action against the print and raise the loose yarn fibers from the ink film. Additional wash and dry cycles cause more loss of ink film.

How can you predict any fibrillation effect?

Test, test, test and test some more. Test your normal printing conditions for each type of garment you offer. Then vary the mesh, stencil, ink and squeegee to find the best combination to hold down loose yarn fibers. Your final result should be an acceptable soft hand print before *and* after washing and drying.

Figure 1

To test for fibrillation, use a sample print that has a solid print area and a 50 percent dot area. Cut the print in half, wash and dry only one half, and compare the halves. If the washed photo (B) appears evenly faded after only a few washes, it's usually a sign of fibrillation.

Fibrillation Guide

	Yarn	Fiber	Stitch	Ink
Fibrillation less likely to occur	High count (fine yarn)	100% polyester (low fiber content)	Higher than 1000	Super-opaque or fast-fusion inks
		Polyester/cotton blends		Multi-purpose or all-purpose inks
Fibrillation more likely to occur	Low count (coarse yarn)	100% cotton, acrylic, and acrylic blends (high fiber content)	1000 or less	Process inks



Figure 2
To analyze the degree of fibrillation, view your samples under a magnifier or microscope.



Notice that when washed and unwashed test samples are viewed with the naked eye, (photos A & B respectively), fibrillation is barely discernable. But when the same samples are viewed at 11x magnification, the loose fiber ends in the washed sample become obvious (photo D).



Figure 3
Although some loose fiber ends occur before washing and drying (photos A & C), a wash test significantly increases their number (photos B & D). These views at 11x magnification show the dramatic effect fibrillation has on a 50 percent dot pattern.



Ink System Concerns That Affect Fibrillation

Ink Type	Filler	Mat-Down	Print
Process	Little/None	Poor	Soft
All Purpose	Moderate	Fair	Fair
Fast Fusion	Little/None	Good	Fair
Super Opaque	High	Good	Harsh

How to improve your results:

1. Apply a wet base of:
 - Finesse
 - Blend of Finesse/MCV-FF Base
 - Do NOT flash
2. With varying mesh counts, apply a flashed base of:
 - MCV-FF Base
 - Transflex Printable Adhesive
3. Alter your ink deposits by combining:
 - Greater stencil thickness and higher mesh count
 - Lower stencil thickness and lower mesh count
 - Softer, slightly rounded-edge squeegees with less pressure
4. Change your ink system to:
 - MCV-FF inks and Genesis inks
 - Transflex transfer inks
 - A mixture of direct print inks and transfer power
5. Apply an overprint of SuperGuard HT
 - This will seal the fibers and protect your designs from apparent fading.



The left side of the above image was overprinted with SuperGuard HT.

Remember: Fibrillation relates to ink film strength and fabric characteristics. 🖋️

DISPOSAL AND RECYCLING INFORMATION

PLEASE NOTE: The following information is given in good faith and applies to the United States. Other countries should consult their distributor or other regulatory organization for further information.

PolyOne encourages all printers to reduce waste at its source and recycle as much remaining waste as possible. These practices will help to protect the environment as well as reduce cost.

INK: PolyOne has formulated all Wilflex Inks with quality, safety and the environment in mind. Our plastisol inks, as supplied are not considered hazardous waste as defined by RCRA (The Resource Conservation and Recovery Act). They are not ignitable, corrosive or reactive and will pass the TCLP (Toxic Characteristics Leaching Procedure). If the ink has been cleaned up (from a screen, floor, etc.) with a solvent listed in the RCRA "F" list (except for F003), the whole mixture is considered a hazardous waste and must be managed in compliance with RCRA regulations. If the ink is mixed with a solvent on the "F003" list, the mixture should be tested to determine the flash point. If below 140 F, it must be managed as a hazardous waste. If the plastisol is mixed with a non-flammable "Safety Solvent" the resulting mixture may be able to be discharged to the municipal sewer. The user must contact their local wastewater treatment plant authority to get permission prior to commencing the discharge.

Screen printers should take care to recover as much excess ink from screens for re-use as possible. Good inventory practices can help avoid waste as well. (Also see information in the Wilflex PC Manual)

All ink should be utilized in operation. When the container is empty, all excess should be scraped from the container. This material can be collected for re-use or put onto rags or cardboard and run through the oven to gel the ink. Ink temperature should achieve at least 250° F (120° C) for 2 minutes 30 seconds. These solids can then be disposed of according to local regulations.

5 GALLON, 1 GALLON AND QUART SIZE HIGH DENSITY POLYETHYLENE CONTAINERS: Soiled HDPE containers should be thoroughly cleaned using the same methods used to clean plastisol ink from screens. The bail or handle should be removed. This container is now a 100 percent recyclable item.

STEEL DRUMS: All excess ink should be removed by wiping down with rags (or for thinner/low viscosity inks; invert drum for 24 hours and collect excess on cardboard). Dispose of rags and cardboard as previously explained. The drum is now in a condition that can be accepted by most steel salvage yards or recyclers.

For information on steel and plastic recyclers near you, consult your local telephlistings.

FIBER DRUMS: Unfortunately, at this time fiber drums are not readily recyclable. Check with your local landfill authorities on guidelines for disposal of fiber drums. If fiber drums are not easily disposed of in your area, please request metal or plastic drums with your ink orders.

AEROSOLS: All aerosol products should be completely emptied prior to any type of disposal. Dispose of according to federal, state and local requirements.

Dedication To Safety

PolyOne has a long history of addressing environmental concerns, including no-lead ink formulations and the elimination of cancer-causing plasticizers. We continue that tradition today with ongoing research to ensure that the plastisol inks we sell are the safest available. PolyOne believes that all producers have a responsibility to protect our environment, not only for today's enjoyment, but for the enjoyment of future generations.

In addition, we consider it important that our customers are informed consumers of our products, from safe handling of the material to proper disposal of any wastes.

Hazard information and communication are an integral part of our commitment to safety. To further this awareness, we provide directions for proper use on our labels and in our Material Safety Data Sheets.

Our Safety and Environmental Engineer is also available to answer your safety and health questions.

We follow the many changes that occur each year in the safety and environmental regulations and remain committed to a safe and healthy setting for our workers, customers and the community.

As an added service, PolyOne customers enjoy the benefit of highly trained technical people who can assist in developing individualized Health and Safety Programs, such as, Hazard Communication and Injury/Illness Prevention, as well as Environmental Compliance Programs.

Our Material Safety Data Sheets should be used to educate all employees in the safe use of Wilflex products and the proper use of safety equipment.

Safety Information: Wilflex Textile Inks

Wilflex inks are formulated to be very safe for the user. As with any chemical used in the industry, good industrial hygiene should be used with Wilflex products. The inks are a moderate skin and eye irritant. In general, safety glasses should be worn and gloves are recommended. Consult the HMIS code on the label or the Material Safety Data Sheet for the proper personal protective equipment recommended for a specific product.

Emergency Treatment

If the ink gets into the eyes, flush thoroughly with clean water.

Wash any affected skin areas with soap and water.

If ink is swallowed, do not induce vomiting.

Get prompt medical attention for any emergencies.

Handling & Storage

Spills of the material should be collected with an absorbent material and disposed of following all appropriate regulations.

Wilflex inks should be stored away from flames and excessive heat. While the inks are not flammable, pressure can build up in a drum if exposed to a fire. Cool water should be used on containers exposed to fire.

Safety Information: Wilflex Aerosols

Many Wilflex Aerosol products are flammable and must be stored and handled properly to avoid injury. The products are a severe eye irritant and a mild skin irritant. Safety glasses and gloves should be worn when using these materials. Breathing the vapors can cause dizziness and nausea. Use only in a well-ventilated area.

Emergency Treatment

For eye exposure, flush thoroughly with clean water.

Wash any affected skin areas with soap and water.

If breathing problems occur, move to a well-ventilated area.

Do not induce vomiting if swallowed.

Get prompt medical attention for any emergencies.

Handling & Storage

Wilflex aerosol products must be stored in a cool, dry location away from flames and excessive heat. During a fire, containers exposed to high temperatures may explode. Cool water should be used on cans exposed to fire.

Spills should be picked up with absorbent and disposed of following all appropriate regulations. Cans must be completely vented before disposal.

Are Plastisol Inks Safe?

Over the past few years, vinyl products have been under attack by politically and economically motivated environmental groups. An often-asked question made to Wilflex and PolyOne Corporation is "Are plastisol inks safe?" Without reservation, we answer this question "yes!" Safe to use, safe to wear. The screen printing industry and the industry's printed products have a health and safety record that is above reproach.

Plastisol inks are made from a blend of polyvinyl chloride resin (commonly referred to as PVC or vinyl), plasticizers, fillers, pigments and other minor components to control viscosity. Though these products and components have been around for 40+ years, there is a considerable amount of negative publicity surrounding some of these ingredients. However, consider the following:

- Vinyl products are safe

Vinyl is a tested, tough and trusted component of many products including more than 25% of all plastic medical products made today. The U.S. Food and Drug Administration (FDA) regulates all of them. Vinyl has been around in such applications for more than 40 years and its track record stands.

- Vinyl is one of the most commonly used plastics in the world today

Vinyl is a very commonly used plastic. In fact, it is the second largest volume plastic sold globally. Vinyl continues to grow strongly and could not have reached its current level of over 50 billion pounds per year globally were it not for its safety and cost-performance. Thousands of companies process millions of pounds of vinyl into useful products for society every day. Banning vinyl would be unrealistic and unthinkable.

- Vinyl resin is virtually inert

Made from natural gas and chlorine, vinyl resin uses fewer natural resources than other plastics and saves energy throughout its manufacturing process. In addition, it's recyclable. In fact, over 500 million pounds per year are recycled in N. America alone.

- Dioxin is not a vinyl issue

Poorly run incinerators cause dioxin. Incinerators running properly (high temperatures) will destroy dioxin. Even if vinyl were banned tomorrow, there is enough chlorine in waste from salt, bleach, food and other natural sources to produce dioxin in sub-optimal incinerators. Dioxin in the environment has been steadily decreasing (down over 50 % from 1970) since the EPA began regulating incineration. While dioxin has been going down, vinyl has been steadily growing.

- There are no wholesale bans on vinyl

No country in the world has banned vinyl. In fact, several small towns in Germany that considered action against vinyl have rescinded them as they worked with the industry on recycling programs. It would be difficult to accomplish a ban on vinyl given its multitude of uses and size. An important question would be: "What is the safety and environmental testing that has been done on any alternative and is it better or worse than vinyl?"

- Vinyl manufacturing is not a problem

The vinyl industry (and PolyOne in particular) has amassed an outstanding record of safe operations that meet or exceed the regulations and standards in place today. This doesn't mean we don't have room to improve. Almost all manufactur-

ing processes including vinyl involve the use of materials that can be hazardous if improperly handled. Handling them properly and converting them to compounds that are used safely by our customers is our business. It's what we're very good at doing. Statistics show that our employees are safer at work than at home.

- Definition of Plasticizers

A plasticizer is a liquid which looks like a vegetable oil that is commonly added to vinyl to make it flexible and soft in products such as toys, blood bags, wire and cable, flooring, and shower curtains. There are many different types of plasticizers but phthalates are the most common and are often used in printing/imaging products.

- Phthalates are safe

Phthalates have been used safely as plasticizers for vinyl for nearly forty years. Extensive testing and scrutiny by such agencies as the FDA for medical applications and the Consumer Product Safety Commission have concluded that the risk to human health in these applications is insignificant.

- Can phthalates leak from flexible vinyl?

Yes, in extremely minute amounts which has been deemed totally safe by health authorities after considerable research. And keep in mind that with the abilities of modern day analytical equipment there is always some migration detected with all materials. The FDA knows and considers this when approving vinyl medical devices. Phthalate producers believe that 40 years of research and clinical experience with vinyl in medical devices supports its safe and beneficial use.

- Do Phthalates cause cancer?

The existing body of scientific studies over many years concludes that there is no validated evidence to indicate that phthalates pose a cancer hazard for humans. Some phthalates have shown that when fed to laboratory rodents in extremely high doses for extended periods that there is potential to induce liver or kidney tumors. This is true for many chemicals besides phthalates. However, government agencies and scientists around the world have widely recognized that for phthalates, what occurs at high doses in rodents is not a predictor for cancer effect in humans. In addition, scientific studies conducted on monkeys have not shown the adverse health effects resulting from exposure to phthalates. Just think, in order to achieve the same effect as the lab rodents, an individual would either have to eat the plastisol logos off of 48 t-shirts per day for the rest of their life or a pregnant woman would have to bathe for 4.5 days in plastisol. Simply put, as our studies indicate, low levels of exposure do not pose a significant human risk.

- Do phthalates cause reproductive problems in humans?

Similarly to the studies on cancer, laboratory rats and mice have shown that if phthalate esters are given in high doses during certain phases of pregnancy, adverse effects can occur. But long term, high dose levels studies with phthalates in primates did not produce reproductive organ damage. So again, there is a great deal of evidence that indicates the effects seen in laboratory animals will not be seen in humans.

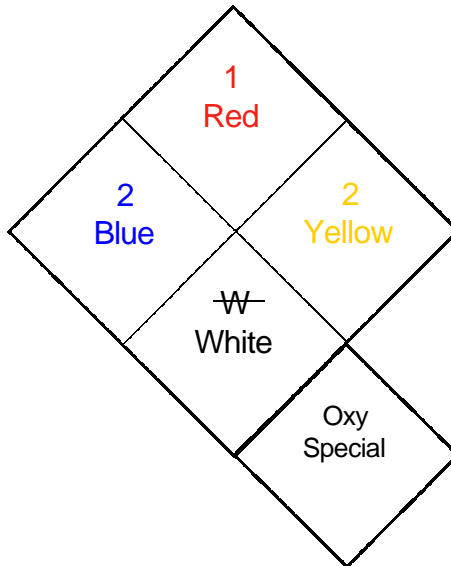
NFPA Rating System

Health (blue)

- 4- Deadly
- 3- Extremely Dangerous
- 2- Hazardous
- 1- Slightly Hazardous
- 0- No Hazards

Fire (red)

- 4- Burns Readily & Rapidly
- 3- Burns Easily
- 2- Burns When Heated
- 1- Burns When Preheated
- 0- Will Not Burn



Special Hazards (white)

- OXY- Oxidizer
- ACID- Acid
- ALK- Alkaline
- COR- Corrosive
- ~~W~~- Use No Water
Radiation Hazard

Reactive (yellow)

- 4- May Detonate
- 3- Shock & Heat, May Detonate
- 2- Violent Chemical Reaction
- 1- Unstable if Heated
- 0- Stable

2002 EDITION

WILFLEX® TEXTILE USER'S MANUAL

The purpose of the Wilflex User's Manual is to provide the screen printer with technical information about Wilflex products as well as basic information on screen printing techniques and testing.

The Wilflex plastisol inks produced by PolyOne have the inherent characteristics of plastisol chemistry. These characteristics include the gradual increase in viscosity over time. Wilflex products are designed to be most effective when used according to the Product Information Bulletins that follow. It is important to carefully follow the guidelines contained in these bulletins. The Wilflex User's Manual also contains brief information on the company and its distribution network. All products, colors and services discussed in this manual may not be available in every country.

The information in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors from the responsibility of carrying out their own tests and experiments. Since PolyOne has no control over the conditions of use or storage of the products sold, we cannot guarantee the results obtained through the use of its products. All products are sold and samples given without any representation or warranty, express or implied fitness for any particular purpose or otherwise, and upon condition that the buyer shall determine the suitability of the product for its own purpose. You must make your own determination of product suitability and thoroughly qualify it for serviceability, for environmental acceptability, and for impact on the safety and health of your employees and purchasers of your products.

Having no control over the conditions of use, we make no representation of freedom from liability, including patent liability, incident to the use of the products referred to, and disclaim any responsibility for any damage or injury resulting therefrom. This applies also where protective rights of third parties are involved. It does not release the user from obligation to test the suitability of the product for the intended purpose and application. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed. No person is authorized to make any statement or recommendation not contained herein, and any such statement or recommendation so made shall not bind PolyOne Corp.

Complete Health and Safety information about all Wilflex products is available upon request.