

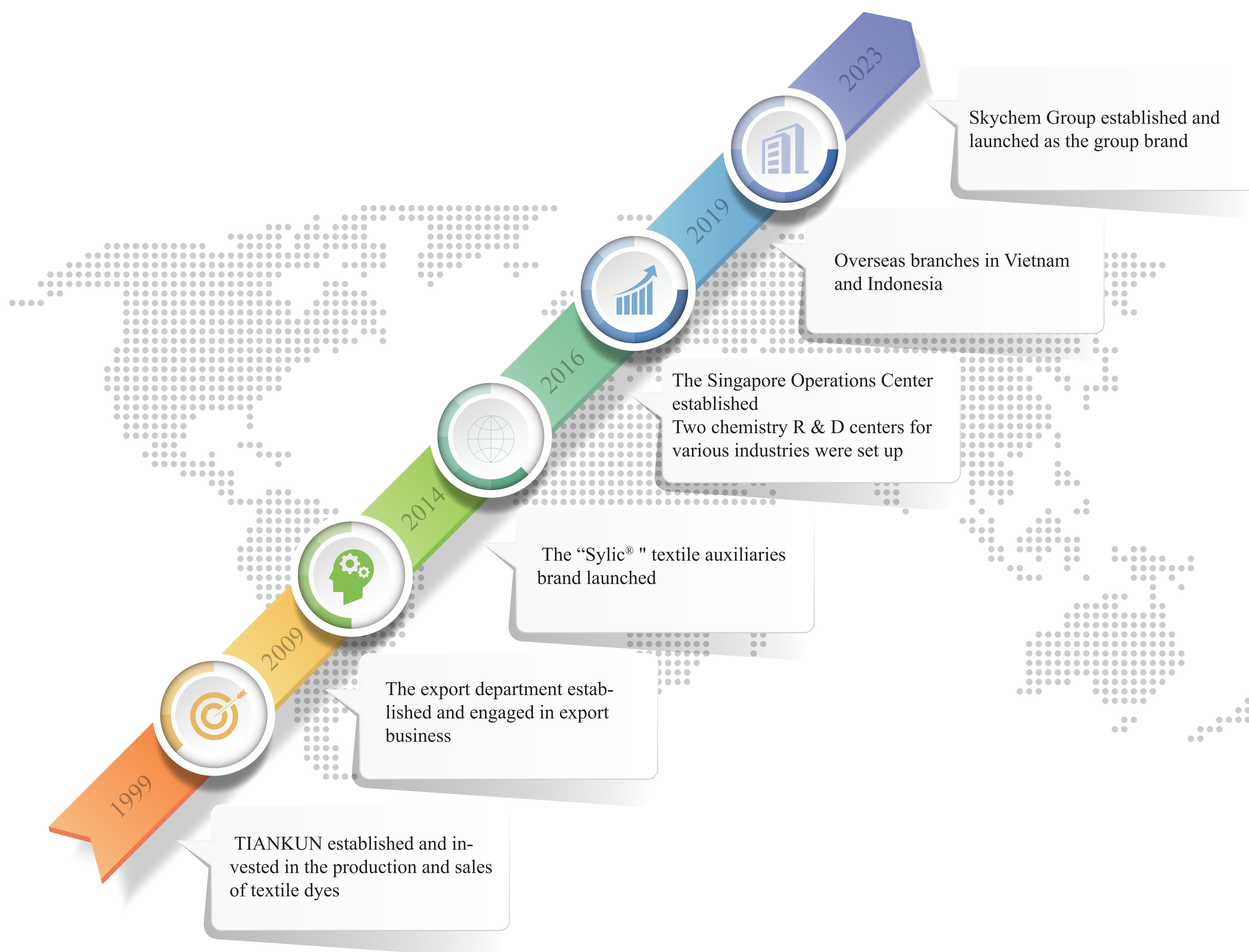


SKYZOL[®]
REACTIVE DYESTUFF
CATALOGUE

杭州天昆化工有限公司
HANGZHOU TIANKUN CHEM CO.,LTD

COMPANY INTRODUCTION

UP to now, Tiankun's products have been exported to nearly 70 countries and regions around the world.



The quality of our products has passed various of certification systems, and we select all the product materials on the highest standards.

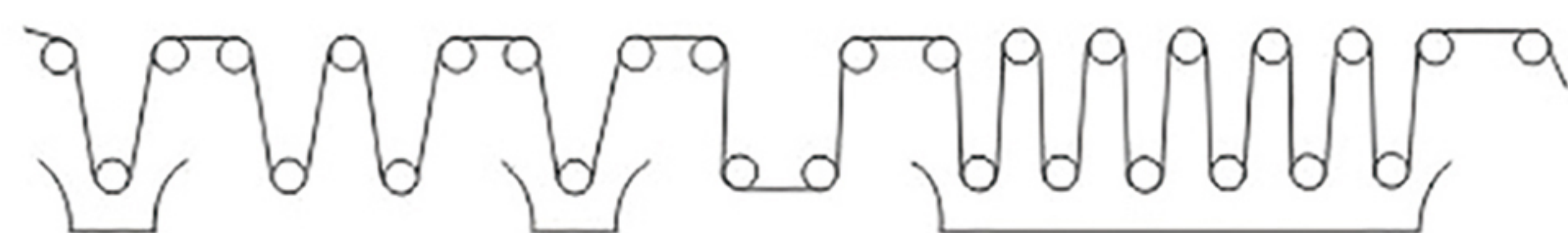
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Dyeing Procedure of Reactive Dyes

I. Padding Process

1.1 Two Baths (Pad-Dry-Pad-Steam) Process



Padding Drying Alkali Padding Steam Soaping → Washing Drying

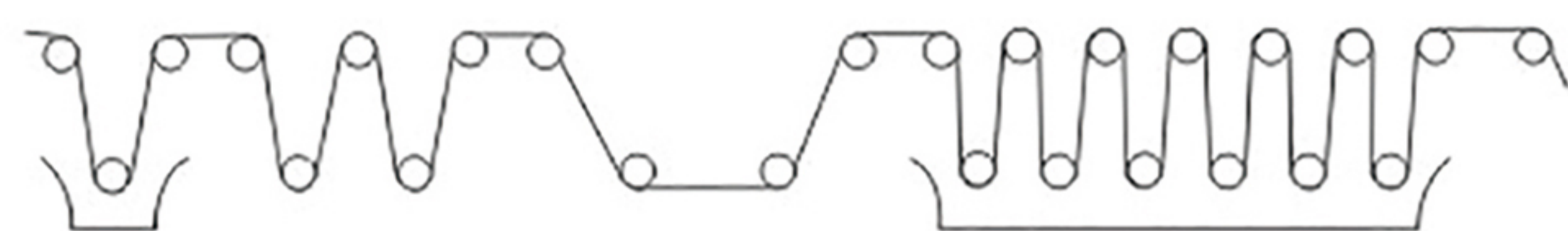
1.1.1 Pad liquor (with 65-70% liquor pick-up) → Pre-drying → Drying → Cooling → Salt and Alkali Padding → Steam (102-105°C 50-90sec) → Running cold water washing → Acid washing → Soaping → Hot water washing → Warm Water washing → cold water washing → Drying and taking Out the fabric

1.1.2 Dyes X g/l, Migration Inhibitor 5-10g/L, Penetrating Agent 0-1g/L

1.1.3 Salt and Alkali Amount recommended

Dyes G/L	<10	10-20	20-30	30-40	40-50	>50
Caustic Soda (36Be') mL	2	5	7	7	10	10-15
Sodium Bicarbonate g/L	20	20	20	20	20	20
Glauber Salt/Salt g/L	220	220	220	220	220	220

1.2 One Bath (Pad Dry Thermofix) Process



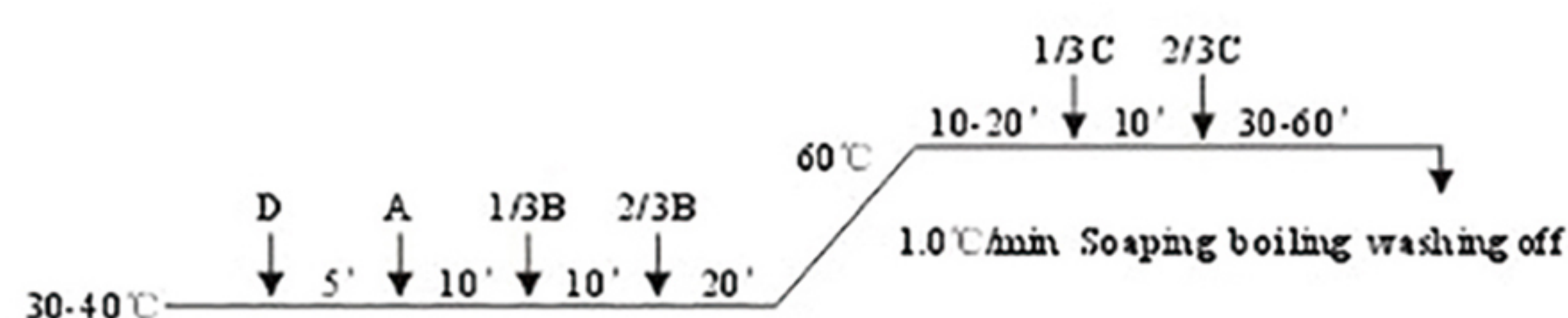
Padding Drying Thermofix Soaping → Washing off Drying

1.2.1 Pad liquor (with 65-70% liquor pick-up) → Pre-drying → Drying → Thermofix (150-160°C 2-3min.) → Running cold water washing → Washing off → Soaping → Washing off → Drying

1.2.2 Dye liquor

Dye	x g/L
Urea	50-100g/l
Soda ash	10-40g/l
Migration Inhibitor	5-10g/l
Resist salt S	2-10g/l
Wetting Agent 0-1g/L	0-1g/l

II. Exhaust Process



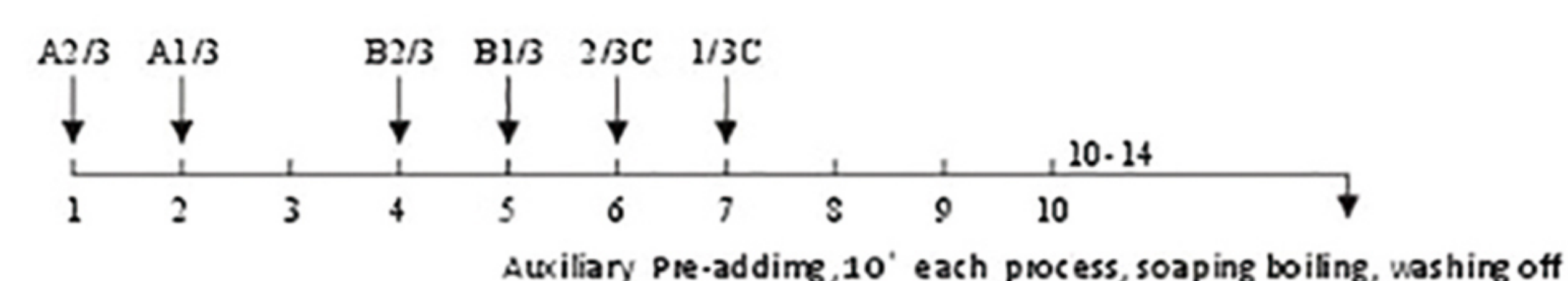
Note: A: Dyes B: Glauber's Salt C: Sodium bicarbonate D: Auxiliary

2.1 Exhaust Process: Washing → Dyeing → Fixation → Washing → Soaping boiling → Washing → Dehydration → Drying.

2.2 Process recipe and Parameters

	Dyes and Chemicals	Amounts
Dyeing	Reactive dyes (%)	0.2-2.0 (o.w.f)
	Glauber's Salt (g/l)	20-60
Fixation	Sodium bicarbonate (g/l)	5-20
Soaping boiling	Detergent (g/l)	3
Process parameters	Liquor Ratio	1:5-20
	Dyeing temperature (°C)	60
	Fixation temperature (°C)	60
	Fixation time (min)	30-60
	Soaping boiling temperature (°C)	95-100
	Soap boiling time (min)	10-15

III. Jig Dyeing Process

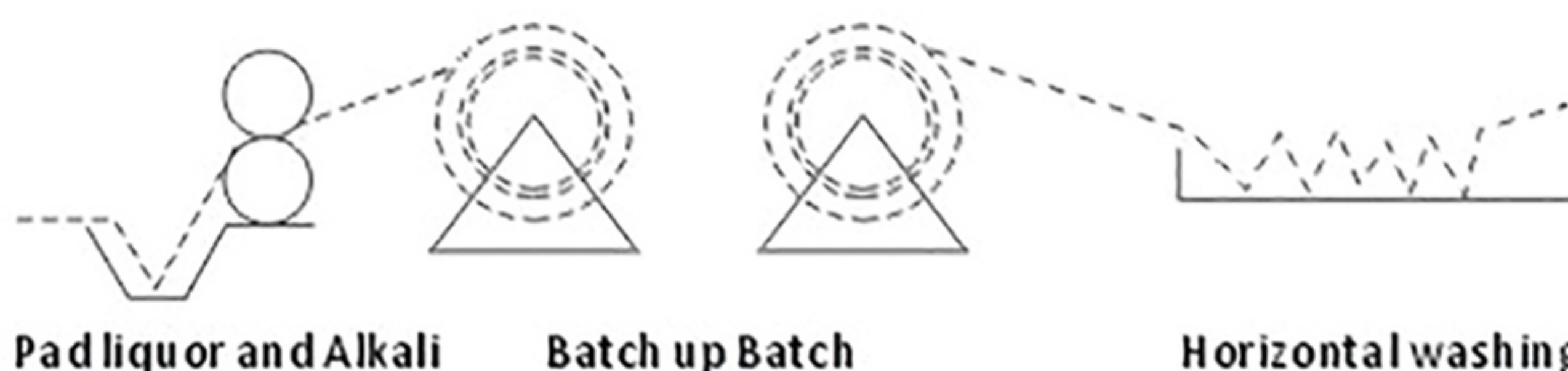


Note: A: Dyes B: Glauber's Salt C: Sodium bicarbonate

3.1 Jig dyeing Process: Washing → Dyeing → Fixation → Washing → Soaping boiling → Washing → Drying.

Color shades	Dye adding (passages)	Accelerating Agent adding (passages)	Fixing Agent adding (passages)	Dyeing Fixing (passages)
Medium and Pate	1-2	3-4	5-6	8-10
Deep	1-2	4-5	6-7	10-14

IV. Cold Pad Batch Process



Note:

- Adopting two mangles padding evenly, the volume of the through should be as small as possible at about 15-30 liter
- Utilizing the Mixing device to pump the dye liquor and alkali liquor with desired mixing ratio.
- Applying the batching-up device with the speed setting.
- The options of the horizontal washing are:
 - a horizontal washing machine with not less than 7 compartments
 - or a winch beck dyeing machine
 - or a jig dyeing machine

Pad dyeing Yield: As the stability of the dye liquor and alkali liquor mixture is not very high, it is recommended to use the automatic dosing pump to transfer the pad liquor to the trough right before the padding process.

Pad liquor pick-up: Cotton 65-70%, viscose 80-100%

Batching up: after the padding, the fabric should be batched up with the edges aligned, then wrapped in plastic film and sealed to prevent the moisture content evaporated. The batched-up roll should be rotated to ensure the dyeing levelness.

4.1 Standard process of short batching time in cold pad batch

Composition of Pad liquor:

Dye solution:

Dye	x g/l
Urea	100g/l
Wetting Agent	2-5g/l

Alkali liquor:

Caustic soda 38°C Be'	x g/l
Glauber Salt/salt	30g/l

The dye and chemical amounts given above are referring to the total volume of the pad liquor in the automatic closing pump with a mixing ratio of 4:1. That 80% of the total pad liquor volume will be consisted of the dye, wetting agent and urea, while caustic soda and salt should be accounted for 20% of the total pad liquor volume.

The alkali demand should be calculated as below:

$$\frac{\text{Dye g/l}}{5} + 8 = \text{Caustic Soda (38°C Be')}$$

Adding salts can improve the dye fixation due to the color yield increasing (except the influential solubility on dye), the solubility of salt is higher than the solubility of Glauber's salt, and therefore it is preferred. But in some special case such as when dyeing with reactive Blue R, Glauber's salt is the only choice.

4.2 Standard Sodium Silicate method

Composition of Pad liquor:

Dye	x g/l
Urea	100 g/l
Wetting Agent	2-5 g/l

Recommended Alkali amounts:

Sodium silicate Concentration	Sodium Silicate Amount	Dye
°Be' Na ₂ O: g/l cc/l	<20g/l 20-30g/l 30-40g/l 40-50g/l 50-60g/l >60g/l	
SiO ₂ Weight ration	Beside Sodium Silicate, the required 32.5% (°Be') Caustic Soda (ml/l)	
37-40	1:3.3 130 95 23.5 28.5 28.5 33.5 33.5 38.5	
40-42	1:3.3 110 80 23.5 28.5 28.5 33.5 33.5 38.5	
48-50	1:2.6 100 65 15 20 20 25 25 30	
58-60	1:2.1 90 55 6 11 11 16 16 21	

4.3 Modified Sodium Silicate method

This method helps to reduce the silicate scale.

Pad liquor composition:

Dye	x	g/l
Urea	100	g/l
Wetting Agent	2-5	g/l

Alkali amount recommended:

65g/l Sodium Silicate 37-40°C Be' the amount of caustic soda will be adjusted according to the depth of the dyeing shade.

Dye g/l	<20	30	40	50	60	>70
Caustic soda 38°C Be' cc/l	20	25	25	25	30	35

V. Printing

5.1 One phase printing Process

Printing paste recipe

Dye	x	g
Urea	50-100	g
Water	X	g
Sodium alginate	500	g
Resist salt S	10	g
Soda Ash	5-30	g
Printing Paste	1000	g

Recommended soda ash amount

Dye	Soda Ash
1-5g/kg	5g/kg
6-10g/kg	10g/kg
11-30g/kg	15g/kg
31-40g/kg	20g/kg
40-60g/kg	25g/kg
>60 g/kg	30g/kg

Printing process:

Printing→drying→steaming→washing

Fixing methode steaming: 102-103°C, 3-5min

Thermofix: 150°C, 3-5min

5.1.1 The after Printing washing off

(continuous washing compartments)

1 st cell	Overflow cold wash
2 nd cell	Cold wash
3 rd cell	Hot wash, 70°C
4 th cell	Hot wash, 70°C
5 th cell	Hot wash, 95°C and 2g/l sequestering agent
6 th cell	Soaping, 95°C and 2g/l sequestering agent
7 th cell	Hot wash, 70°C
8 th cell	Cold wash

VI. Color Fastness Properties

Light color fastness GB/T 8427-1998 (EQV ISO 105-B02-1994)

Washing color fastness GB/T 3921.4-1997 (EQV ISO 105-C04-1989)

Rubbing color fastness GB/T 3920-1997 (EQV ISO 105-X12-1993)

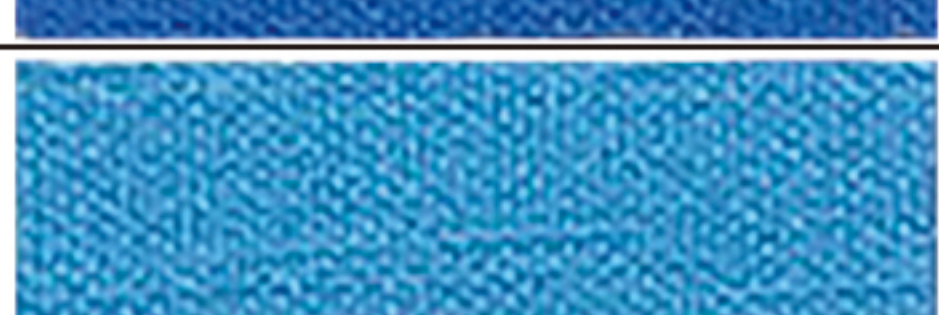
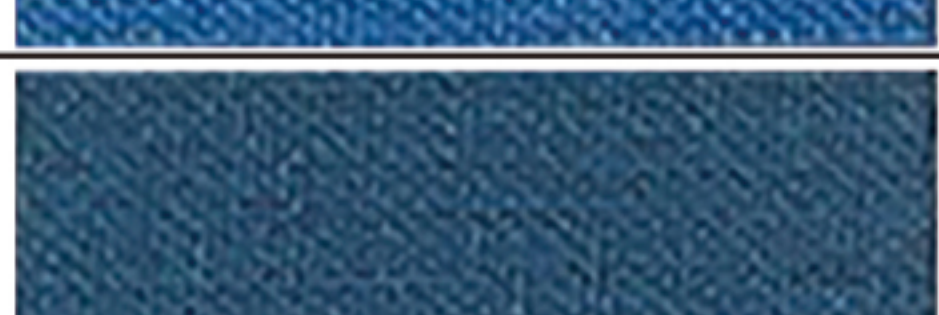
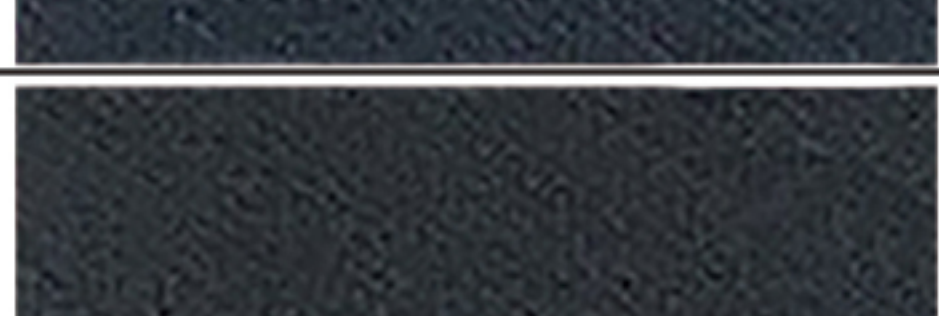
Perspiration color fastness GB/T 3922-1995 (EQV ISO 105-X11-1994)

Chlorine bleach color fastness GB/T 8433-1998 (EQV ISO 105-E03-1994)



Skyzol® Reactive Dyes M Type



No.	Color Sample	Brand Skyzol®	C.I.NO.	Specification	O.W.F(%)	Light Fastness	Washing		Chlorine bleach	Rubbing		Perspiration	
							Ch	Co		Dry	Wet	Acid	Alkali
1		Yellow 4GL	160	150%	1.5	4	4	4	3-4	4	3-4	4	4
2		Yellow 3RS	145	150%	1.5	4-5	4-5	4-5	3	4-5	4	4	4-5
3		Orange 2R	122	150%	1.2	4-5	4	4	4	4-5	4	4-5	4-5
4		Red 3BS	195	150%	1.5	4-5	4-5	4-5	4	4-5	3-4	4	4
5		Red 2BN	194	100%	3	5-6	4-5	4	3	4	4	3-4	3-4
6		Red 6BN	250	100%	1.5	4-5	4	4	3	4	3-4	4	4
7		Violet 5RN	45	150%	4	4	4-5	2	2-3	4-5	4-5	4-5	4
8		T.Blue G	21	100%	2	4-5	4	4-5	3	4-5	3-4	4-5	4-5
9		Blue G H.C	21	160%	2	4-5	4	4-5	3	4-5	3-4	4-5	4-5
10		Brill Blue R	19	100%	2	5-6	4	4-5	4-5	4	3-4	4-5	4-5
11		Brill Blue R	19	150%	2	5-6	4	4-5	4-5	4	3-4	4-5	4-5
12		Brill Blue RSP	19	140%	2	5-6	4	4-5	4-5	4	3-4	4-5	4-5
13		Blue GN	198	125%	2	4-5	4	4-5	4	4	3-4	4	4
14		Blue BRF	221	100%	2	5	4-5	4-5	4	4	3-4	3-4	4
15		Blue BF	222	150%	2	4	4-5	4-5	3	4-5	3-4	4-5	4-5
16		Blue 2G	194	150%	2	4	4	4	3-4	4-5	3-4	3-4	4
17		Black B	5	150%	6	4	4-5	4	3	4	3	4-5	4-5
18		Black WNN	—	150%	6	4-5	4-5	4-5	3	4-5	3-4	4-5	4-5



No.	Color Sample	Brand Skyzol®	C.I.NO.	Specification	O.W.F(%)	Light Fastness	Washing		Chorine bleach	Rubbing		Perspiration	
							Ch	Co		Dry	Wet	Acid	Alkali
19		Black WNN	—	165%	6	4-5	4	4-5	3	4-5	3-4	4-5	4-5
20		Black WNN	—	200%	6	4-5	4	4-5	3	4-5	3-4	4-5	4-5
21		Super Black R	—	200%	6	4	4-5	4-5	3	4	3	4-5	4-5
22		Super Black G	—	200%	6	4-5	4	4-5	3	4	3	4-5	4-5

M Type Reactive Dyes

- M Type Reactive dyes are a series of dyes with good dyeing property.
- They have perfect compatibility and larger scope choice of different colors.



Skyzol® Reactive Dyes

Deep Shade Series



No.	Color Sample	Brand Skyzol®	C.I.NO.	Specification	O.W.F(%)	Light Fastness	Washing		Chlorine bleach	Rubbing		Perspiration	
							Ch	Co		Dry	Wet	Acid	Alkali
1		Brill. Yellow S-G	—	—	1.5	5-6	5	5	1-2	5	4	4-5	4-5
2		Yellow S-D	—	—	2.0	4-5	4-5	4-5	3-4	4-5	3	4	3-4
3		Yellow S-3R	—	—	1.2	4-5	4-5	4-5	3	4-5	4	4	4-5
4		Orange S-2R	—	—	2.0	4-5	3-4	3-4	4	4	2-3	4	4
5		Red S-D	—	—	2.0	4-5	4-5	4-5	4	4-5	2-3	4	4
6		Red S-3B	—	—	2.0	4-5	4-5	4-5	3-4	4-5	2-3	4	4-5
7		Red S-4B	—	—	2.0	4-5	4-5	4-5	3-4	4-5	2-3	4	4
8		Red S-7B	—	—	2.0	4	4	4	3-4	4	2-3	4	4
9		Deep Red S-B	—	—	2.0	4-5	4	4	3-4	4	3-4	4	4
10		Rubine S-D	—	—	2.0	4	4-5	4	3-4	4-5	3-4	4-5	4
11		Scarlet S-D	—	—	6.0	4-5	3-4	3-4	4	4	2-3	4-5	4
12		Brill. Blue S-G	—	—	2.0	4-5	4-5	4-5	1	4-5	2-3	4	4-5
13		Brill. Blue S-R	—	—	2.0	4-5	4-5	4-5	1	4-5	2-3	4	4
14		Ocean Blue S-D	—	—	2.0	4	4	4	1	4-5	2-3	4	4
15		Navy Blue S-D	—	—	2.0	4-5	4	4-5	4	4-5	3	4	4-5
16		Black S-D	—	—	6.0	4-5	4-5	4-5	1-3	4-5	2-3	4	4
17		Black S-G	—	—	6.0	4-5	4	4-5	3	4	3	4-5	4-5
18		Black S-R	—	—	6.0	4	4-5	4-5	3	4	3	4-5	4-5

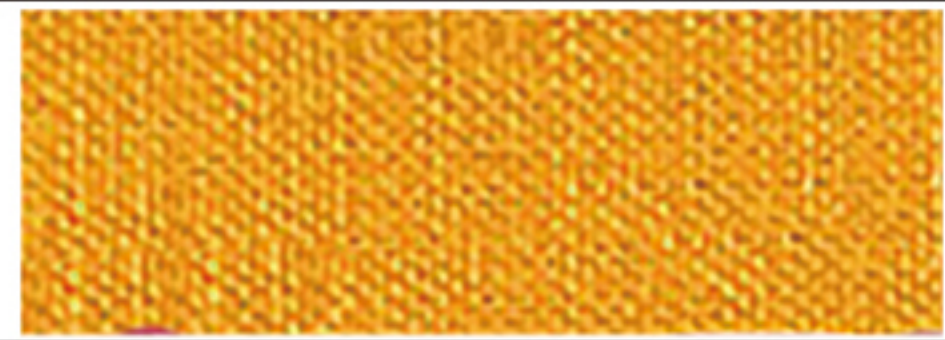
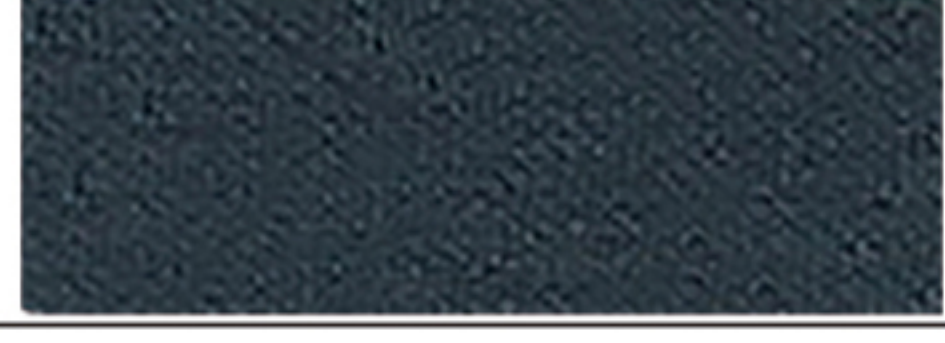


No.	Color Sample	Brand Skyzol®	C.I.NO.	Specification	O.W.F(%)	Light Fastness	Washing		Chlorine bleach	Rubbing		Perspiration	
							Ch	Co		Dry	Wet	Acid	Alkali
1		Yellow TE-4R	84	—	1.5	3-4	4	4-5	3	4	3-4	4	4-5
2		Yellow TE-4G	105	—	2	5	4-5	1-4	2-3	4-5	3-4	4	4
3		Orange TE-R	84	—	1.5	3-4	4	4-5	3	4	3-4	4	4-5
4		Blue TE-R	171	—	3	3-4	4	4-5	3-4	4-5	3	4	4-5
5		Red TE-7B	141	—	3	4-5	4	4-5	3-4	4-5	3-4	4	4-5
6		Red TE-3B	120	—	1.5	4-5	4	4-5	3-4	4-5	3-4	4	4-5
7		Blue TE-GN	198	—	2	4-5	4	4-5	4	4	3-4	4	4

TE Type Reactive Dyes

- Good levelness and reproducibility.
- It can save dyeing time, simplify dyeing process, improve wash-off property and good compatibility with TE Type Reactive Dyes.



No.	Color Sample	Brand Skyzol®	C.I.NO.	Specification	O.W.F(%)	Light Fastness	Washing		Chorine bleach	Rubbing		Perspiration	
							Ch	Co		Dry	Wet	Acid	Alkali
1		Yellow RGB	—	—	2	4-5	4	4-5	3	4-5	4-5	4-5	4-5
2		Red RGB	—	—	2	4-5	4	4	3	4-5	3-4	4	4
3		Deep Red RGB	—	—	2	4-5	4	4	3-4	4	3-4	4	4
4		Super Red RGB	—	—	2	4-5	4	4-5	4	5	3-4	4-5	5
5		Orange RGB	—	—	2	4-5	4	4	4	4-5	4	4-5	4-5
6		Blue RGB	—	—	2	4	4	4	3-4	4-5	3-4	4	4-5
7		Black RGB	—	—	2	4-5	4-5	4-5	2-3	4	3	4-5	4-5

RGB Series Reactive Dyes

- Less consumption of dyes and chemicals compared with dyeing the same depth of shade.
- Energy saving and environmental friendly.



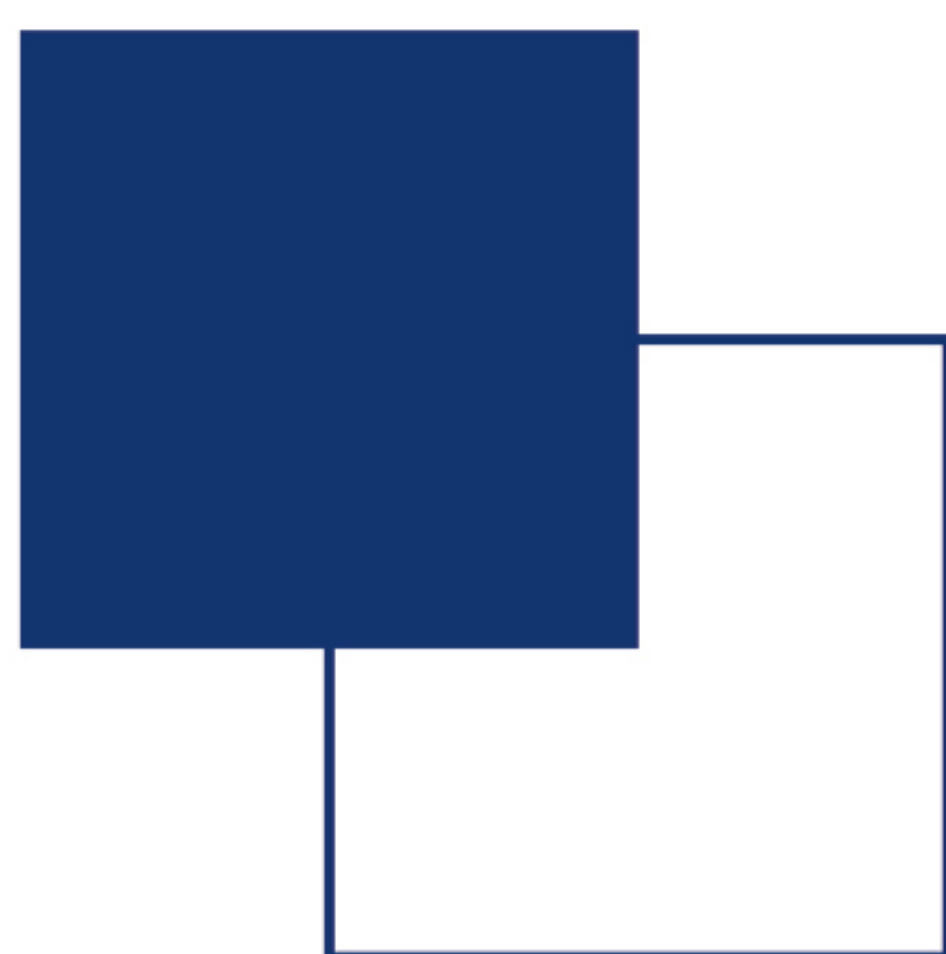
Skyzol® Reactive Dyes Printing Series



No.	Color Sample	Brand Skyzol®	O.W.F (%)	Solubility (g/l)	Light (1/1SD)	Washing	Perspiration		Rubbing		(20ppm)
						CO	Acid	Alka	Dry	Wet	
1		YELLOW P-6GS	3.0	200	5-6	5	5	5	5	4	4-5
2		GOLD YELLOW P-2RN	3.0	200	5	4-5	4-5	4	4-5	3	4
3		ORANGE P-2R	3.0	200	4	4-5	4-5	4-5	4-5	3	4-5
4		ORANGE P-GN	3.0	200	5-6	4-5	4-5	4-5	4-5	3	4
5		BROWN P-6R	3.0	200	5	4-5	4-5	4-5	4	3-4	4
6		RED P-BN	3.0	100	4-5	4-5	4-5	4-5	4-5	3-4	3-4
7		RED P-4B	3.0	200	5	4-5	4	4-5	4-5	3-4	3
8		RED P-6B	3.0	200	4	4-5	4-5	4-5	4-5	3-4	4-5
9		RED P-8B	3.0	200	4	4-5	4-5	4-5	4-5	3-4	4-5
10		VIOLET P-RN	3.0	150	4	4-5	4-5	4-5	4-5	3-4	4
11		TURQ.BLUE P-GR	3.0	150	6	5	4	3-4	4	3	2-3
12		BRILL BLUE P-3R	3.0	200	6	5	4-5	4-5	4-5	3-4	3
13		NAVY BLUE P-2R	3.0	200	4-5	4-5	4-5	4-5	4-5	3-4	4
14		BLACK P-SR	3.0	100	7	4-5	4-5	4-5	4-5	3-4	2-3
15		BLACK P-GR	3.0	200	5-6	4-5	4-5	4-5	4-5	3-4	3

Note:

All the data on this color card is on the basic of our company experiment,suggestion according to your own production technology and application.Please do the relative experiment work before use this product.



The information and our technical advice submitted in this shade card are based on our current knowledge and experience. In view of many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments, neither do they imply any legal binding assurance of certain properties or of suitability for a specific purpose.



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