

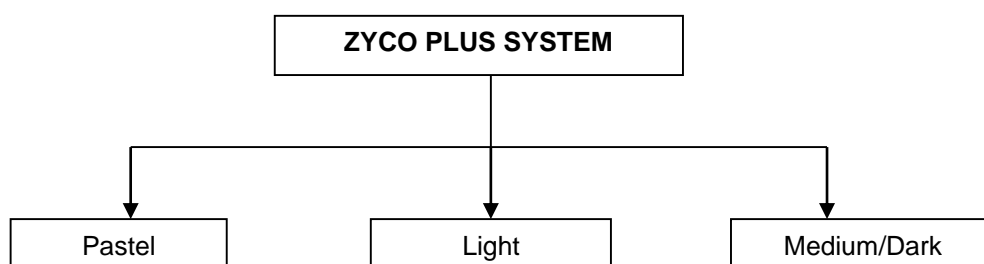
ZYCOPLUS SYSTEM

ZYCO-PLUS is one of the most comprehensive Pigment Dyeing Systems for exhaust application.

ZYCO-PLUS system gives exhaustibility above 95% for pastel, light and medium shades and 85% to 90% for dark shades, reducing the cost of effluent treatment.

In **ZYCO-PLUS** system, full range of colours can be generated with proper choice of pigment composition.

ZYCO PLUS system can generate full range of depth (light, Pastel, medium and dark) with excellent evenness by using different recipes.



FEATURES	BENEFITS
Compatibility	Can be used alone / Compatible with Reactive/ direct dyes and also inter-Compatible with all pigments.
Cost Effective	Reduces the cost of effluent treatment because of better exhaustion of pigments Saves time, water and energy
Stand alone system	Can be used for dark, medium, light and pastel shades
Fastness	Excellent washing and Dry & Wet crock fastness
Reduces Eco-problem	Gives 85% - 95% exhaustion of pigment hence reduces pollution load

ZYCOPLUS System comprises the application of following products:

- Zycron** : Range of pigment emulsions(10 colours)
- Zytreat** (Cationic & Anionic) : For pretreatment of garments.
- Luxsil** : Softener for lubricity
- Zytrol-600** (Binder) : To improve wash / (wet & dry) crock fastness.
- Catalyst-MX** : Activates binder for better fastness
- Velvetrol** : Reactive silicon softener for soft & silky finish.
- Zycron SR(Stain Remover)** : For removal of pigment stains / dirt from dye equipment.

APPLICATION METHOD

ZYCOPLUS system has different methods to achieve pastel, light, medium / dark shades. Exact dosage & sequence of pretreat, levelling agent, pigments, binder, catalyst and softeners are given below for each type of depth to be achieved. The graph is enclosed for more clarity of the system.

PROCEDURE

Steps	ZYCOPLUS Dyeing System(Application procedure)		
	Pastel	Light	Medium/ Dark
Pretreatment	Zytreat (Anionic) 0.5--1% (OWG) at room temp.	Zytreat (cationic) 1 - 2% (OWG). + Luxsil: 0.1 - 0.2%	Zytreat (cationic) 3-- 8% (OWG). + Luxsil: 0.1 - 0.2%
	For 20 min Washing not required	Temp: RT to 55 °C (Temp, raise@ 2°C/min) Time: 15 –20 min at 55°C M: L ratio 1:15 Wash & rinse	
Dyeing	Zycron -- 0.1—0.5%	Zycron -- 1—4 %	Zycron -- 5—15%
	<ul style="list-style-type: none"> • Temp: RT to 55°C (Temp.raise@2°C/min) • Time: 30-45min at 55°C • M: L: 1:15 • For dark shades, after 30-45 min, stop the machine and hold for 15 min 		
Fixing	Zytrol-600—2.5% Catalyst MX (10% of binder)	Zytrol-600—2.5—7.5% Catalyst MX (10% of binder)	Zytrol-600--7.5—20% Catalyst MX (10% of binder)
	<ul style="list-style-type: none"> • Temp.: RT to 40°C (temp.raise@2°C/min) • Time: 15 min at 40°C 		

The garments are then hydro extracted and sent for drying at 90oC

* One can look at soaping to wash off any contamination or loosely deposited pigments. Bio- polishing can also be done prior to dyeing or sometimes after dyeing to reduce pilling and soft feel.

Imp Note: Always mix catalyst MX in binder Zytrol 600 and stir and then only dilute in water to add in the machine.

Pre-requisite for ZYCO PLUS system:

- Proper desizing / scouring / bleaching of garments must be carried out prior to dyeing.
- These ready for dyeing (RFD) garments are to be processed with **ZYCO-PLUS** system as per depth requirement.

Comments to ZYCOPLUS pigment dyeing system:

- It is desirable that all batches contain garments of similar composition as mixed composition invariably can have differing affinities leading to uneven colour depth. As a general rule the exhaustion rates of cotton are:

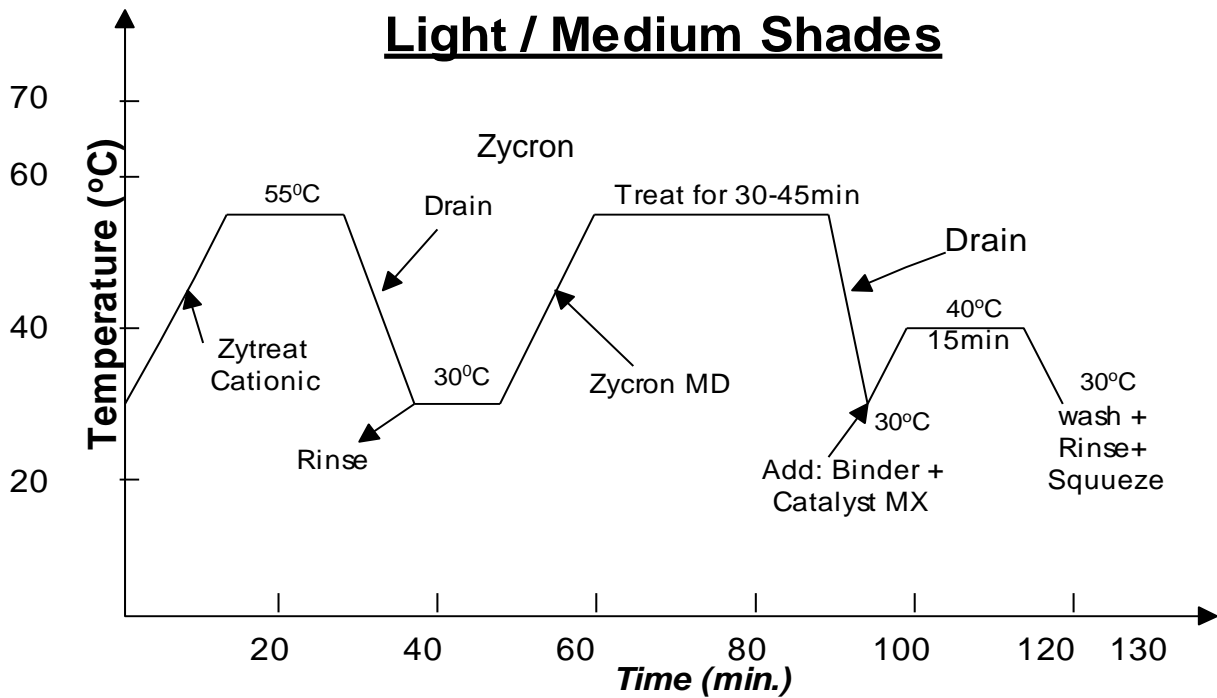
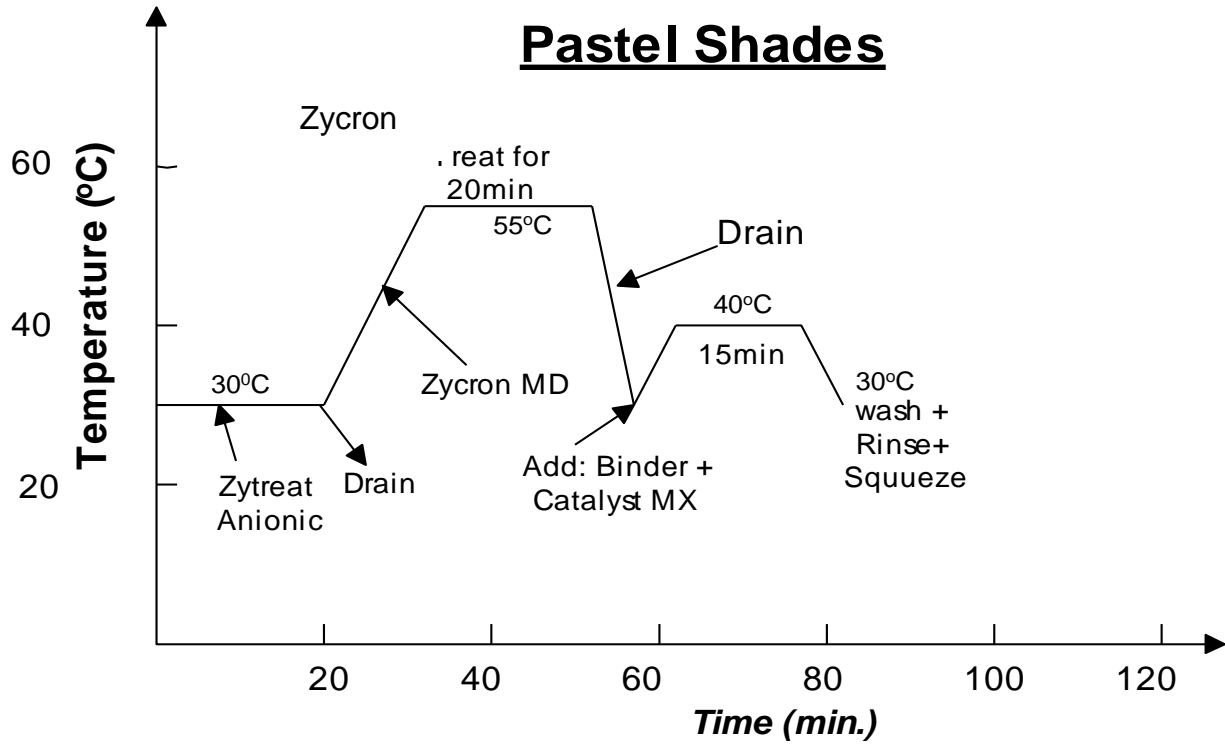
High affinity	100% cotton - unprepared
↓ ↑	100% Cotton - prepared
↓ ↑	Polyester/ Cotton
Lower affinity	100% cotton – Bleached
	100% cotton – mercerized

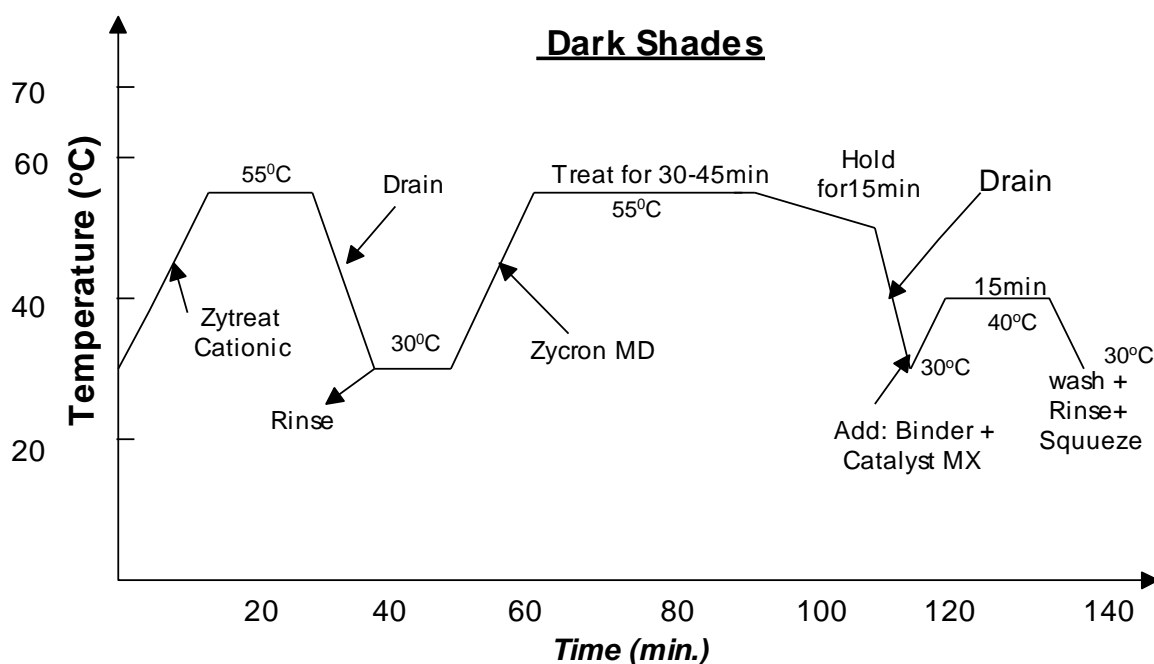
These rates should be taken as a guide only. Other factors such as tight weave versus open weave, knitted versus woven, size etc. all can effect the final result.

- Ensure that any sewing threads used are preferentially cellulosic.
- Cuttings of the same material as the garments or blanks should be dyed along with each batch for shade matching.
- Machine to be used must be completely clean as dirty or contaminated equipment will attract impurities onto the garment and affect the final shade.
- Do not heat above 70°C during dyeing as pigment may drop out of dispersion or flocculate.
- All the chemicals to be diluted 10 times to ensure uniform application.
- **Recommended speed** : 10—12 rpm for 250—500 kg batch garment dyeing machine because high speed results in more abrasion, hence pilling effect will be seen.
- When you match the shade, always do under clear water in large flat tray to ensure perfect shade and tone matching.

Note: The above procedure is for guidance purpose only and individual dyer may modified this based on his experience to get best results. Results will vary due to various factors like Garment & water quality, pigment mixture used for particular shade etc.

Time Cycle:





Stripping method: (Colour stripping / Machine cleaning)

A. Colour Stripping

It is very difficult to remove colour (15—20%) from pigment dyed garments. The following procedure is helpful before fixing stage and if the garments have not been dried. Once drying and fixation has taken place then colour removal on tone is almost impossible.

Method:

Treat the garments in :

5—10 gm/ l of Zycron SR

2—3 gm / l of Caustic soda (flakes).

Dissolve and run for 30—45 min at 95°C. This removes 20-25% shade. This is followed by, draining and thorough rinsing.

B. Machine Cleaning: It is recommended for cleaning of laundry machines after number of pigment dyeing cycles or when dyeing of light or pastel shades is to be done immediately after dyeing dark shades. The typical recipe for the above-mentioned applications is as follows:

Method:

5—10 gm/ l of Zycron SR

2—3 gm / l of Caustic soda (flakes).

Dissolve and run for 30—45 min at 95°C. This is followed by draining and thorough rinsing.

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Zycron Pigments

Fastness Data

Pigments	Light fastness Fade-O- meter (1—8)		Washing (1—5)		Rubbing 10% (1—5)	
	10%	1%	10%	1%	Dry	Wet
ZYCRON WHITE/	7	6	5	5	4	3
ZYCRON BLACK	8	8	4	5	3-4	2
ZYCRON BLUE Ultramarine	8	8	4	5	3-4	2-3
ZYCRON BLUE 1	8	8	4	5	3-4	2
ZYCRON BLUE 2	7	6	4	5	3-4	2-3
ZYCRON GREEN	8	8	4	5	3-4	2-3
ZYCRON YELLOW	7	6	4	5	3-4	2-3
ZYCRON VIOLET	8	7	3-4	5	3-4	2
ZYCRON RED(48:1)	7	6	3-4	5	3-4	2
ZYCRON RED (57:1)	7	6	3	5	3-4	2-3

Technical Note

Trouble shooting

1. Uneven dyed (Patchy) garments—possible causes

- a. Too short a liquor ratio.
- b. Too High bath temperature at the beginning of pretreatment or at pigment cycle.
- c. Temperature raised too fast during the process.
- d. Pigments or chemicals added whilst machine not running.
- e. Garments not thoroughly wet out.

2. Pilling –possible causes

- a. Goods contain man made fibre and running cycles longer than recommended.
- b. No use of lubricant in dyebath.
- c. Use of inferior quality of yarn and of short fibres.
- d. Too high RPM of the machine.

3. Colour Spots—Possible causes

- a. Machine not cleaned after previous dyeing.
- b. Insufficient rinsing of excess pretreatment chemical before pigment stage.
- c. Insufficient dilution or stirring of Pigment before adding to dyebath.

4. Poor colour yield—possible causes

- a. Too high liquor ratio.
- b. Excessive rinsing between cycles.
- c. Excessive time in any cycle.
- d. Goods not pretreated for recommended time and temperature.

5. Poor fastness—Possible causes

- a. Poor wash and crock fastness is generally due to inadequate usage of binder and catalyst MX.

ZYTREAT (CATIONIC)

Zytreat is a Pretreatment Chemical recommended for exhaust pigment dyeing of cotton knitted garments.

Zytreat improves exhaustion of **Zycron** pigments.

Specifications:

Appearance	: Pourable translucent viscous pale yellow liquid
Diluent	: Water
Nature	: Cationic
Solid content	: $42 \pm 2\%$

Application: As explained in Zycoplus system

Storage

- Stable for 6 months if stored in a shade at room temperature in a closed container.

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Zycron Pigment Emulsions

Zycron Pigment Emulsions are dispersed pigment colours in emulsion form. They have exceptional fineness of dispersion and excellent stability.

Before application of **Zycron** Pigments, RFD garments are treated with **Zytreat (Cationic/ Anionic)** as per the **depth** requirement. This will improve the bonding of pigments to the pretreated garments.

Following **Zycron** range of colours are available in self-shades. These colours can be mixed to achieve variety of shades. Zycron range of pigments is formulated for getting very good fastness properties even at dark shades.

Zycron pigments can be used alone / compatible with reactive/ Direct dyes and also inter-compatible with all pigments. Binder & fixer are to be added after dyeing with pigments to improve the fastness properties.

Specification:

Nature: Anionic

ZYCRON PIGMENTS
Zycron White
Zycron Black
Zycron Blue 1
Zycron Blue 2
Zycron Red
Zycron Yellow
Zycron Green

Storage

- Stable for 3 months if stored in a shade at room temperature in a closed container.
- Shake carboy once every 15-20 days to minimize settling tendency.

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CATALYST-MX

Catalyst-MX is a specially developed product to improve the fastness of exhaustible **Zycron** Pigments on cellulosic goods. It is used alongwith our binder after dyeing. Binder to catalyst MX ratio is 10:1.

Addition of **Catalyst -MX** is recommended in **ZYCO-PLUS** Pigment Dyeing System to get excellent wet/ dry crock fastness and washing fastness.

Specifications:

Appearance	: Pourable Colorless Liquid
Diluent	: Water
Solid Content	: 65 ± 2%

Storage

Stable for 6 months under normal conditions, if stored in shade at room temperature in a closed container

Ensure that carboy is closed properly after each usage.

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LUXSIL

Luxsil is a high-tech softener designed for exhaust/ pad dyeing and finishing. The Amino functional long fatty acid chains give superior performance compared to conventional cationic and reactive softeners. The new polymeric structure combined with Micro Emulsion Technology adds unique dimension to the properties and application of **Luxsil** in textile finishing and dyeing.

Luxsil is specially designed for Cotton Knits, Rayon and 100% Cotton Terry Towels & acrylic fiber.

Specifications

Appearance	:	Pale yellow paste
Diluent	:	Water
Nature	:	Cationic (quaternary salt)
Solid content	:	98 ± 2%

Notes:

For exhaustion, use 0.1 to 0.5% on weight of goods.

A slight yellowing of white fabric treated with **Luxsil** may be caused by prolonged exposure to heat.

Application

Luxsil is a concentrated product and can be easily dissolved in water to get the required concentration.

One can prepare 10% solution of **Luxsil** and make it easy to use on the shop floor.

Solutions when prepared are translucent and all are stable at room temperature for minimum one week.

Such solutions can be used as regular softeners in exhaust dyeing and also with other ingredients in finish bath.

Preparation of 10% solution of Luxsil:

Take 10 gm of Luxsil.

Add 10gm of acetic acid to it and mix it properly

Add 80 gm of hot water.

Stir it for 15—20 min by hand and clear solution will be formed.

Note: Never use Luxsil in concentrated form.

Storage

The material should be stored below 40°C in shaded area.

The product on ageing may show slight haziness but it does not affect the performance of the product.

Solution of LUXSIL is stable to dilute acids but not to metal salts and hard water above 100ppm.

Stable for 6 months if stored in a shade at room temperature.

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Velvetrol

Velvetrol is a specially reactive silicone softener for exhaust/Padding application.

Velvetrol is suitable for super slick, soft finish results on 100% polyester and its blends with all natural fibres.

Specifications:

Colour	:	Translucent emulsion
Diluent	:	Water

Application :

Velvetrol can be applied by exhaust method with varying dose between 0.5% to 1.0% on weight of fabric as per finish requirement.

Precautions:

Velvetrol should not be applied to high shear condition during application.

Velvetrol should not be subjected to high temperature conditions (i.e. above 80°C).

Overdose of **Velvetrol** may cause thermo-migration problem.

Storage:

Store in a cool and dry place (below 40°C).

Keep the drum tightly closed and avoid inhalation.

Shelf life of **Velvetrol** is 3 – 6 months.

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Zycron-SR (Stain remover/ Machine cleaner)

Zycron-SR is specially formulated auxiliary for cleaning and removal of stains from dyeing equipment(washing machines in laundries/ garment dyeing units) after pigment dyeing of garments along with Zycoplus system.

Zycron-SR removes the staining of pigments on metal surface / inner portion of laundry machines due to insoluble / unwashable colouring matter(residual pigments sticking to the metal surface which is not removed with soap / detergents etc.)

Specifications:

Appearance	:	Transparent liquid
Diluent	:	Water
Nature	:	Non ionic
pH	:	Alkaline(9—10)

Typical application:

Zycron SR is recommended for cleaning of laundry machines after number of pigment dyeing cycles or when dyeing of light or pastel shades is to be done immediately after dyeing dark shades.

Procedure:

For this application the recommended procedure is as follows:

Based on the volume of the approx water in the washing machine at 50% level, add Zycron SR @ 5—10 gm/ lit. and 2—3 gm / lit. of Caustic soda (flakes).

Dissolve the above material by rotating the machine at 10—12 rpm.

Raise the temperature to 95°C—100°C and run for 30 min. followed by draining and thorough rinsing.

Storage:

Keep the drums of Zydex SR in a cool shade. Do not store in a direct sun or at a temperature higher than 40°C

In case the drums are intended to be stored for longer time, ensure to tie and seal the mouth to avoid moisture contact.

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ZYTROL-600

Zytrol-600 is a binder recommended for Exhaust Pigment Dyeing for better fastness properties. It replaces the conventional binders, which are designed for water-based pigment dyeing system.

Zytrol-600 can be used along with Catalyst MX which activates the binder to improve the washing fastness and Dry & wet crock fastness

Specifications

Appearance	:	Milky White
Solids	:	41 ± 2%
pH	:	6.5-7.5

Application

Mix catalyst MX in binder **Zytrol- 600**
Stir and then dilute in water to add in the machine

Exact quantity of **Zytrol- 600** will depend upon type of shade depth required. Dosage varies from 2.5 to 20%.

Procedure: As explained in Zycoplus system.

Storage:

Do not store above 45°C or in direct sun.
After each withdrawal from the container, always ensure to close the cap.

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