



Professional color separation and artwork creation system

Screen Printing Guide

www.wilflexeasyart.com

Wilflex EasyArt² Screen Printing Guide

Screens:

The mesh count of your screens will depend on the Halftone Lpi count of your artwork. We recommend for the best result that you output your artwork with a halftone screen of 55 Lpi (lines per inch) at an angle of 22.5

To get the most detail and best color graduations from your artwork you should use 180 (or higher for automatic press) screen mesh for your "White Base" and 305 for all other colors (metric = 62 mesh white base and 120 mesh for all colors).

If you output your artwork at a lower Lpi 45 - 50 (the screen angle remains the same) you should use a 180 screen mesh for your "White Base" and 280 for all other colors.

Print Order

Simulated Process

Dark Shirts = White Base, Yellow, Red, Magenta, Gray, Light Blue, Dark Blue, Green, Dark Brown and Highlight White.

Light Shirts = Yellow, Red, Magenta, Gray, Light Blue, Dark Blue, Green, Dark Brown and Black. (NB: Black can also be printed first on some designs)

Simulated Grayscale.

Dark Shirts = White Base, Medium Gray, Light Gray, Dark Gray and Highlight White.

When printing Grayscale onto white shirts you will use the same screens as you would for black shirts only you will use the Medium Gray ink on your Dark Gray screen the Light Gray ink on your Medium Gray screen and the White Gray ink on your Light Gray screen.

Light Shirts = Light Gray, White Gray, Medium Gray, Highlight White, Black.

The same applies to the Sepia images.

Index Printing

Print your colors from dark to light. For example Print your white base first then Black, Brown Medium Gray, Green, Red, Yellow and highlight white.

You can get quite different effects by changing the print order try a few different options there really is no one absolute correct order.

Flash Curing -


Generally you will flash after the White Base on Dark Shirts and before the Black on light shirts but you can flash anywhere the design requires it.

Inks


We have developed a range of Plastisol inks using the Wilflex® MX and PC formulas. For the very best results we highly recommend you use these colours. We have deliberately not given you Pantone® PMS numbers for these colors, we have found that especially in the Flesh tones and Gray tones there is no suitable match.

Easyart® Wilflex MX Recipe Guide. (Makes 1kg)


Yellow

	1. MX Fluro Yellow	500.0
	2. MX Yellow	500.0
		1000.0


Red

	1. MX Red	390.0
	2. MX Fluro Pink	80.0
	3. MX Fluro Red	530.0
		1000.0


Magenta

	1. MX Magenta	600.0
	2. MX Fluro Pink	375.0
	3. MX White	25.0
		1000.0


Light Blue

	1. MX White	920.9
	2. MX Blue G/S	43.1
	3. MX Green	36.0
		1000.0

Dark Blue

	1. MX Blue	455.0
	2. MX Fluro Blue	455.0
	3. MX White	90.0
		1000.0


Green

	1. MX Yellow	339.0
	2. MX White	330.0
	3. MX Green	331.0
		1000.0

Dark Brown

	1. MX White	649.8
	3. MX Orange	240.7
	2. MX Yellow	68.6
	5. MX Black	40.9
		1000.0

Medium Gray

	1. MX White	852.0
	2. MX Black	148.0
		1000.0

Light Flesh

	1. MX White	925.1
	2. MX Fluro Yellow	64.6
	3. MX Orange	8.8
	4. MX Black	1.5
		1000.0

Medium Flesh

	1. MX White	900.0
	2. MX Yellow	50.0
	3. MX Red B/S	50.0
		1000.0

Dark Flesh

	1. MX White	673.3
	2. MX Orange	224.5
	3. MX Yellow	64.0
	4. MX Black	38.2
		1000.0

Red Flesh


	1. MX Orange	335.6
	2. MX Magenta B/S	335.5
	3. MX White	322.2
	4. MX Black	6.7
		1000.0




NOTE The "Red Flesh" ink can be used in images that contain flesh tones but you don't want to screen print an additional 2 or 3 shades of skin colored ink. The "Red Flesh" ink replaces the regular "Red". The "Red Flesh" produces a better simulated flesh, which is made up from the Red, Yellow and Brown channels.

Easyart® Wilflex MX Recipe Guide. (Makes 1kg)


Light Gray

	1. MX White	960.0
	2. MX Black	40.0
		1000.0


Medium Gray

	1. MX White	852.0
	2. MX Black	148.0
		1000.0


Dark Gray

	1. MX White	582.0
	2. MX Black	418.0
		1000.0


White Gray

	1. MX White	985.0
	2. MX Black	15.0
		1000.0

Light Sepia

	1. MX White	952.4
	2. MX Magenta B/S	20.2
	3. MX Yellow	17.9
	4. MX Black	9.5
		1000.0


Medium Sepia

	1. MX White	625.0
	2. MX Magenta B/S	170.5
	3. MX Yellow	156.3
	4. MX Black	48.2
		1000.0

Dark Sepia

	1. MX White	581.9
	2. MX Black	258.6
	3. MX Orange	107.8
	4. MX Yellow	51.7
		1000.0

White Sepia

	1. MX White	976.2
	2. MX Magenta B/S	10.0
	3. MX Yellow	9.0
	4. MX Black	4.8

1000.0

White Base, use Wilflex Arctic White

Highlight White use 100% MX White

Black use 100% MX Black



When printing a simulated grayscale image onto a white or light colored shirt, the colors can appear a little dark so to correct this use the medium gray ink as your dark gray, light gray ink as your medium gray and the white gray ink as your light gray. The same applies to the sepia tone colors.

Wilflex MX Color mixing system

Use this system to mix the EasyArt colors (can also use PC Express 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 mix all of the EasyArt colors and produce simulations of coated and un-coated Pantone Color Formula guide colors on white and dark (with white under base) garments. MX inks produce soft-hand inks for high production, wet-on-wet printing, offering a matt finish and improved crock resistance.

Printers Parameters

Substrates	100% cotton, cotton blends, some synthetics
Bleed resistance	None, use BR under base
Mesh	156 - 305, t/in (43 - 120 t/cm)
Squeegee	60 to 90 durometer, straight edge blade
Emulsion	Conventional direct or capillary film
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 1 year of receipt
Wash-Up	Wilflex screen wash
Health & Safety	Data available on request

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.

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 white, 100 percent cotton fabric for color approval. Wilflex MX Mixing Inks can, however, be 31 Back Next Contents 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.

Wilflex MX Color mixing system

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
techserviceswilflex@polyone.com

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


NEW Non-Migrating Mixing colors

38881MXNM Orange NM
48881MXNM Red B/S NM
88881MXNM Yellow NM

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.

Easyart® Wilflex PC Express Recipe Guide. (Makes 1kg)


Yellow (grams)

	Genesis Plus Base	789.00
	Extra White PC	12.80
	Bright Yellow PC	89.70
	Electron Yellow PC	108.50


Red

	Genesis Plus Base	761.10
	Extra White PC	6.00
	Electron Red PC	125.50
	Electron Orange PC	48.40
	Fluro Pink PC	28.00
	Maroon PC	31.00


Magenta

	Genesis Plus Base	874.90
	Extra White PC	11.70
	Magenta PC	84.90
	Fluro Pink PC	28.50


Light Blue

	Genesis Plus Base	797.00
	Extra White PC	130.40
	Electron Blue PC	59.60
	Blue PC	7.60
	Electron Yellow PC	5.50


Dark Blue

	Genesis Plus Base	842.10
	Extra White PC	19.60
	Blue PC	56.80
	Electron Blue PC	81.40


Green

	Genesis Plus Base	818.40
	Extra White PC	86.30
	Bright Yellow PC	66.30
	Green PC	29.00

Dark Brown (grams)

	Genesis Plus Base	775.50
	Extra White PC	145.80
	Bright Yellow PC	25.70
	Bright Orange PC	43.50
	Maroon PC	5.90
	Velvet Black PC	3.60

Medium Gray

	Genesis Plus Base	760.80
	Extra White PC	223.40
	Velvet Black PC	15.80

Light Flesh

	Genesis Plus Base	738.20
	Extra White PC	257.90
	Bright Yellow PC	2.20
	Bright Orange PC	1.40
	Velvet Black PC	.20

Medium Flesh

	Genesis Plus Base	750.20
	Extra White PC	225.30
	Bright Yellow PC	14.50
	Bright Orange PC	7.20
	Maroon PC	2.40
	Velvet Black PC	.40

Dark Flesh

	Genesis Plus Base	764.30
	Extra White PC	179.20
	Bright Yellow PC	15.50
	Bright Orange PC	34.40
	Maroon PC	4.00
	Velvet Black PC	2.60

Red Flesh

	Genesis Plus Base	731.30
	Extra White PC	94.20
	Electron Red PC	98.40
	Electron Orange PC	38.00
	Bright Yellow PC	7.80
	Bright Orange PC	16.50
	Maroon PC	12.40
	Velvet Black PC	1.30




NOTE


The "Red Flesh" ink can be used in images that contain flesh tones but you don't want to screen print an additional 2 or 3 shades of skin colored ink. The "Red Flesh" ink replaces the regular "Red". The "Red Flesh" produces a better simulated flesh, which is made up from the Red, Yellow and Brown channels.

Easyart® Wilflex PC Express Recipe Guide. (Makes 1kg)


Light Gray

	Genesis Plus Base	744.10
	Extra White PC	251.60
	Velvet Black PC	4.30


Medium Gray

	Genesis Plus Base	761.00
	Extra White PC	223.20
	Velvet Black PC	15.80

Dark Gray

	Genesis Plus Base	802.70
	Extra White PC	152.50
	Velvet Black PC	44.70

White Gray

	Genesis Plus Base	740.30
	Extra White PC	258.00
	Velvet Black PC	1.60


Light Sepia

	Genesis Plus Base	754.00
	Extra White PC	222.70
	Velvet Black PC	3.20
	Maroon PC	3.00
	Bright Yellow PC	11.80
	Bright Orange PC	5.20


Medium Sepia

	Genesis Plus Base	790.12
	Extra White PC	136.20
	Velvet Black PC	9.60
	Maroon PC	10.40
	Bright Yellow PC	37.20
	Bright Orange PC	16.50


Dark Sepia

	Genesis Plus Base	812.70
	Extra White PC	104.80
	Velvet Black PC	30.00
	Maroon PC	8.70
	Bright Yellow PC	29.40
	Bright Orange PC	14.40

White Sepia

	Genesis Plus Base	745.90
	Extra White PC	242.40
	Velvet Black PC	1.60
	Maroon PC	1.50
	Bright Yellow PC	5.90
	Bright Orange PC	2.70

White Base, use Wilflex Arctic White

 NOTE	<p>When printing a simulated grayscale image onto a white or light colored shirt, the colors can appear a little dark so to correct this use the medium gray ink as your dark gray, light gray ink as your medium gray and the white gray ink as your light gray. The same applies to the sepia tone colors.</p>
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Wilflex™ PC Express Mixing system

The Easy-to-Use PC/Base System

Create PANTONE® Simulations with Just 15 Pigments

Standard Base

10680GNS Genesis Plus Base

Standard 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

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

Optional Base

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.

10000GNS	Genesis Halftone Base	10480TUF	Tuff Puff Base
10007TF	TransClear	10540GNS	Genesis Base
10040SSVFF	SSV-FF Base	10640GNS	Genesis Super (Europe only)
10099MVP	MVP LB Neutral Base	10670RB	Rock Base
10108SA	Stretch Base/Additive	10890NRB	Rug Base
10140SHC	Soft Hand Clear	11110SSV	SSV Base
10145IB	Ice Base	11422MSH	Nylon Mesh Base
10150FNS	Finesse	12000MP	MP Flow Base
10250NPF	NuPuff Base	13010MP	Super Opaque Base
10425NS	Natural Suede Base	18800MCVFF	MCV-FF Base
10440TF	TransFlex Base	21000SB	SuperBase
10455FCB	FiberCoat Base		

4 Color Process Printing

Setting up Photoshop for process printing

It is important to set up your monitor so that what you are looking at on screen is the same as the image on your hard drive. There is an excellent section in the Adobe Photoshop manual about monitor calibration to help you do this.

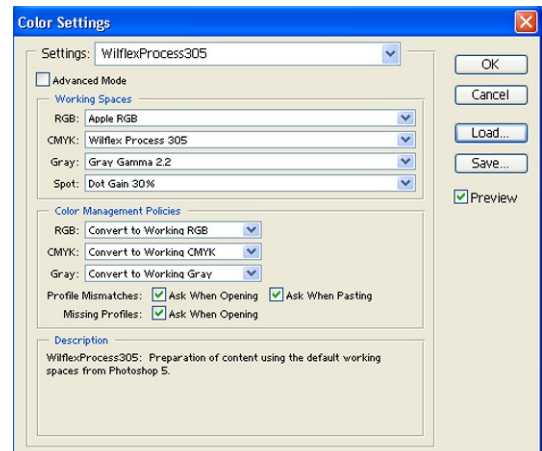
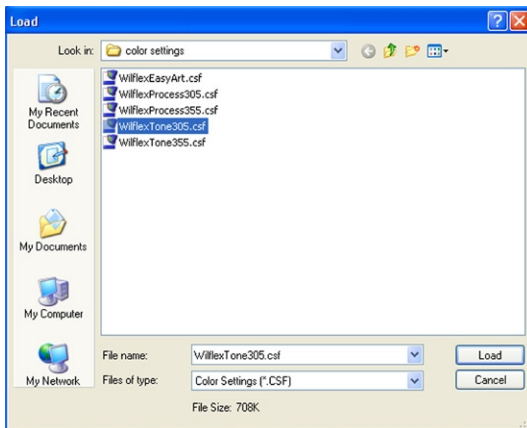
Color Settings for Adobe Photoshop

Before converting your image to CMYK you must have the correct CMYK color conversion settings for screen printing, loaded into Photoshop.

The color settings are determined by the Process ink you are using. For example if you are using Wilflex Process355 ink then you load in the corresponding color settings.

For this example we will presume you are going to screen print your image using the standard Wilflex Process 305 inks.

In the "Color Settings" window click "Load" then navigate your way to the "Color Settings" folder on the EasyArt CD and double click to open. Next select the file "WilflexProcess305" and click "Load"



Convert to CMYK

With your color settings loaded into Photoshop you can convert your image to CMYK.

To do this go to the menu bar at the top of your screen click "Image" scroll down and select "Mode" scroll across and down and select "CMYK Color"

Make any further color adjustments required to improve the image.

Separate

Separate the image using either the EasyArt "Process for light Shirts" or "Process for dark shirts" routines.

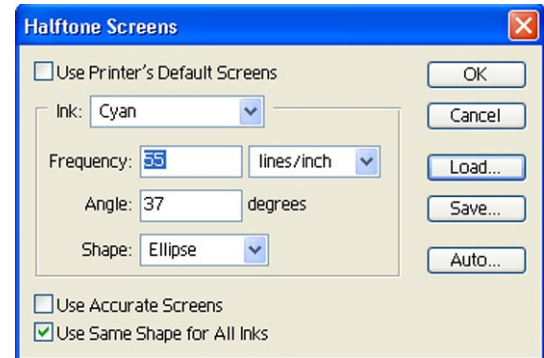
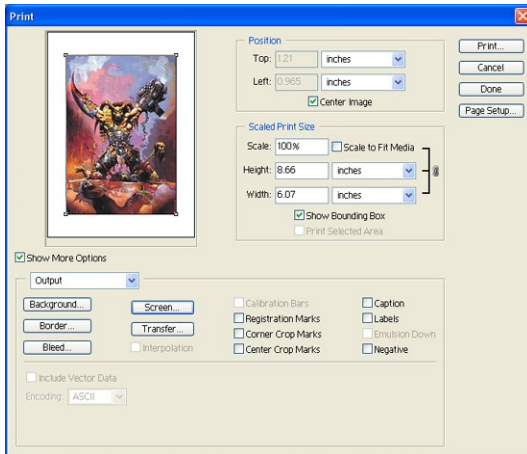
4 Color Process Printing

Printing out the Film

The correct screen angles are very important. The angles are calculated to produce the least amount of interference with the screen mesh. Using the correct angles will eliminate the moire pattern which often appears with incorrectly produced CMYK film.

To print the film, go to the menu bar at the top of your screen click “File” scroll down and click “Print with Preview”.

In the Print options window that opens click on the button “Screens”



In the Halftone Screens window that opens click on the button “Load”.

Navigate your way to the “Printer Settings” folder on the EasyArt CD, double click to open it then select the file CMYK_Manual Press and click “Load”. If you have an automatic press load the file CMYK_Automatic Press.

Back in the “Print” options window select “Labels” and “Registration Marks”.

If you are printing separations with a laser printer or dry imaging system you may want to add an additional transfer curve to allow for the extra dot gain with those devices.

To do this, in the “Print” options window click on the button “Transfer”, in the “Transfer Functions” window that opens click “Load”, navigate your way to the “Printer Settings” folder on the EasyArt CD and double click to open it then select the file “LaserPrinter” and click “Load”.

4 Color Process Printing

Screen Printing

Screen Mesh

If you are using an automatic press and produced your film at 65 Lpi the most commonly used screen mesh is 355 - 390 (metric 140 - 155). If you produced your film at 55 Lpi then use a 305 (metric 120) screen mesh. White base use a 305 for automatic press and a 195 for manual (metric 68)

Ink deposit, moire control and image density can also be affected by thread diameter. A finer thread gives a larger open area, for example a 305/30, has approximately the same open area as a 280/34. Use the thread diameter which best achieves your print requirements and make sure if you have to print the job again at a later date that you use the exact same specifications in mesh count and thread diameter, or it will be impossible to achieve the same print.

Your Wilflex representative will be able to give you the best advise on screen specifications for your screen printing setup.

Screen Tension

High tension mesh is a must for successful Process printing. Use retensionable frames and make sure all frames have exactly the same tension.

Printing Press

An automatic or semi-automatic press will produce the best results. You can produce process prints on a good quality manual press but it is very difficult to maintain consistency on larger runs and is not recommended.

Off contact should be set as low as possible forty-thousandths (0.040) is ideal. Keeping the screen close to the shirt surface means less squeegee pressure required and more accurate registration.

Squeegees

Squeegee and flood bar set to 15° or less. Squeegee hardness 70 - 75 durometer, if the squeegee is too soft you will increase dot gain.

Summary

Process printing can give great rewards and can also give endless headaches!. The best policy is to test endlessly and record everything in triplicate!

If you are having problems check everything, artwork, screens, inks, film even the t-shirts you are printing onto can cause problems.

Process printing can be very difficult, but is the true measure of quality. If you can produce good quality accurate process prints you can pretty much print anything.

Wilflex™ Genesis Process Ink

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	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

GENESIS STANDARD PROCESS SET

- 19850GNS Process Black
- 49850GNS Process Magenta
- 69850GNS Process Cyan
- 89850GNS Process Yellow
- To create a process white mix 50-50 MX white with extender

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

PROMATCH-1 SET

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

Wilflex™ Genesis Process Ink

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.

WHERE TO GET THE COLOR VALUES

The process color values for Wilflex inks are available on this Wilflex EasyArt User's Manual CD-ROM, or download from the Wilflex's 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 or see "Process Seps" in this manual in Screenprinting 101.

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 pretested or consultation sought with Wilflex Technical Services Department prior to printing
techserviceswilflex@polyone.com