



**BETTER CHEMISTRY,
BETTER LIFE...**

**Manufacturer & Exporter
of Reactive Dyes**



Cronus™ 'X' Series of Reactive Dyes

Cronus™ 'X' Series Reactive Dyes, being spray dried R/O products with minimal salt content, offer prudent solutions for medium and dark shades by taking into consideration economic and ecological aspects of any Dye House. The performances of the products usually match the specifications set by International Retailers and Buying Houses like – Walmart, Gap, Adidas, Nike, Tommy Hilfiger, J.C. Penny, M & S and so on.

Salient Features of Cronus™ 'X' Reactive Dyes

- Highly compatible range over a wide spectrum of medium to dark shades.
- Robustness in dyebath by achieving excellent reproducibility and consistency.
- Right profile with respect to exhaustion, diffusion and fixation to balance cost and performance.
- Least sensitive to minor processing variables when used in combinations.
- Very good build up in dark shades.
- Very good wash-off properties, thereby reducing ecological costs and improving productivity.
- Enhanced leveling properties.
- Satisfies the requirements set by major ecological standards.

Exhaust Dyeing

The process application adopted for Cronus™ 'X' Reactive Dyes exhibit level dyeing with excellent reproducibility due to low dependence on dyeing parameters and high fixation behavior, thereby, easy to operate and control in dye house with minimum manual intervention.

The Dyeing Methods adopted depends exclusively on the type of substrate, shade and machinery available.

The starting dyebath pH is set between 5.5 and 6.5 by using adequate quantity of Acetic Acid.

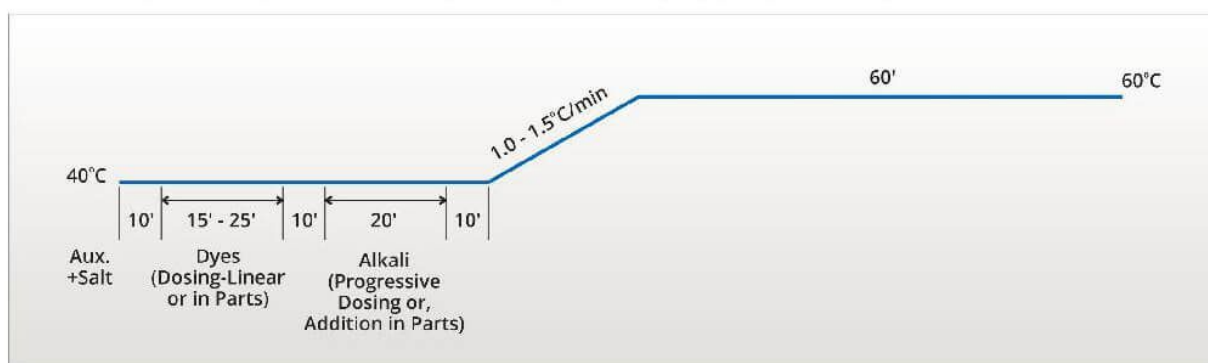
A general recipe for Dyebath Assistants during dyeing process with water of minimum hardness will be:

Acetic Acid	0.30 to 0.50 gpl
Sequestering Agent	0.50 to 1.00 gpl
Defoaming Agent	0.10 to 0.30 gpl
Lubricating Agent	0.25 to 0.40 gpl
Tri Sodium Phosphate	0.20 to 0.25 gpl

Dyeing Method

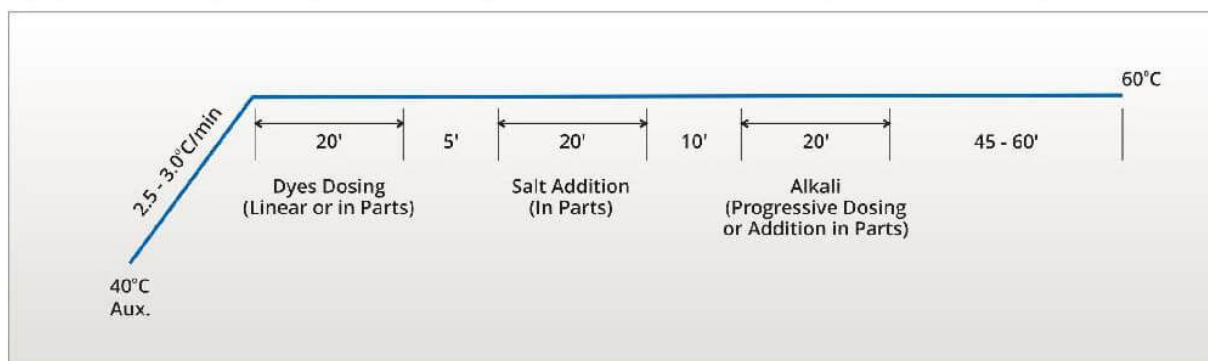
I) All-In-One Method:

This method provides better levelness when difficult to obtain, esp. with darker shades.



II) Isothermal Process:

The process is suitable for light to medium shades and for cellulosic substrates of high absorbancy.



Salt and Alkali Requirement & Fixation Time During Exhaust Dyeing:

Liquor Ratio 10:1							
Depth of Shade (% o.w.f.)			0.01 to 0.5	0.5 to 1.0	1.0 to 2.0	2.0 to 4.0	4.0 & Above
Salt	Unmercerized Cotton		30	50	60	70	80
(gpl)	Mercerized Cotton		20	40	45	50	60
	Soda Ash		10	15	20	20	20
Alkali	Mixed	Soda Ash	★	★	★	8	10
(gpl)	Alkali	Caustic Soda	★	★	★	1.0	1.5
Fixation Time (Min.)			50	50	60	60	70

★ = Not Recommended

Notes:

- Glauber's Salt is recommended as electrolyte(Salt) for dyeing.
- Soda Ash is always the preferred alkali, however, to reduce the amount of handling, the mixed alkali (Soda Ash & Caustic Soda) can be used especially in dark shades.
- Caustic Soda used in mixed alkali should be originally in the flakes form.
- In case of dyeing of regenerated cellulosic, like-Viscose, mixed alkali should always be avoided.

Washing Off Process of Cronus™ 'X' Reactive Dyes During Exhaust Dyeing

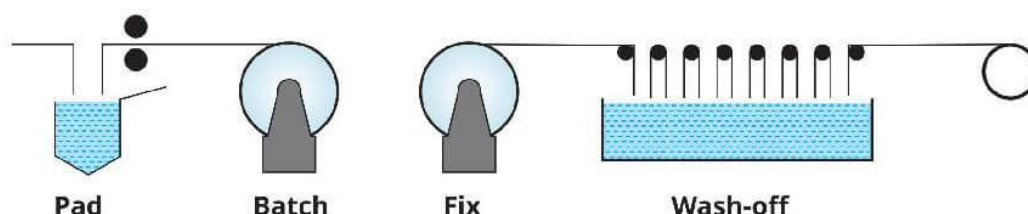
On completion of the Dyeing Cycle, washing off steps to be followed are as:

- Cold Wash with Overflow for 10 minutes.
- Hot Wash at 80°C for 10 minutes.
- Neutralization with Acetic Acid.
- Soaping with 1-2 gpl Non-Ionic Soaping Agent and 0.50 gpl of Sequestering Agent at 90°C for 10 minutes.
- Hot Wash for 10 minutes at 80°C.
- Cold Rinse.
- For maximum wet fastness properties for dark to heavy dark shades, additional soaping and hot wash may be repeated before final cold rinse.
- Hot or cold rinse is necessary till final clear solution is obtained.

Cold Pad Batch System

Introduction

- Cold Pad Batch Dyeing System offers the most economical and most convenient method of applying Cronus™ 'X' Reactive Dyes with high color yield especially for woven fabric.
- Energy and water consumption are the lowest and salt addition is totally made redundant, thus rendering it more eco-friendly.
- Primarily applied for woven fabrics but process can be extended to knits as well with specialized features in the pad box and the guiding systems.
- With least inputs in terms of capital outlay, energy, water, manpower and Right First time(RFT) capabilities, this method is most cost effective option for dyeing substrates that are amenable to padding operation.



Application Procedure

Sodium Silicate Method

Description

This is the most commonly adopted method by the Process Houses for applying Cronus™ 'X' Reactive Dyes. The general approach is to apply the dye at neutral pH and after distribution of the dye on the substrate, the pH is raised for fixation.

Economics

The following advantages are achievable:

- Increase the stability of padding liquor by preventing hydrolysis of the dyestuffs in alkaline atmosphere prior to fixation.
- Any antagonistic effect due to variation in the concentration of alkali in the padding liquor is taken care of by Sodium Silicate.
- Assist in avoiding selvedge carbonization due to uneven selvedge edges resulting due to improper weaving and subsequent overlapping of edges on batching.
- Presence of Sodium Silicate provides better fixation yield thereby resulting in better depth of shade.

Padding Liquor Recipe

(A) Dyestuff Solution

COMPOSITION OF DYESTUFF SOLUTION	QUANTITY (GPL)
Cronus™ 'X' Reactive Dye	X GPL
Wetting-cum-Penetrating Agent	1-2 GPL
Antimigration Agent	2-4 GPL
Sequestering-cum-Dispersing Agent	1-2 GPL
Urea	30-40 GPL (Upto 20 GPL Shades) 50-80 GPL (Above 20 GPL Shade)

(B) Silicate / Caustic Solution

Amount of Cronus™ 'X' Reactive Dyes				
Na ₂ SiO ₃ (48 - 50° Be)	<20 gpl	20gpl - 40 gpl	40 gpl - 70 gpl	>70 gpl
	Amount of Caustic Soda Solution 35.5% w/w (38° Be) in cc/l required in addition to Sodium Silicate			
100 gpl	15 cc/l	20 cc/l	25 cc/l	30 cc/l

Notes:-

- Only necessary amount of boiling water is used for dissolution of dyestuff. Further dilution is done by cold water.
- Urea is sprinkled in solid form into the cooled liquor and dissolved by stirring. Temperature of dye solution should not be above 40°C at the time of adding urea.
- A/B ratio should be 4:1 in the padding bath and to be added through dosage pump.

Padding:

- Uniformly cooled fabric is padded at about 25-30°C.
- Padding trough should be of smaller capacity of 15-25 litres due to high fabric speed and frequent replenishment.
- Fabric pick-up should be about 60-70% for cotton and 90-100% for viscose fabrics.
- Quantity of ready-to-pad fabric and speed of the Padding Mangle to be kept at a higher speed, so that Cronus™ 'X' Reactive Dye Solution is used up within 15-20 minutes.

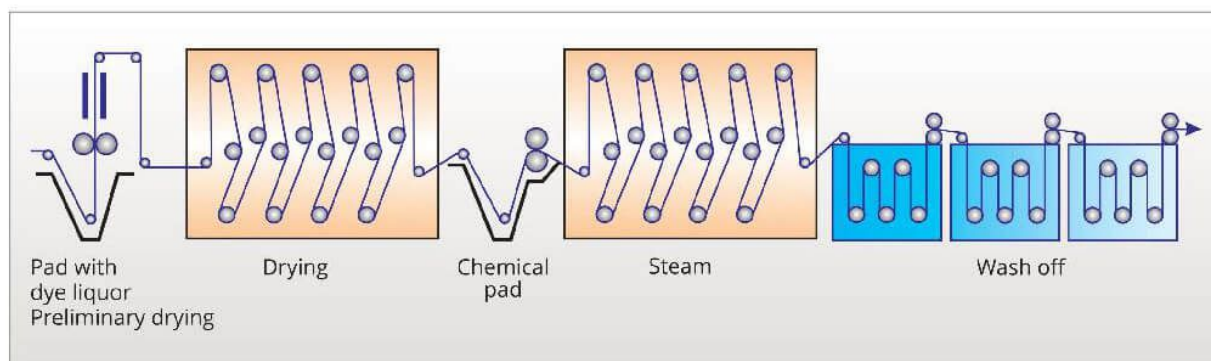
Fixation:

- On padding, fabric roll is covered with plastic sheet to protect the padded goods from partial drying and is made to rotate at around 5-10 rpm.
- Fixation time is 8-10 hours.

Washing-Off:

- Can be carried out on any suitable machine, say, Jigger, Winch or Open-width Soaper.
- For efficient washing off of dyed fabric, 7-8 chamber washing tank is suggestive. In the first 2-3 chambers, excess amount of water is used, to remove Silicate and to drop pH to 8.0-8.5. Temperature in these tanks should not be above 50°C.
- From 4th to 6th chamber, temperature is maintained at 98°C with soaping agent being added in 4th chamber.
- Temperature can be dropped down to 70°C in 7th Chamber and 40°C in the last chamber.

Continuous Dyeing Using Pad-Dry-Pad-Steam Process



Dye Liquor Pad

Cronus™ 'X' Reactive Dye	x gpl
Wetting-cum-Penetrating Agent	2-3 gpl
Migration Inhibitor	7-10 gpl
Mild Oxidising Agent	5-10 gpl

Liquor Pick-up : 60-80%

Padding Temperature : <35 °C

Intermediate Drying : To be done at 100 - 110 °C

Chemical Pad

Soda Ash	20 gpl
Caustic Soda (38° Be)	10 ml/l
Common Salt	200 gpl

OR

Sodium Silicate (1:2.5) (48-50° Be)	70%
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Liquor Pick-up : 60-80%

Padding Temperature : <35 °C

Steaming :

To be done in Saturated Steam (101 - 105 °C) for 45 – 90 seconds



Washing

To be done in Open-Width Washer to remove the hydrolyzed unfixed dyes on the substrate.
Washing steps to be followed are as follows:



Cold Wash	30-40 ° C
Warm Wash	50-60 ° C
Soaping	90-100 ° C(With 1-2 gpl Soaping Agent)
Warm Wash	50-60 ° C
Cold Wash	30-40 ° C

IMPORTANT:

The following supersedes the Buyer's documents. This is intended to service as non-binding guidelines. Seller makes no representation or warranty, expressed or implied, including the fitness for a particular purpose. Data and results are based on controlled lab conditions and must be confirmed by Buyer by testing for the intended conditions of use.

			Solubility(g/l) @ 60° C		Applications		
			Salt-Free Neutral Water	Water with 50 gpl Salt	Exhaust	Pad-Batch	Pad-Dry-Pad-Steam
CRONUS™ REACTIVE DYES							
1%	4%	Product Name					
		CRONUS™ YELLOW XBR	130	100	R	R	R
		CRONUS™ RED XBR	130	75	R	R	R
		CRONUS™ BLUE XBR	130	100	R	R	R
		CRONUS™ NAVY XBR	130	100	R	R	R
		CRONUS™ MEGA YELLOW X2BR	125	100	R	R	R
		CRONUS™ MEGA RED X2BR	125	100	R	R	R
		CRONUS™ MEGA SAFFRON X2BR	125	100	R	R	R

Dischargeability (Neutral Discharge)	Fixation Temperature (°C)	FASTNESS PROPERTIES												
		Light Fastness (ISO 105 / B02)		Chlorinated Water (20 ppm Active Chlorine)	WASHING				CROCKING		PERSPIRATION (ISO 105-E04)			
		1/1 S/D	1/6 S/D	ISO 105-E03	ISO 105-C06-C2S, @ 60° C		AATCC TM 61-3A, @ 70° C		ISO 105-X12		Acidic		Alkaline	
				Shade Change	Shade Change	Staining Cotton	Shade Change	Staining Cotton	Dry	Wet	Shade Change	Staining Cotton	Shade Change	Staining Cotton
NR	60°C	5	4-5	3	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4
NR	60°C	4-5	4	4	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4
R	60°C	4-5	3-4	4	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
R	60°C	3-4 (Navy)	2-3	3-4	4-5	4	4	4	4-5	4	4-5	4-5	4-5	4-5
NR	60°C	5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
NR	60°C	4	3-4	4-5	4-5	4-5	4-5	4-5	4-5	4	4-5	4	4-5	4
R	60°C	4-5	4	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5

			Solubility(g/l) @ 60° C		Applications	
			Salt-Free Neutral Water	Water with 50 gpl Salt	Exhaust	Pad-Batch
CRONUS™ REACTIVE DYES						Pad-Dry-Pad-Steam
1%	4%	Product Name				
		CRONUS™ MEGA CARMINEX2BR	150	100	R	R

Dischargeability (Neutral Discharge)	Fixation Temperature (°C)	FASTNESS PROPERTIES												
		Light Fastness (ISO 105 / B02)		Chlorinated Water (20 ppm Active Chlorine)	WASHING				CROCKING		PERSPIRATION (ISO 105-E04)			
1/1 S/D	1/6 S/D	ISO 105-E03	ISO 105-C06-C25, @ 60 °C		AATCC TM 61-3A, @ 70 °C		ISO 105-X12		Acidic		Alkaline			
Shade Change	Shade Change	Staining Cotton	Shade Change	Staining Cotton	Dry	Wet	Shade Change	Staining Cotton	Shade Change	Staining Cotton				
R	60°C	4-5	4	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	

R = Recommended NR = Not Recommended

Pattern Illustration : On R.F.D. Cotton by Exhaust Process



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