



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

**Manufacturer & Exporter
of Reactive Dyes**





NEBULA™ 'R' Series of Reactive Dyes

To implement Blind Dyeing Concept of Reactive Dyeing in pale to medium ternary and critical trichromatic shades on cellulosic fibers using the exhaust process with excellent build-up, our Nebula™ 'R' Series Reactive Dyes, being Spray Dried R/O products with minimal salt content, offer prudent solutions for Dye Houses. 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, Inditex, H & M and so on.

Salient Features of Nebula™ 'R' Reactive Dyes

- Highly compatible range over a wide spectrum of critical trichromatic shades.
- Robustness in dyebath by achieving excellent reproducibility and consistency.
- Right Profile with respect to exhaustion, diffusion and fixation to balance cost and performance .
- Insensitivity to minor variations in dyeing parameters like Salt, Alkali, Temperature, Liquor Ratio and process times, thereby ensuring reliable application.
- Enhanced leveling properties.
- Good build-up of shades and homogeneous fixation properties ensure level, reproducible and economical dyeing.
- Excellent wash-off properties, thereby reducing ecological costs and improving productivity.
- Satisfies the requirements set by major ecological standards.

Exhaust Dyeing

The process application adopted for Nebula™ 'R' Reactive Dyes exhibit level dyeing with excellent reproducibility due to 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.

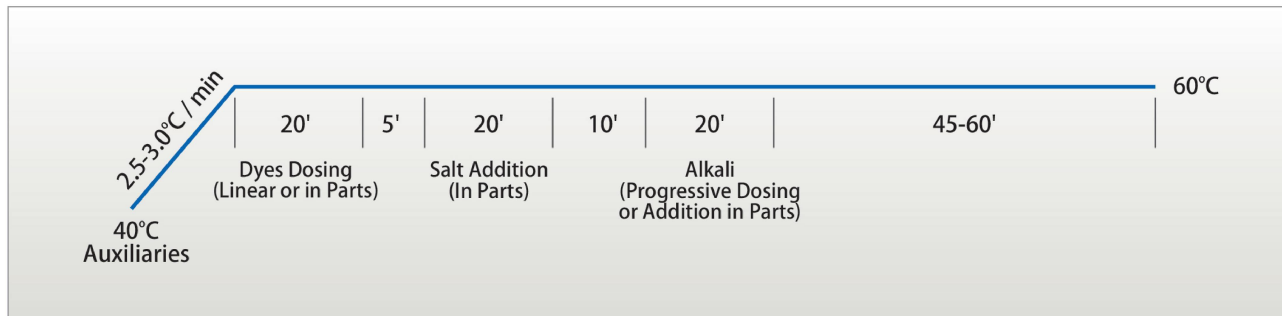
A general recipe for Dyebath Assistants during dyeing process with water of minimum hardness will be:

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

(1) Fabric Dyeing for 100% Cellulose Substrate (Knits & Wovens)

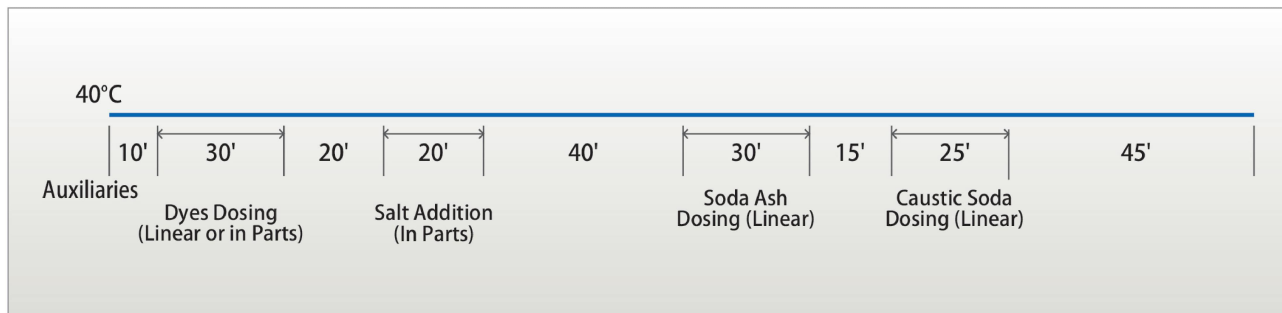
I. Isothermal Process - 60°C :

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



II. Isothermal Process - 40°C :

The process is especially suitable for dyeing cellulosic substrates of high absorbency.



(2) Package Dyeing For 100% Cellulose

Steps for Yarn Dyeing

- Set the dyebath with soft water at 35-40°C as per MLR.
- Enter the scoured/bleached and neutralized material.
- Add Chemicals¹, circulate for 3 minutes(Inside→Out) and hold for 10 minutes and drain.
- Check pH (5.5-6.0) & Channeling.
- Fill cold water, add Chemicals², circulate for 5 minutes(Inside→Out) and hold for 10 minutes.
- Raise the temperature to 40°C & hold for 5 minutes.
- Add dyestuff solution(dyes weighed as per desired o.w.f.) in 2-3 parts with Outside → In circulation at 40°C.
- Raise temperature to 60°C @ 1.5°C/Min and hold for 15 minutes.
- Add Chemicals³ in two parts with Inside → Out Circulation and hold for 45 minutes.
- Check the sample & drain the dye bath.
- Rinse at Room Temperature for 5 minutes & drain.
- Give Overflow Rinse as per depth of shade (3-5 minutes).
- Fill cold water, add Chemical⁴ & hold for 5 minutes and Drain.
- Fill hot water, add Chemicals⁵ & circulate for 3 minutes.
- Heat to 95°C and hold for 15 minutes. Then Drain.
- Rinse at 80°C for 10 minutes followed by 5 minutes process of Overflow→Rinse→Drain.
- Fill cold water and add Chemical⁶ & Chemical⁷(Optional) and circulate for 3 minutes. Hold for 15 minutes and Drain.
- Fill cold water, add Chemical⁸. Circulate for 3 minutes and hold for 10 minutes. Drain.
- Unload the batch.

Notes:

(1) Two soaping operations are necessary for shades above 7%.

(2) Pressure difference during In → Out & Out → In operations have to be maintained constant.

In → Out 100-140 KPA

Out → In 90-120 KPA

Keys:

Sr.No.	Chemicals	Quantity (gpl)
1	Acetic Acid (30%) Sequestering Agent	0.5 0.5
2	Acetic Acid(30%) Common Salt	0.5 As Recommended
3	Soda Ash	As Recommended
4	Acetic Acid (30%)	0.5
5	Sequestering Agent Non-Ionic Soaping Agent	0.5 0.5
6	Acetic Acid(30%)	0.5
7	Dyefixing Agent	As recommended
8	Softener	1.0 – 2.0 (as per shade)

Salt and Alkali Requirement Time During Exhaust Dyeing:

I. For Isothermal Process - 60 ° C:

Liquor Ratio 10:1		0.01 to 0.5	0.5 to 1.0	1.0 to 2.0	2.0 to 4.0	4.0 & Above
Depth of Shade (% o.w.f.)						
Salt (gpl)	Unmercerized Cotton	30	50	60	70	80
	Mergerized Cotton	20	40	45	50	60
Alkali (gpl)	Soda Ash	5	10	15	15	20

II. For Isothermal Process - 40 ° C:

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 (gpl)	Unmercerized Cotton	30	50	60	70	80
	Mercerized Cotton	20	40	45	50	60
Alkali	Soda Ash (gpl)	6	6	6	8	10
	Caustic Soda (%)	0.5	0.75	1.5	2	4

Notes:

- 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 Nebula™ ‘R’ 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.

Notes:

In case of 40°C Isothermal Process, as a washing-off process, 2 cold washes for 10 minutes each followed by neutralization at room temperature with Acetic Acid, then, soaping at room temperature for 20 minutes & finally a cold wash to achieve clear dyebath, is recommended.

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		Dischargeability (Neutral Discharge)
			Salt-Free Neutral Water	Water with 50 gpl Common Salt	
NEBULA™ REACTIVE DYES					
0.5%	2%	Product Name			
		NEBULA™ YELLOW R-20	100	50	R
		NEBULA™ RED R-20	100	50	NR
		NEBULA™ ORANGE R-20	80	20	NR
		NEBULA™ BLUE R-20	100	50	R

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

Abbreviations : R = Recommended NR = Not Recommended

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



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