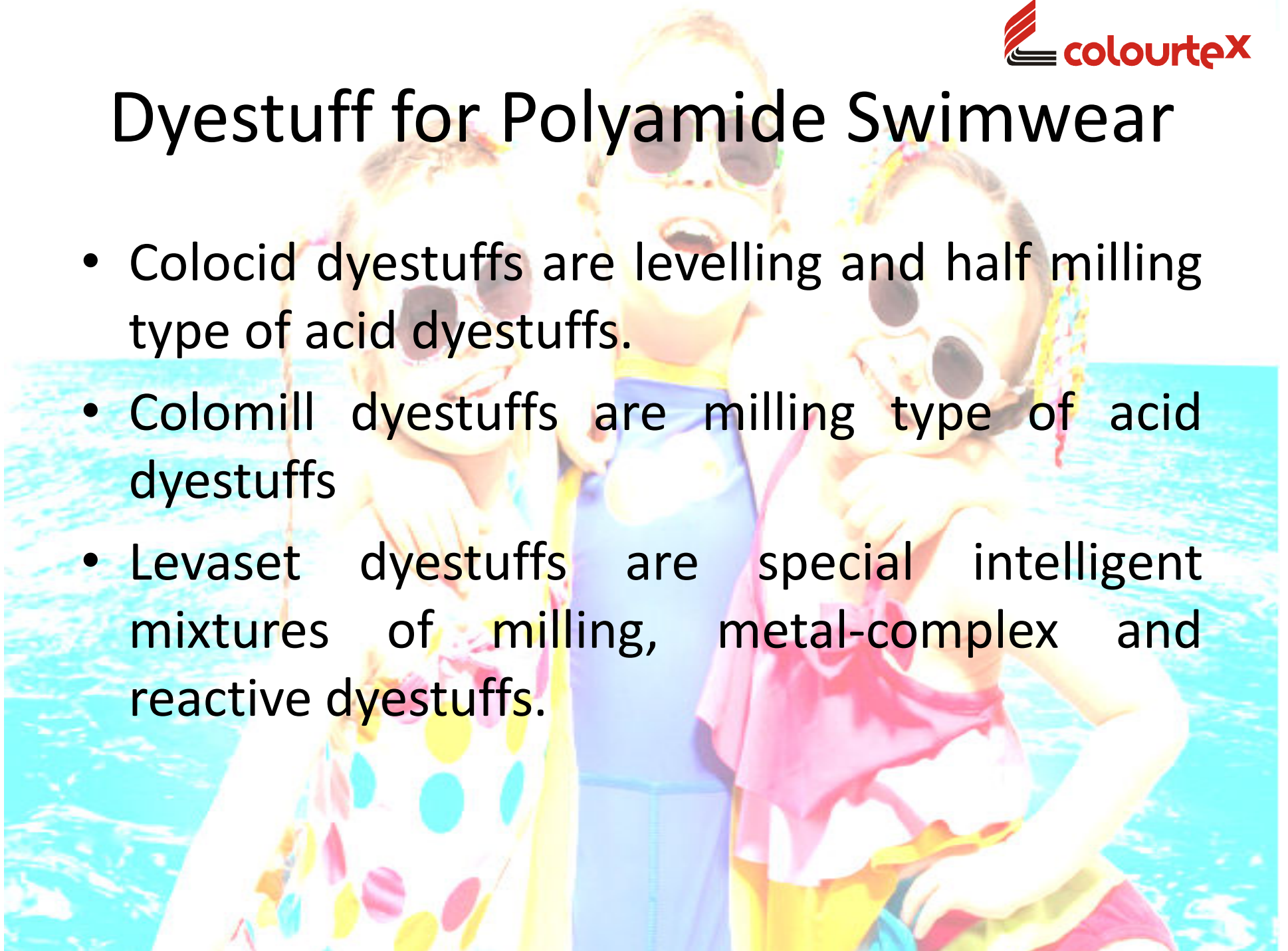




Dyestuffs for Polyamide Swimwear

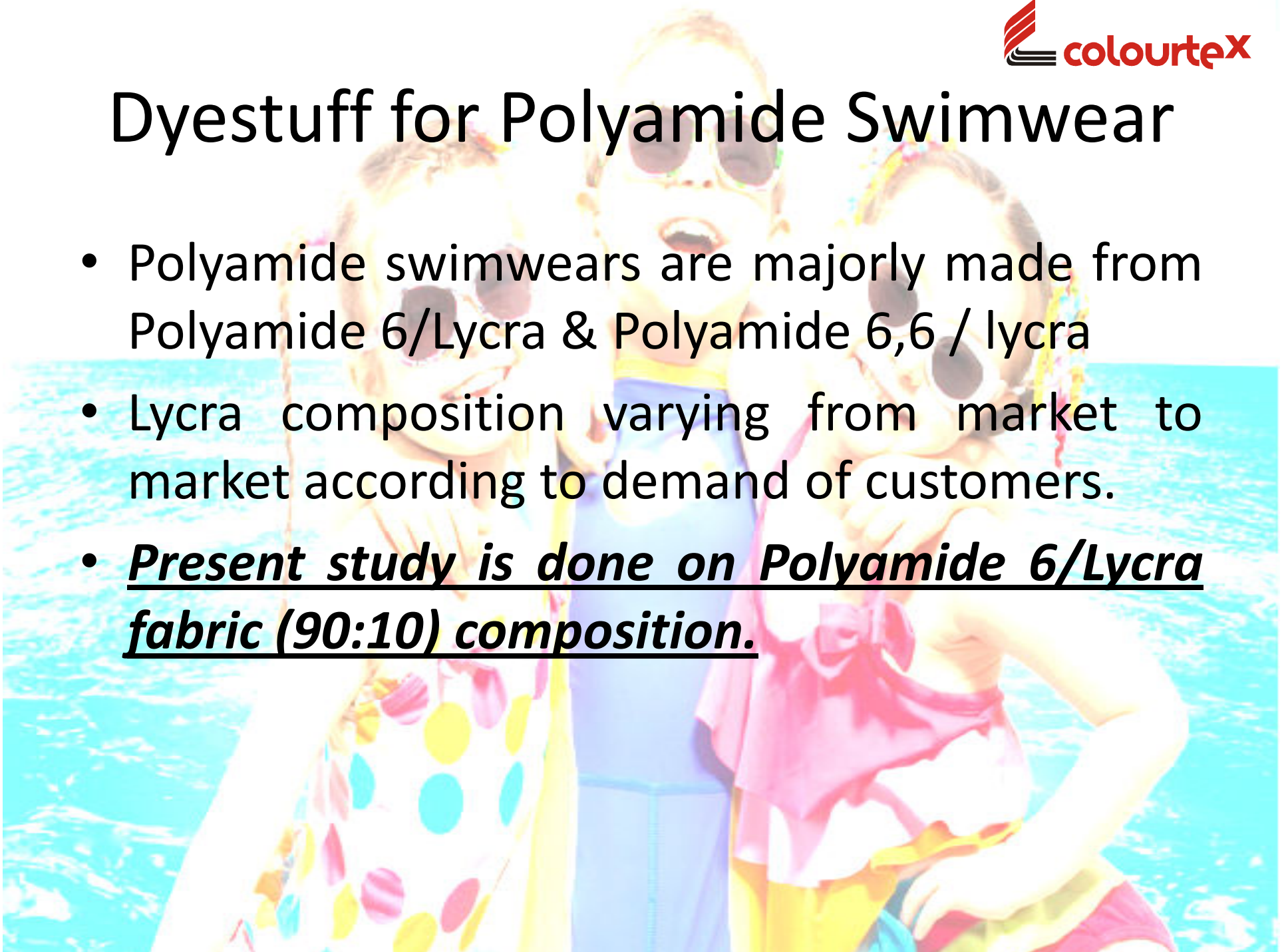
# Dyestuff for Polyamide Swimwear

- Colocid dyestuffs are levelling and half milling type of acid dyestuffs.
- Colomill dyestuffs are milling type of acid dyestuffs
- Levaset dyestuffs are special intelligent mixtures of milling, metal-complex and reactive dyestuffs.

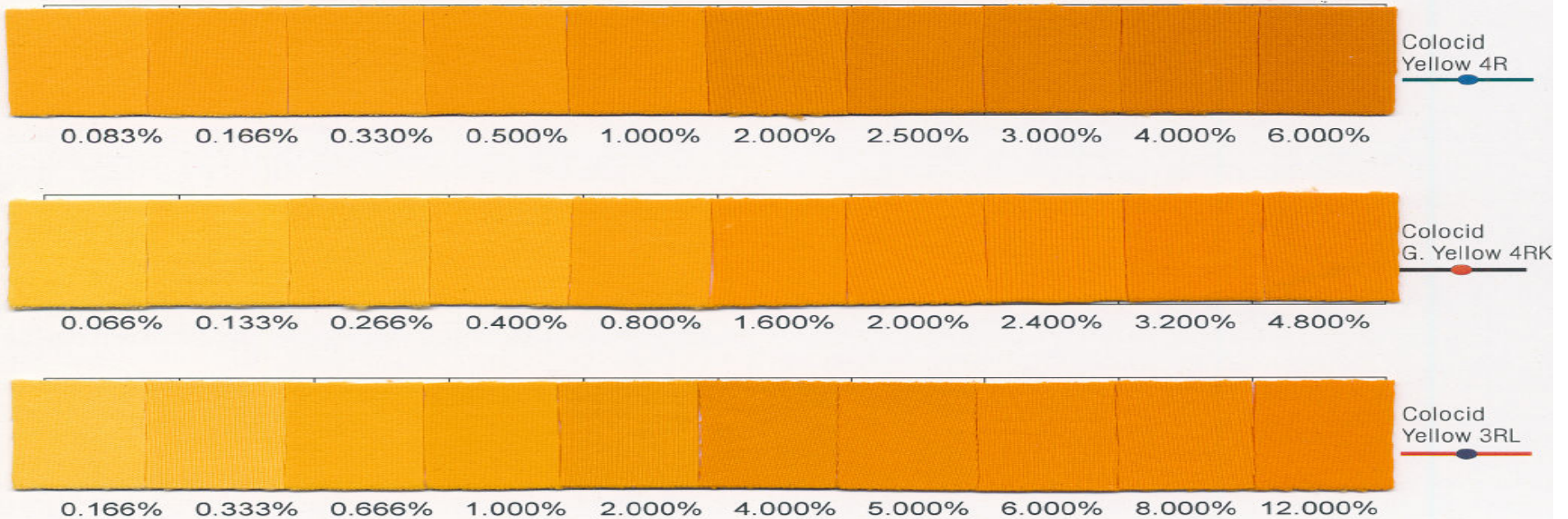
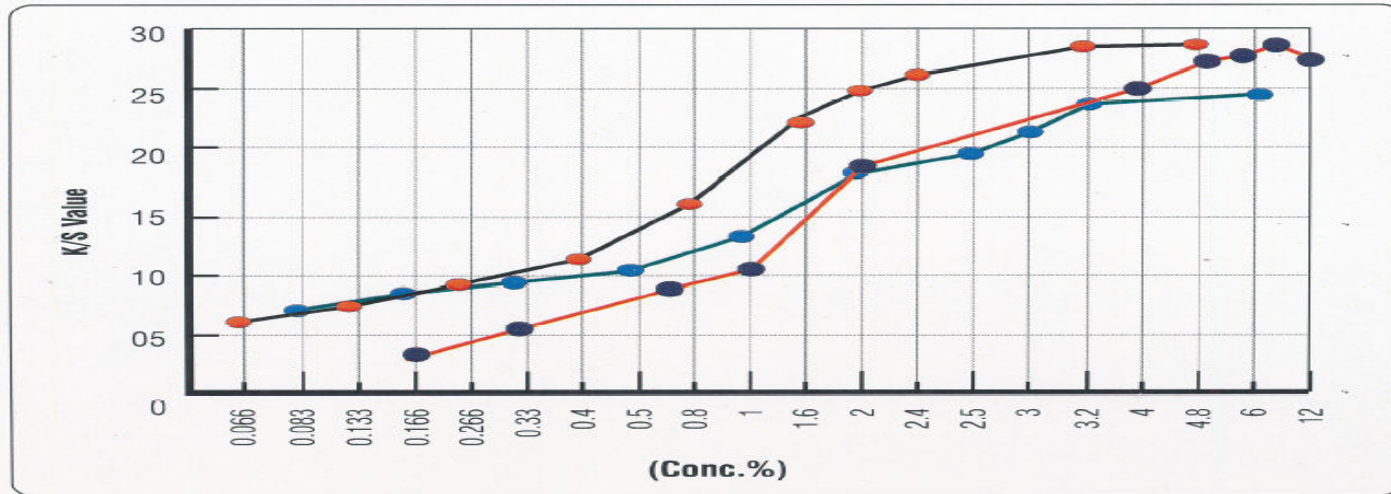


# Dyestuff for Polyamide Swimwear

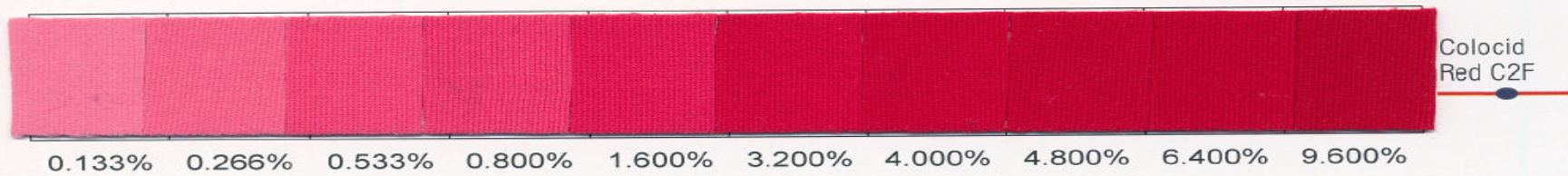
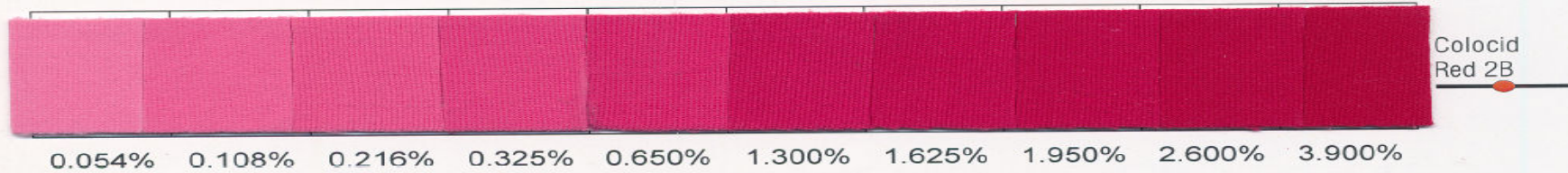
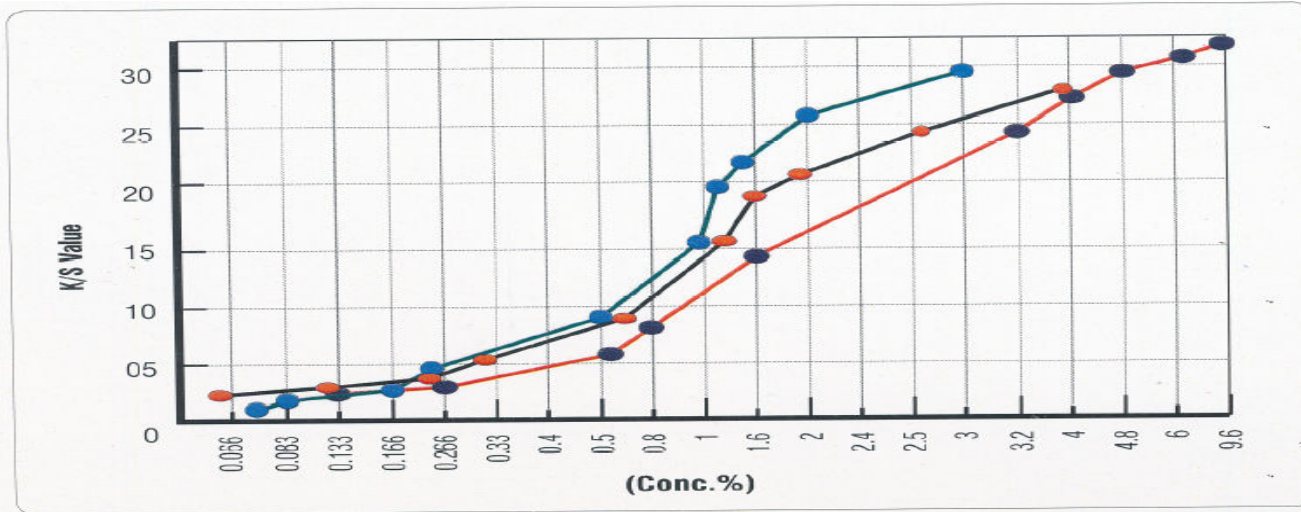
- Polyamide swimwears are majorly made from Polyamide 6/Lycra & Polyamide 6,6 / lycra
- Lycra composition varying from market to market according to demand of customers.
- **Present study is done on Polyamide 6/Lycra fabric (90:10) composition.**



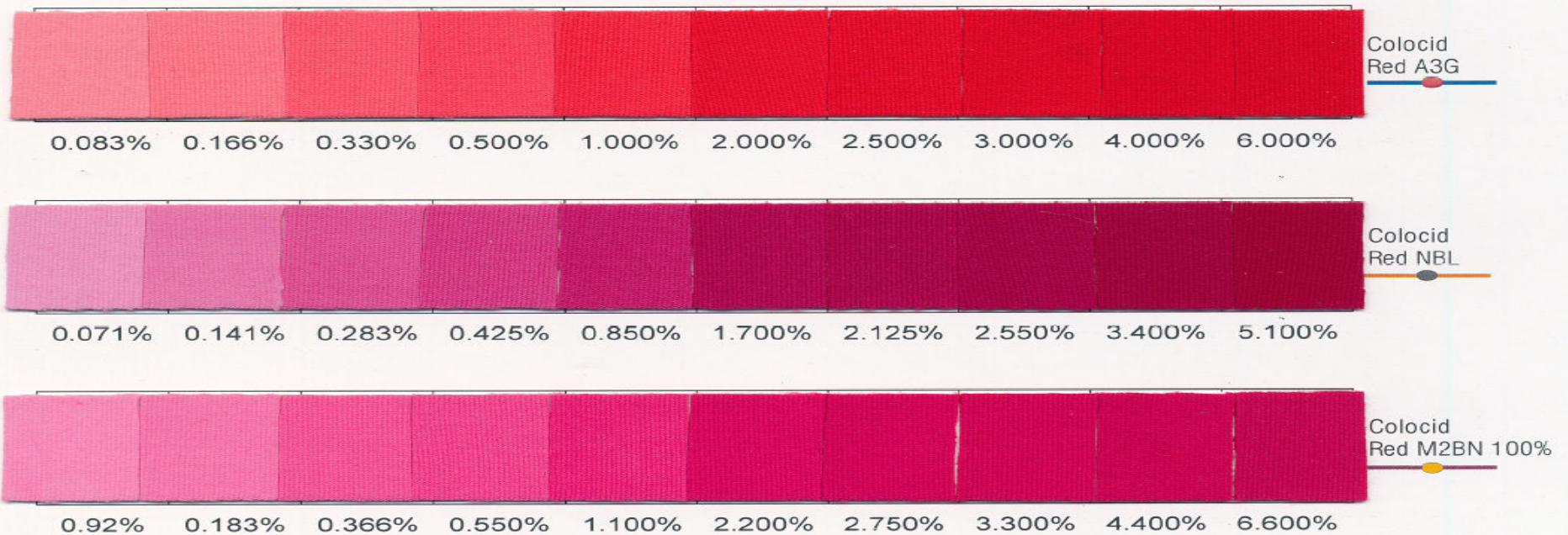
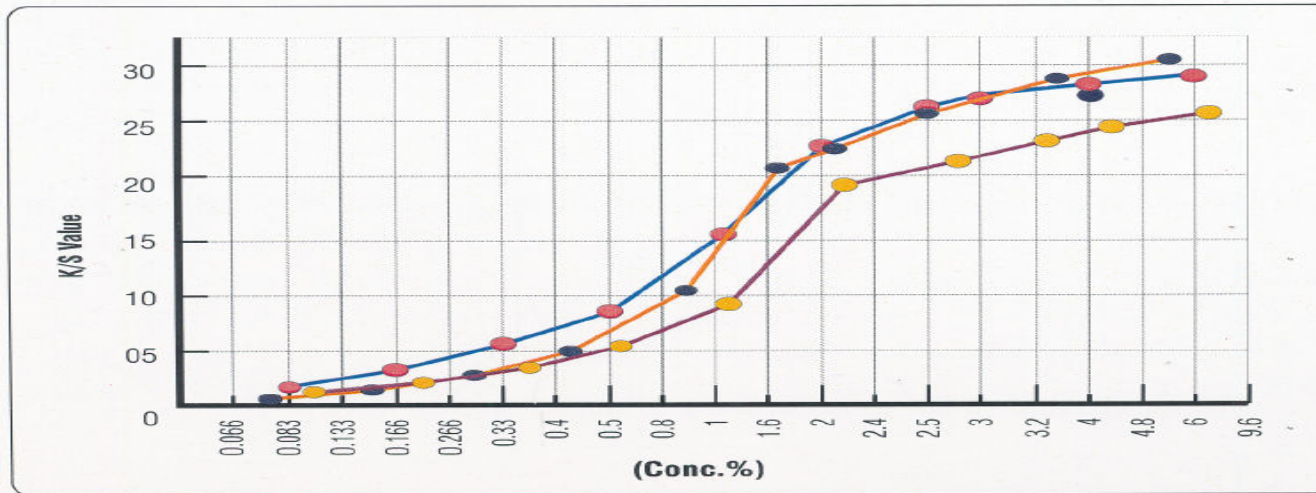
## Saturation limit of Acid Yellows from Colocid range



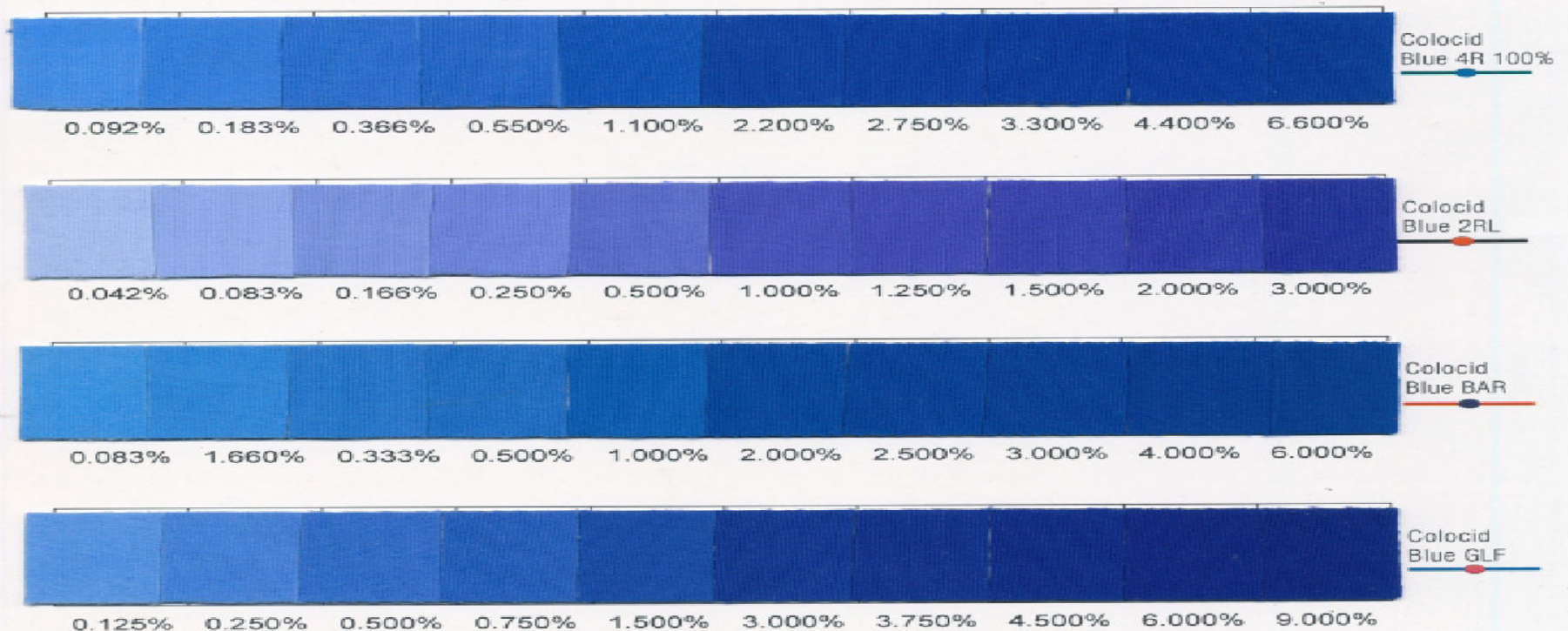
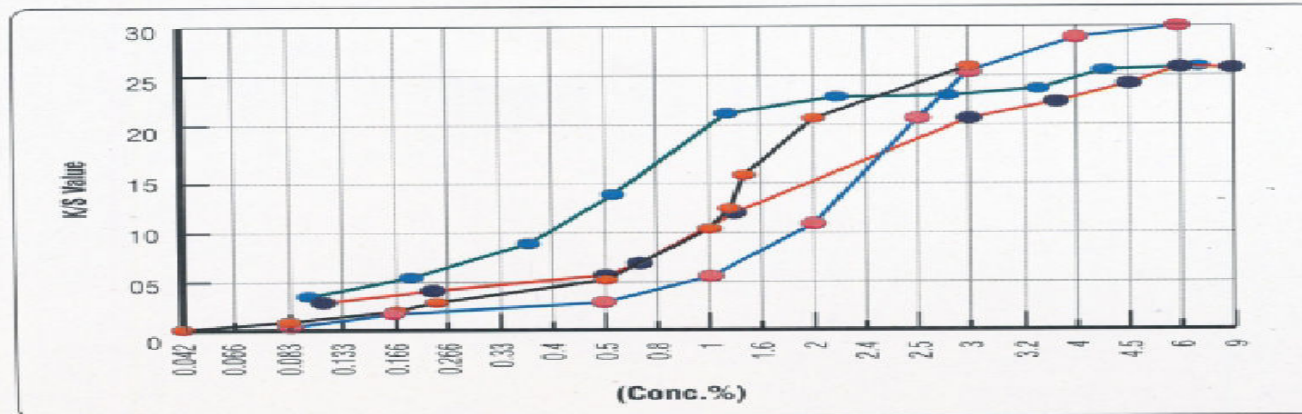
# Saturation limit of **Acid Reds** from Colocid range



## Saturation limit of **Acid Reds** from Colocid range



## Saturation limit of **Acid Blues** from Colocid range



## Washing fastness ISO 105 C06-C2S

### Colocid Yellow 4R (1.0%)

(at 1/1 std depth)

Staining before dye fixing



Polyamide 3-4 Cotton 4

Staining After dye fixing



Rating of staining

Polyamide 4 Cotton 4

Rating of staining

### Colocid G. Yellow 4RK (0.8%)

(at 1/1 std depth)

Staining before dye fixing



Polyamide 2 Cotton 3

Rating of staining

Staining After dye fixing



Polyamide 3 Cotton 3

Rating of staining

### Colocid Yellow 3RL (1.8%)

(at 1/1 std depth)

Staining before dye fixing



Polyamide 3 Cotton 4-5

Rating of staining

Staining After dye fixing



Polyamide 3-4 Cotton 4-5

Rating of staining

Original



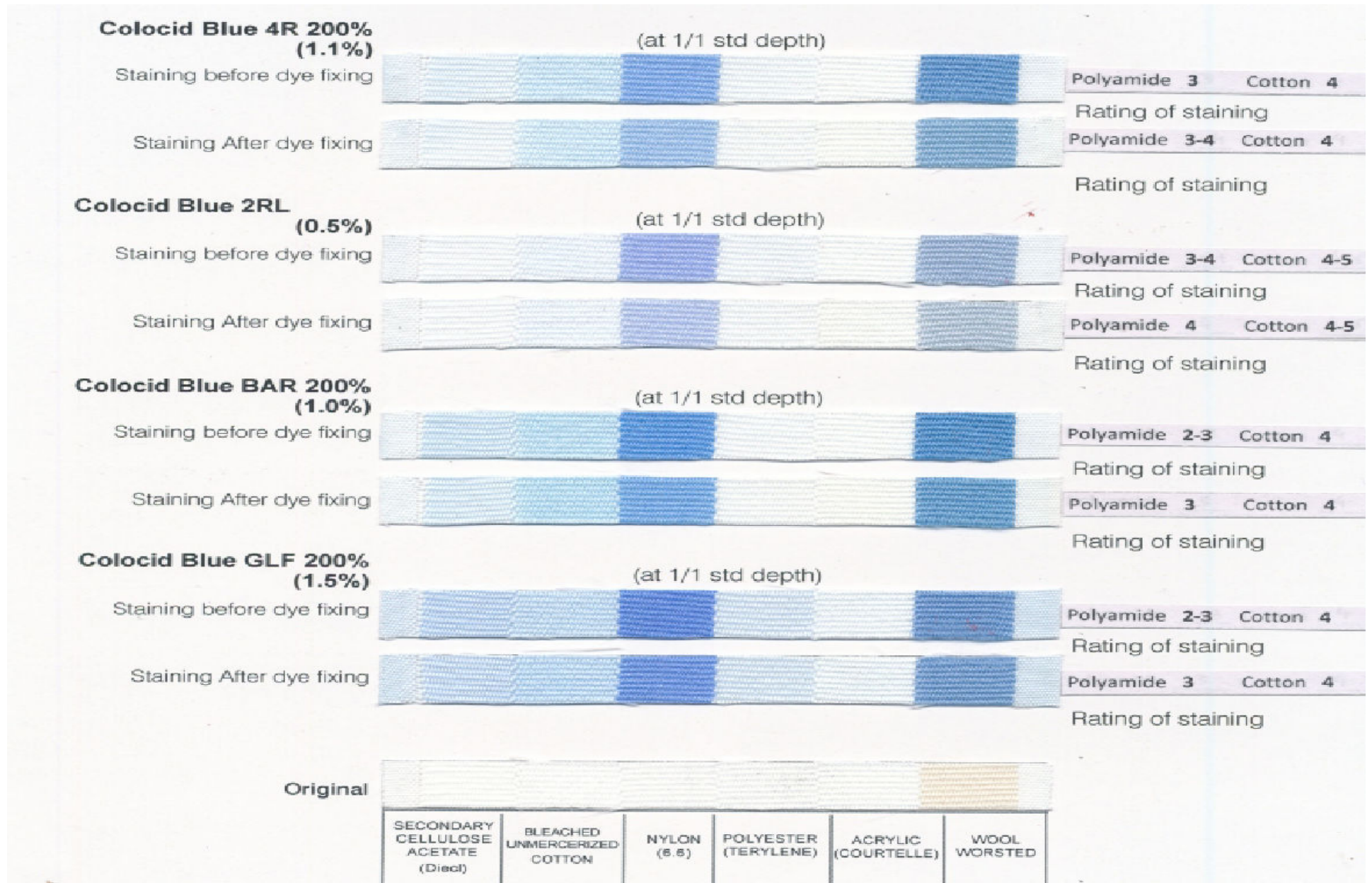
SECONDARY CELLULOSE ACETATE (Diecl)	BLEACHED UNMERCERIZED COTTON	NYLON (6.6)	POLYESTER (TERYLENE)	ACRYLIC (COURTELLE)	WOOL WORSTED
-------------------------------------	------------------------------	-------------	----------------------	---------------------	--------------



## Washing fastness ISO 105 C06-C2S

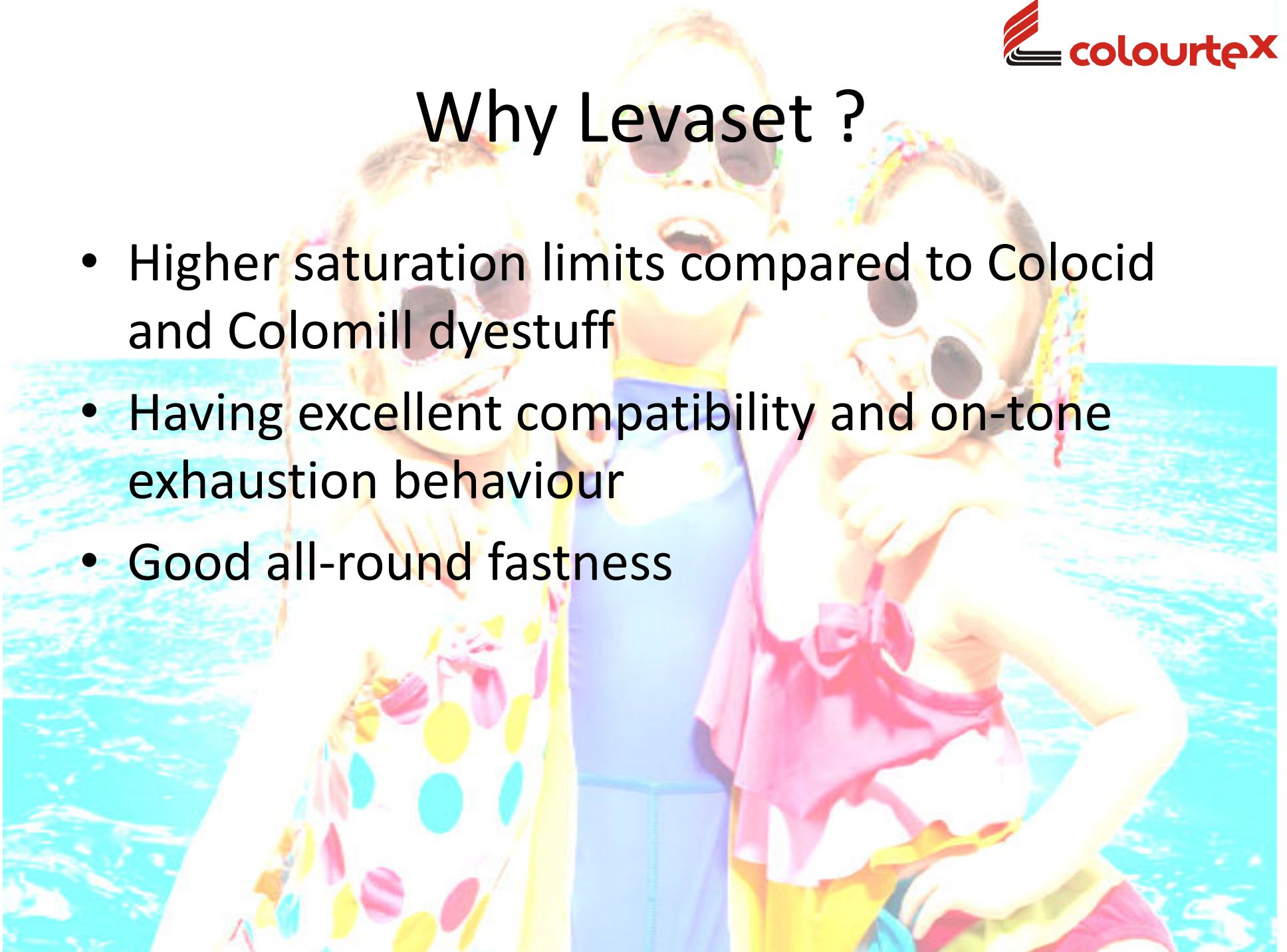
Dye	Concentration	Depth	Material	Staining before dye fixing	Staining After dye fixing	Rating of staining
Colocid Red 2B	200% (0.65%)	(at 1/1 std depth)	Polyamide			2-3
				Cotton		
Colocid Red FRL	0.5%	(at 1/1 std depth)	Polyamide			1-2
				Cotton		
Colocid Red C2F	1.6%	(at 1/1 std depth)	Polyamide			3-4
				Cotton		
Colocid Red A3G	1.0%	(at 1/1 std depth)	Polyamide			4
				Cotton		
Colocid Red NBL	0.85%	(at 1/1 std depth)	Polyamide			3-4
				Cotton		
Colocid Red M2BN	1.1%	(at 1/1 std depth)	Polyamide			4-5
				Cotton		
Original			Secondary Cellulose Acetate (Diecl)			
				Bleached Unmercerized Cotton		
			Nylon (6.6)			
			Polyester (Terylene)			
			Acrylic (Courtelles)			
			Wool Worsted			

## Washing fastness ISO 105 C06-C2S



# Why Levaset ?

- Higher saturation limits compared to Colocid and Colomill dyestuff
- Having excellent compatibility and on-tone exhaustion behaviour
- Good all-round fastness

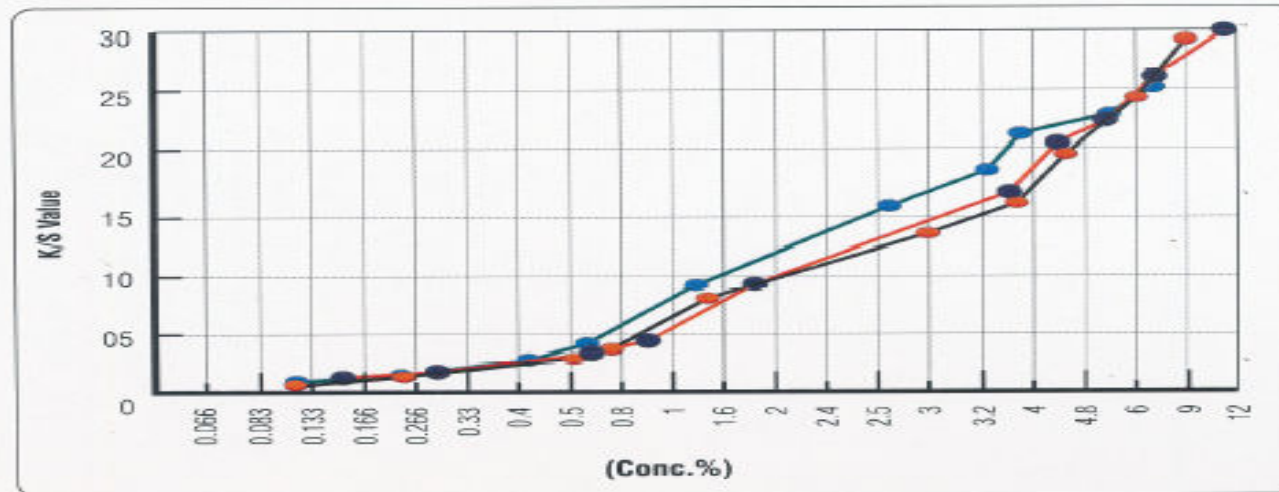


# Gamut of Levaset Dyes

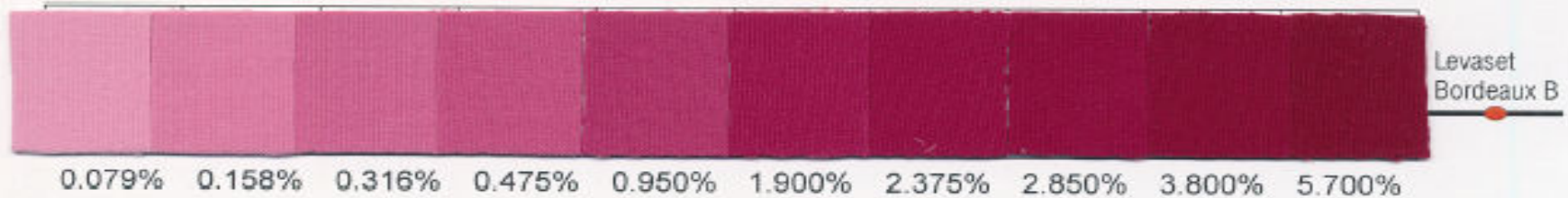
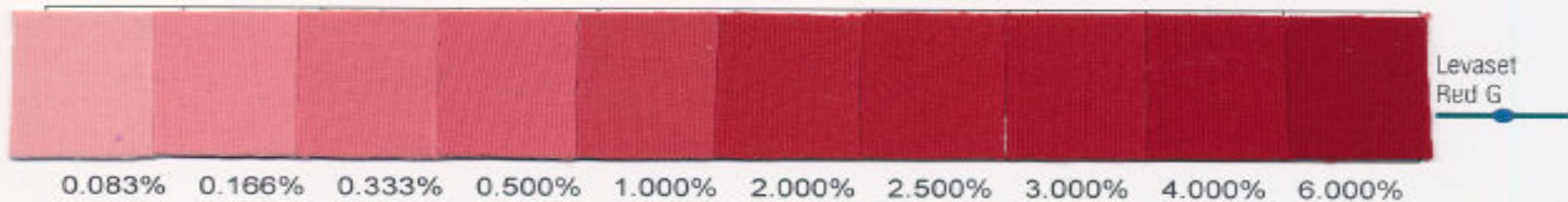
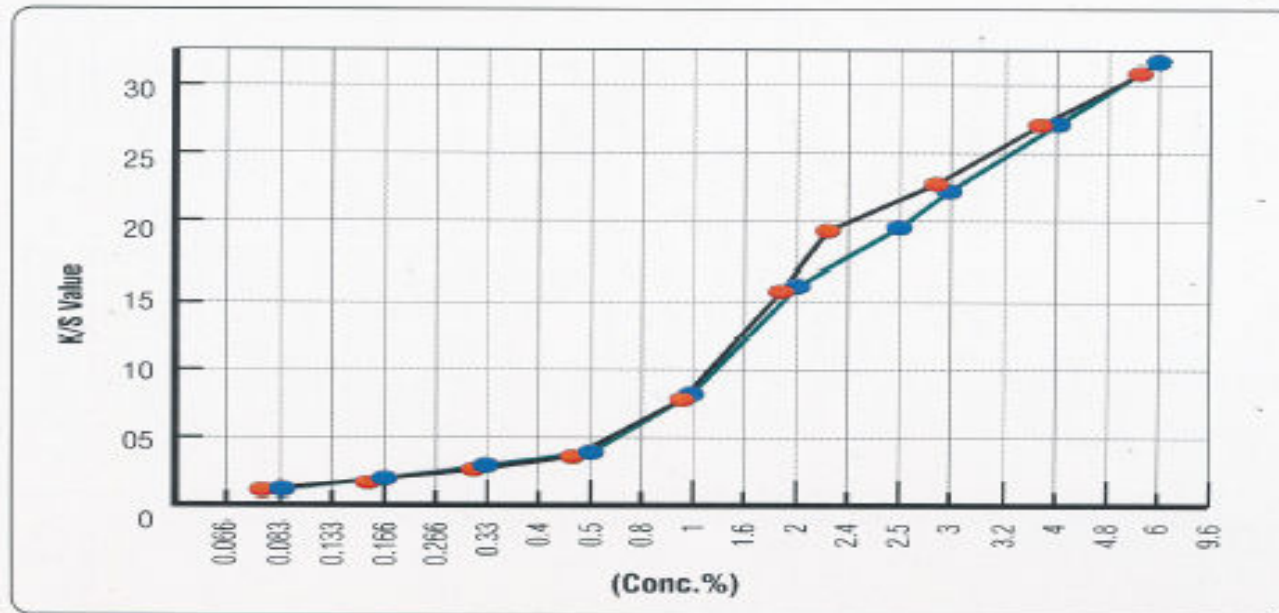


Levaset	HUES	
Yellow 4GN		<ul style="list-style-type: none"> <li>Brilliant lemon yellow for making good green shades using Levaset Blue 5G and Levaset Blue 2R</li> </ul>
Yellow 2R		<ul style="list-style-type: none"> <li>Good trichromatic Yellow with excellent build up properties for reproducible shades with Levaset Red G and Levaset Grey G. Good fastness to washing and chlorine</li> </ul>
Orange RN		<ul style="list-style-type: none"> <li>Brilliant Orange with good fastness to washing and chlorine</li> </ul>
Red G		<ul style="list-style-type: none"> <li>Red shade with good washing fastness</li> <li>Moderate fastness to chlorine</li> <li>Excellent compatibility with Levaset Yellow 2R and Grey G</li> </ul>
Bordeaux B		<ul style="list-style-type: none"> <li>Bluish Red with good fastness to washing and chlorine</li> </ul>
Violet B		<ul style="list-style-type: none"> <li>Brilliant violet with excellent build up properties</li> <li>Good washing and light fastness</li> </ul>
Blue 2R		<ul style="list-style-type: none"> <li>Brilliant Royal Blue shade with excellent build up properties</li> <li>High light fastness and washing fastness</li> </ul>
Blue 5G		<ul style="list-style-type: none"> <li>Greenish blue with good light fastness properties</li> </ul>
Green B		<ul style="list-style-type: none"> <li>Brilliant Green with good washing fastness and moderate fastness to chlorine</li> </ul>
Navy R		<ul style="list-style-type: none"> <li>Navy with excellent build up properties for dark shades with good fastness to washing and chlorine</li> </ul>
Brown G		<ul style="list-style-type: none"> <li>High wash fast reddish brown with excellent fastness to washing and chlorine</li> </ul>
Brown B		<ul style="list-style-type: none"> <li>Dark Brown with excellent fastness to chlorine</li> </ul>
Grey G		<ul style="list-style-type: none"> <li>Bluish grey with good washing and chlorine fastness.</li> <li>Excellent compatibility with Levaset Yellow 2R and Red G</li> </ul>
Black B		<ul style="list-style-type: none"> <li>Black with excellent build up properties, washing and chlorine fastness</li> </ul>

## Saturation limit of **Acid Yellows/Orange** from Levaset range

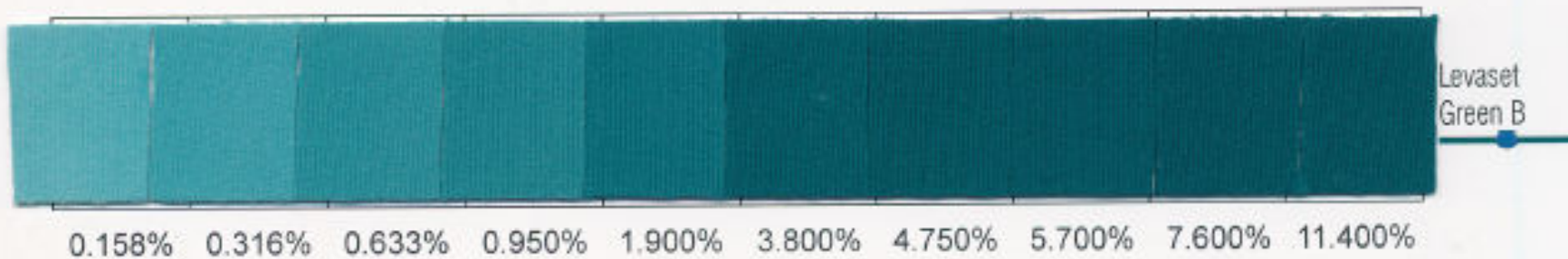
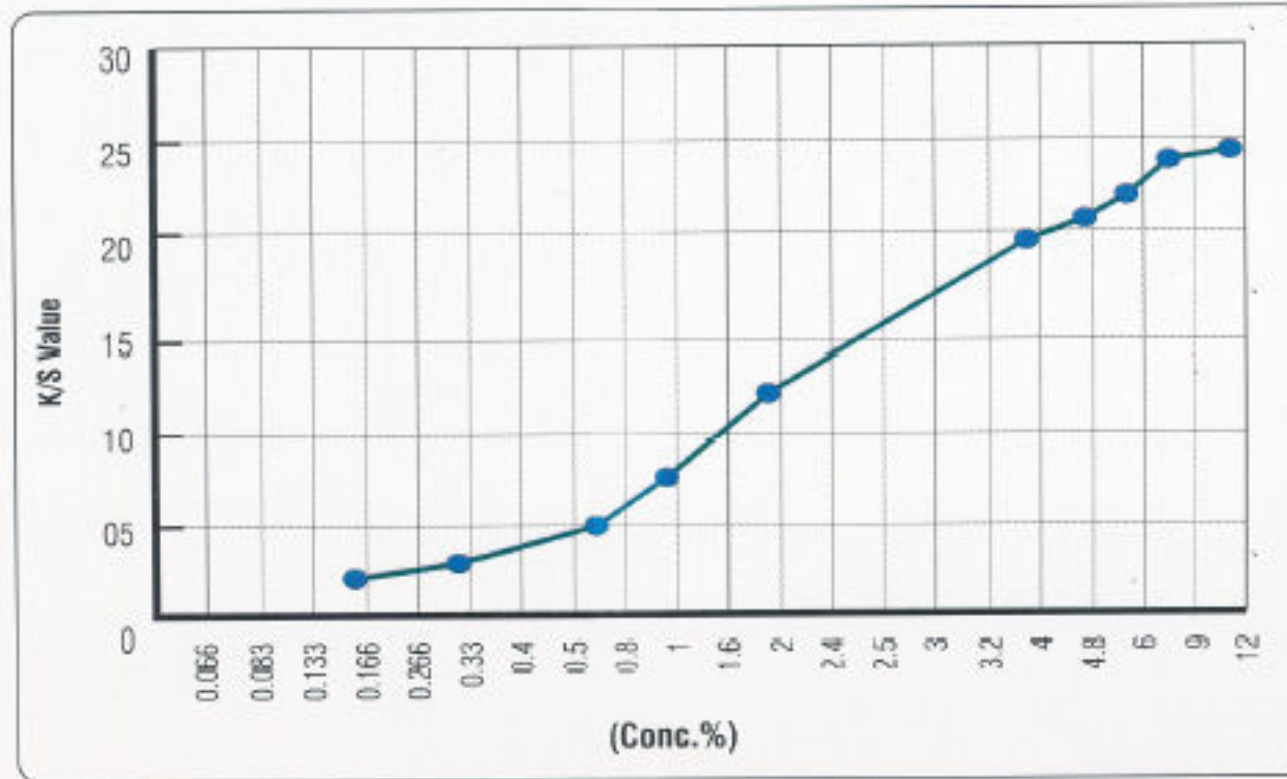


## Saturation limit of **Acid Reds** from Levaset range



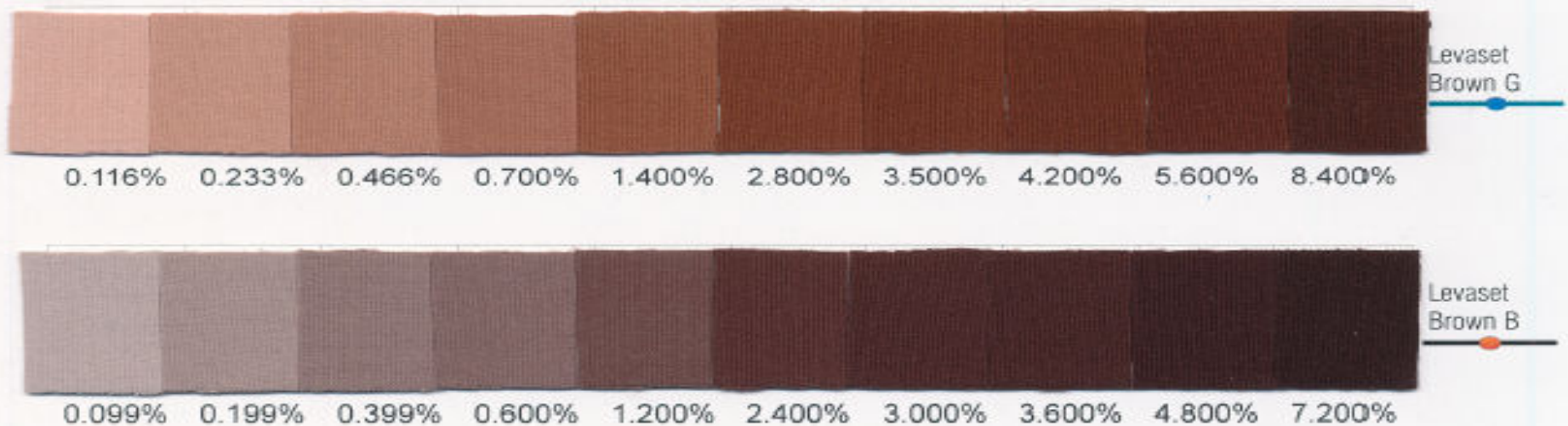
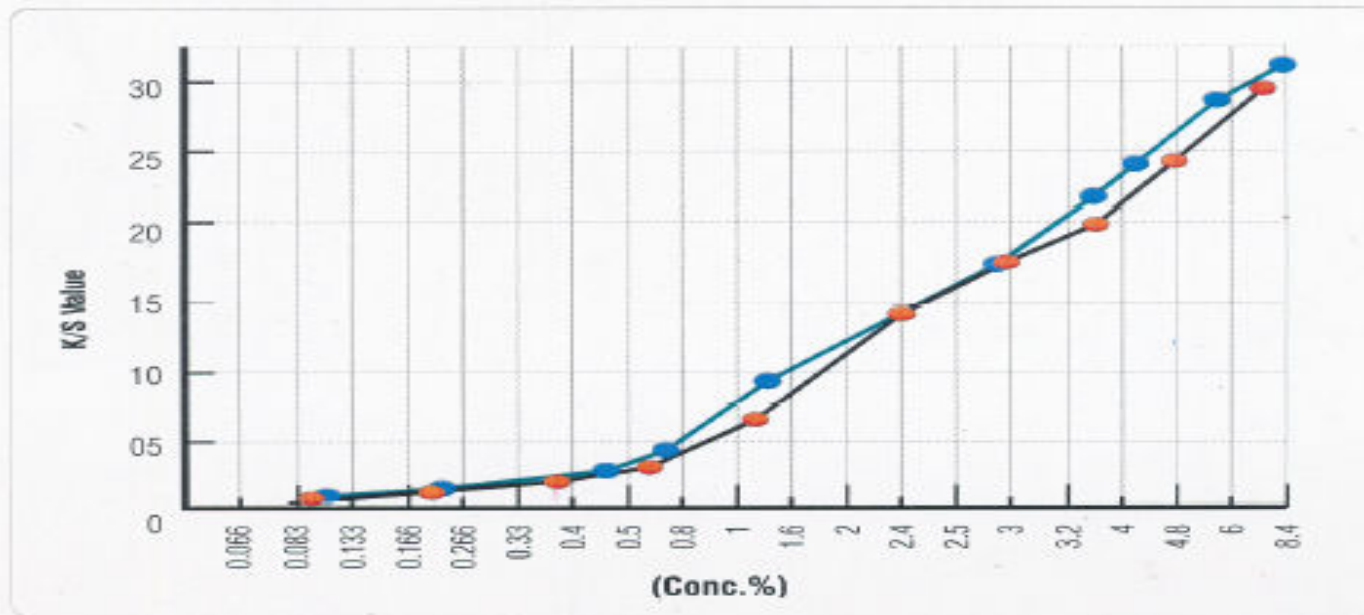


## Saturation limit of **Acid Green** from Levaset range

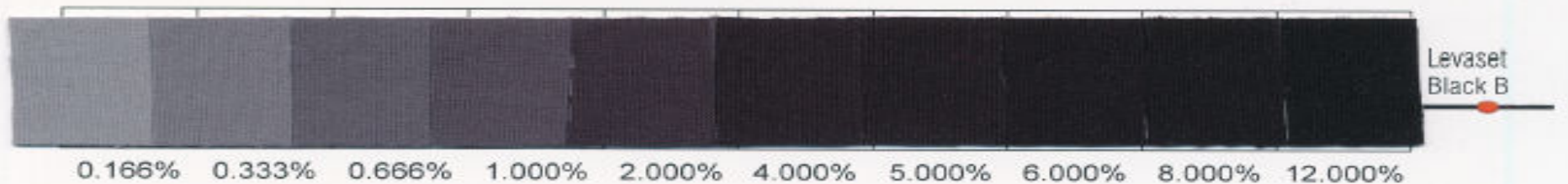
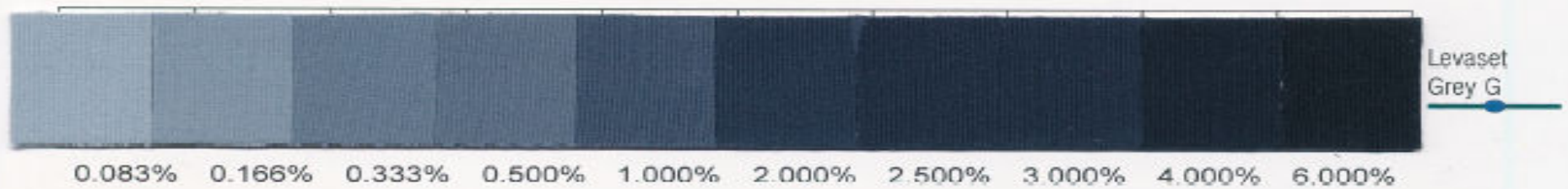
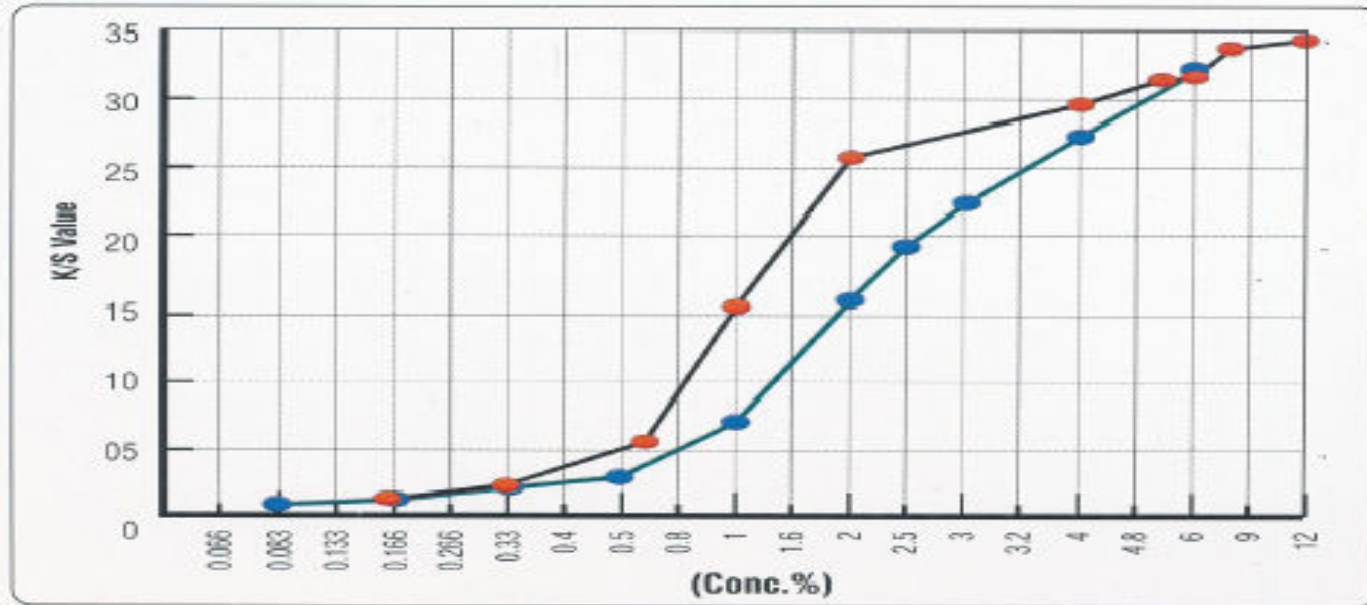




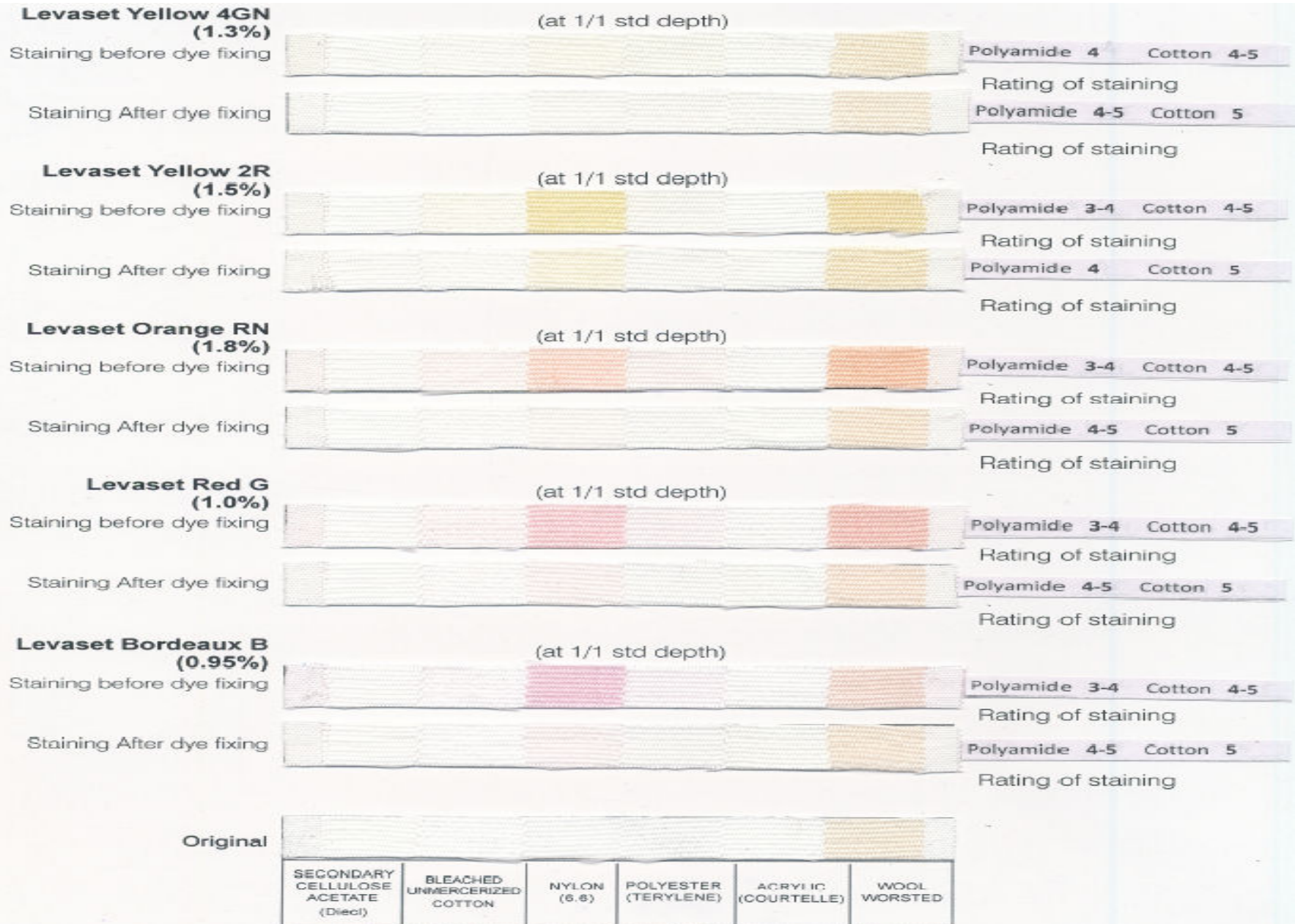
## Saturation limit of **Acid Brown** from Levaset range



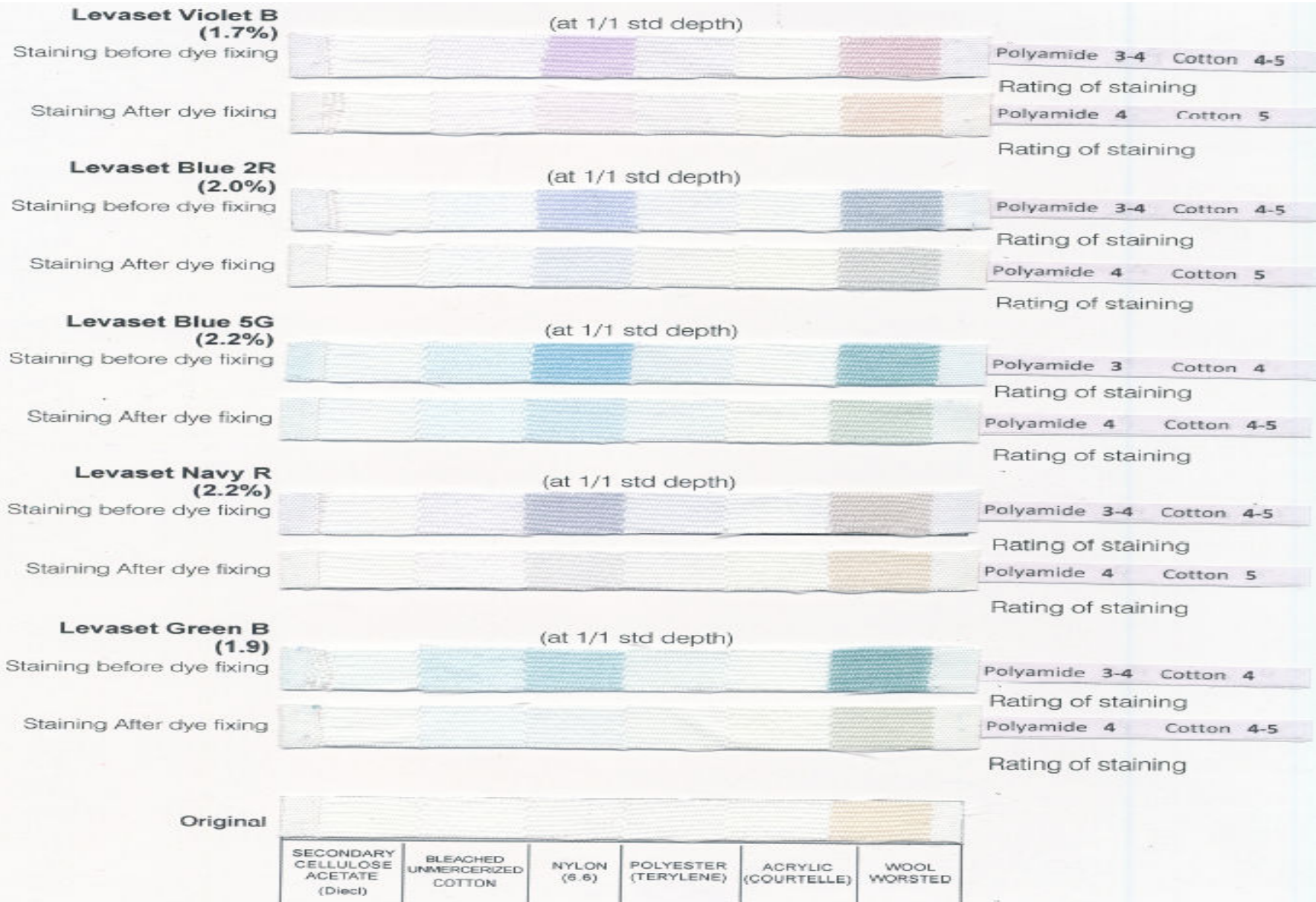
## Saturation limit of **Acid Black** from Levaset range



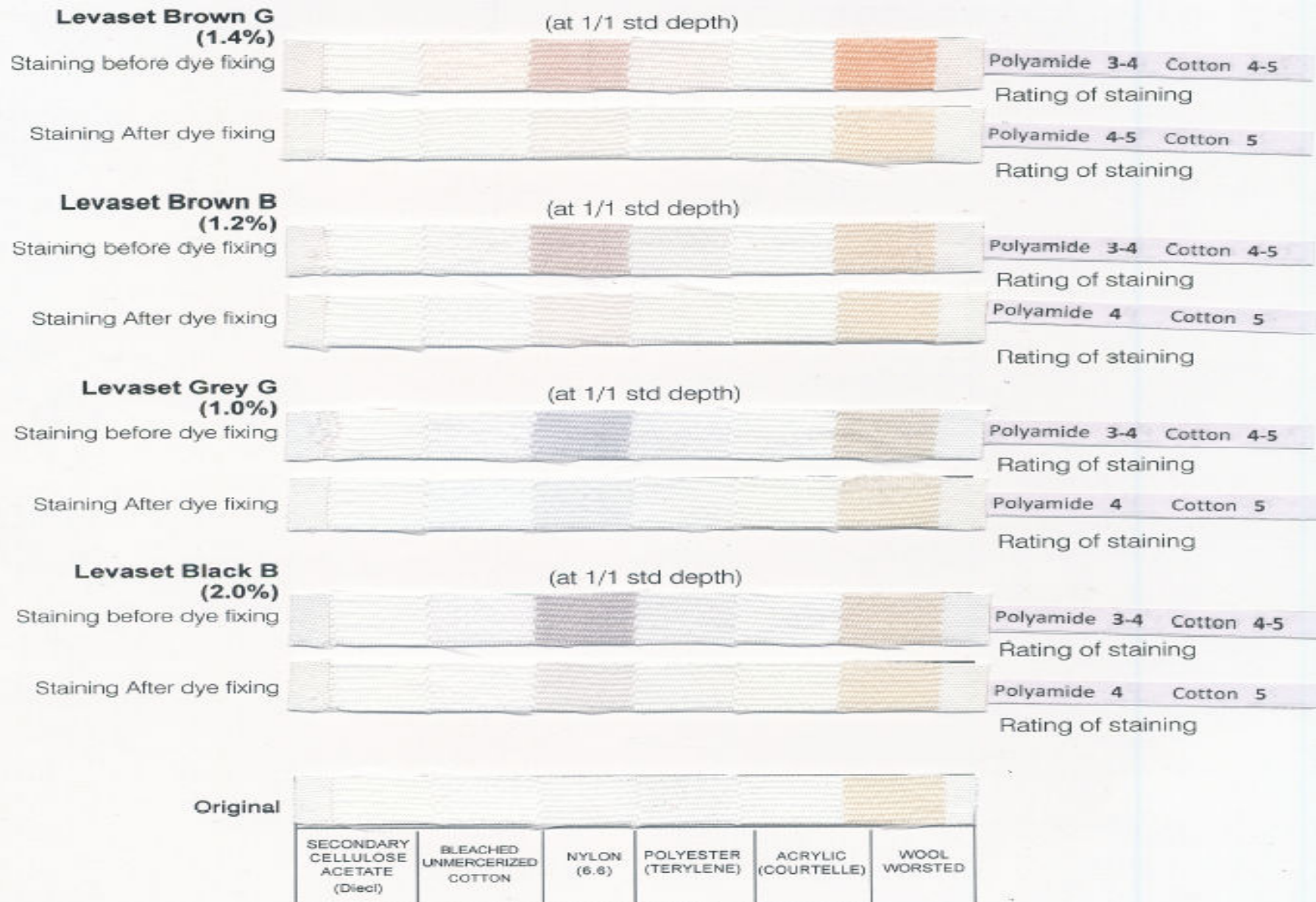
## Washing fastness of Levaset - ISO 105 C06-C2S



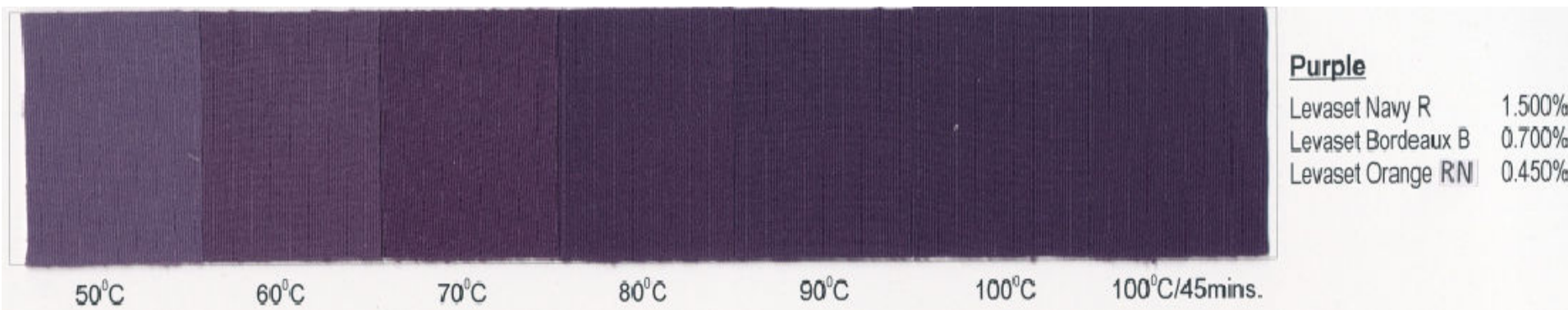
## Washing fastness of Levaset - ISO 105 C06-C2S



## Washing fastness of Levaset - ISO 105 C06-C2S



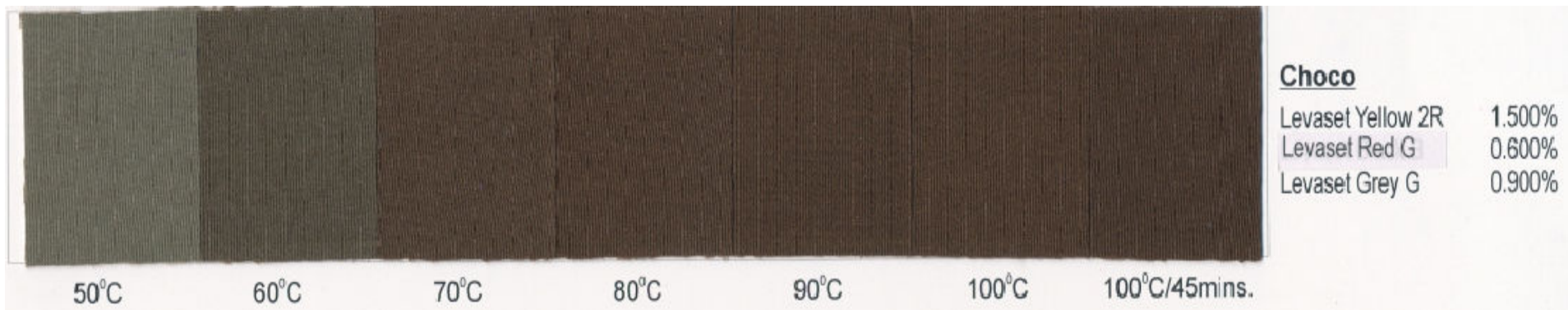
On-Tone exhaustion of Levaset dyes.. Excellent compatible dyes in trichromie



1	Shade ; - Purple	O.W.F.
	Levaset Orange RN	0.45%
	Levaset Bordeaux B	0.70%
	Levaset Navy R	1.50%
	<b>Total</b>	<b>2.65%</b>

Sr No	Shade Name	Dyeing On PA Lycra	Strength By Reflec	DE	Da	Db	DE	DL	DC	DH
				CIELab			CMC2:1			
	Purple	2.65%								
1	100 <sup>0</sup> C/45 Mins	2.65%	100.00%	Control						
2	100 <sup>0</sup> C	2.65%	101.28%	0.16	0.03	-0.02	0.12	-0.12	0.03	0.01
3	90 <sup>0</sup> C	2.65%	96.77%	0.43	0.14	0.06	0.34	0.30	0.02	0.15
4	80 <sup>0</sup> C	2.65%	89.36%	1.50	0.57	0.19	1.19	1.03	0.12	0.59
5	70 <sup>0</sup> C	2.65%	81.84%	2.99	1.44	0.82	2.53	1.87	0.16	1.69
6	60 <sup>0</sup> C	2.65%	57.11%	7.34	1.01	0.71	5.58	5.43	0.03	1.27
7	50 <sup>0</sup> C	2.65%	36.94%	13.35	0.15	-0.19	10.02	10.02	0.16	0.02

On-Tone exhaustion of Levaset dyes.. Excellent compatible dyes in trichromie

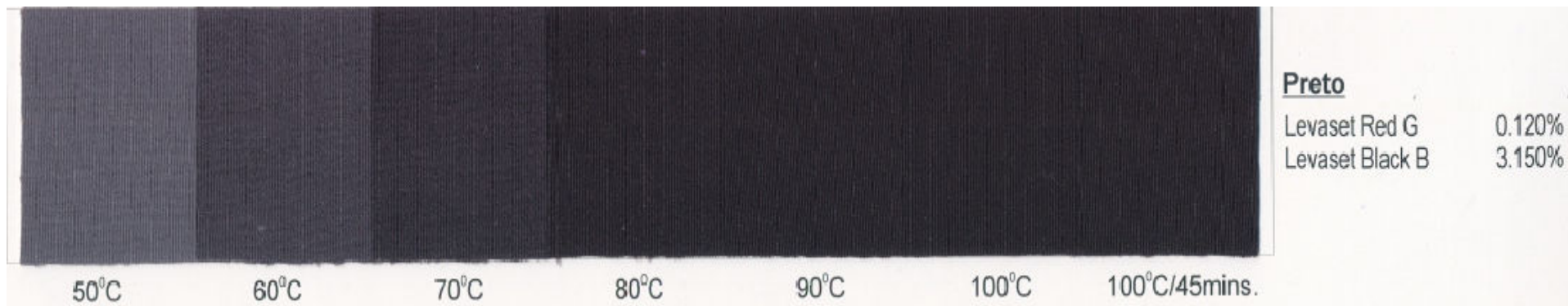


**Choco**  
 Levaset Yellow 2R 1.500%  
 Levaset Red G 0.600%  
 Levaset Grey G 0.900%

2	Shade :- Choco	O.W.F.
	Levaset Yellow 2R	1.50%
	Levaset Red G	0.60%
	Levaset Grey G	0.90%
	<b>Total</b>	<b>3.00%</b>

Sr No	Shade Name	Dyeing On PA Lycra	Strength By Reflec	DE	Da	Db	DE	DL	DC	DH
	<b>Choco</b>	3.00%		<b>CIELab</b>			<b>CMC2:1</b>			
<b>1</b>	<b>100°C/45 Mins</b>	3.00%	<b>100.00%</b>	<b>Control</b>						
2	100°C	3.00%	<b>97.32%</b>	0.75	0.18	0.54	0.61	0.33	0.50	0.11
3	90°C	3.00%	<b>94.84%</b>	1.04	0.08	0.61	0.84	0.57	0.52	0.33
4	80°C	3.00%	<b>89.26%</b>	1.56	0.00	0.35	1.11	1.04	0.28	0.26
5	70°C	3.00%	<b>78.72%</b>	3.07	-0.51	-0.02	2.23	2.07	-0.20	0.81
6	60°C	3.00%	<b>58.47%</b>	7.80	-3.30	-0.25	7.36	7.83	-0.96	5.47
7	50°C	3.00%	<b>33.11%</b>	16.44	-5.23	0.67	14.09	10.64	-0.02	9.23

On-Tone exhaustion of Levaset dyes.. Excellent compatible dyes in trichromie



<b>3</b>	<b>Shade :- Preto</b>	<b>O.W.F.</b>
	Levaset Red G	0.12%
	Levaset Black B	3.15%
	<b>Total</b>	<b>3.25%</b>

Sr No	Shade Name	Dyeing On PA Lycra	Strength By Reflec	DE	Da	Db	DE	DL	DC	DH
				CIELab			CMC2:1			
	Purple	3.27%								
<b>1</b>	<b>100°C/45 Mins</b>	3.27%	<b>100.00%</b>	<b>Control</b>						
2	100 °C	3.27%	<b>102.53%</b>	0.28	0.04	0.04	0.26	-0.24	-0.06	0.05
3	90 °C	3.27%	<b>103.80%</b>	0.42	0.07	0.04	0.38	-0.36	-0.06	0.09
4	80 °C	3.27%	<b>96.11%</b>	0.43	-0.03	-0.10	0.39	0.37	0.12	-0.02
5	70 °C	3.27%	<b>67.13%</b>	4.58	-0.38	-0.73	4.10	3.98	0.91	-0.33
6	60 °C	3.27%	<b>41.67%</b>	10.64	-0.75	-1.38	9.48	9.30	1.75	-0.61
7	50 °C	3.27%	<b>21.10%</b>	20.18	-1.11	-1.59	17.90	17.75	2.10	-0.95



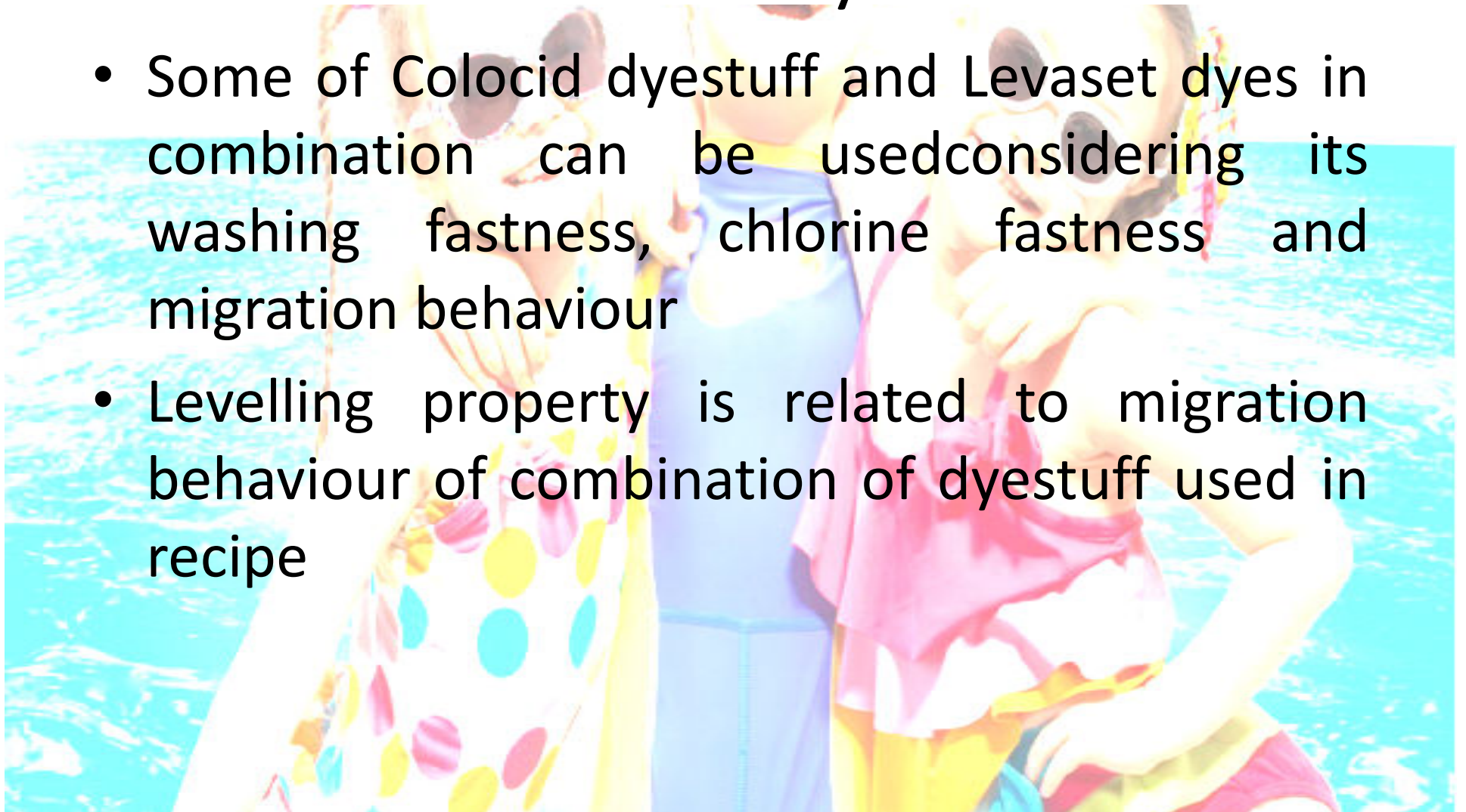
## Chlorine Fastness comparative

No	Product Name	Fastness To Chlorinated Pool Water ISO105 E03 (at 1/1 SD)	
		Grey Scale for Color Change	
		20 ppm	50 ppm
1	Colocid G.Yellow 4RK	4-5	4-5
2	Colocid Yellow 4R	4	3
3	Colocid Yellow 3RL	4-5	4
4	Colocid Red 2B	4	3-4
5	Colocid Red FRL	3-4	3
6	Colocid Red C2F	4-5	2-3
7	Colocid Red A3G	4-5	4
8	Colocid Red NBL	5	4-5
9	Colocid Red M 2BN	4-5	4
10	Colocid Blue 4R 200%	4	2-3
11	Colocid Blue 2RL Crude	4-5	2
12	Colocid Blue BAR 200%	4-5	2
13	Colocid Blue GLF 200%	4-5	3-4

No	Product Name	Fastness To Chlorinated Pool Water ISO105 E03 (at 1/1 SD)	
		Grey Scale for Color Change	
		20 ppm	50 ppm
1	Levaset Yellow 4GN	3-4	2-3
2	Levaset Yellow 2R	4-5	4
3	Levaset Orange RN	5	4-5
4	Levaset Red G	4	3
5	Levaset Bourdeaux B	4	3-4
6	Levaset Violet B	2	1
7	Levaset Blue 2R	3-4	2-3
8	Levaset Blue 5G	3-4	2
9	Levaset Green B	4	3
10	Levaset Navy R	4-5	3-4
11	Levaset Brown G	4-5	4-5
12	Levaset Brown B	4-5	4
13	Levaset Grey G	3-4	3-4
14	Levaset Black B	4-5	4-5

# Recipe formulation with Levaset and Colocid dyes

- Some of Colocid dyestuff and Levaset dyes in combination can be used considering its washing fastness, chlorine fastness and migration behaviour
- Levelling property is related to migration behaviour of combination of dyestuff used in recipe



## Migration behaviour of Colocid and Levaset dyes

	A	B	C	Migration
Colocid Yellow 4R (6.0%)				102.17%
Colocid G. Yellow 4RK (4.8%)				95.57%
Colocid Yellow 3RL (8.0%)				90.07%
Levaset Yellow 4GN (7.8%)				93.03%
Levaset Yellow 2R (9.0%)				91.95%
Levaset Orange RN (10.8%)				96.03%

**A = Original dyed fabric**  
**B = Original dyed after Migration test**  
**C = Adjacent fabric after Migration test**

# Migration behaviour of Colocid and Levaset dyes

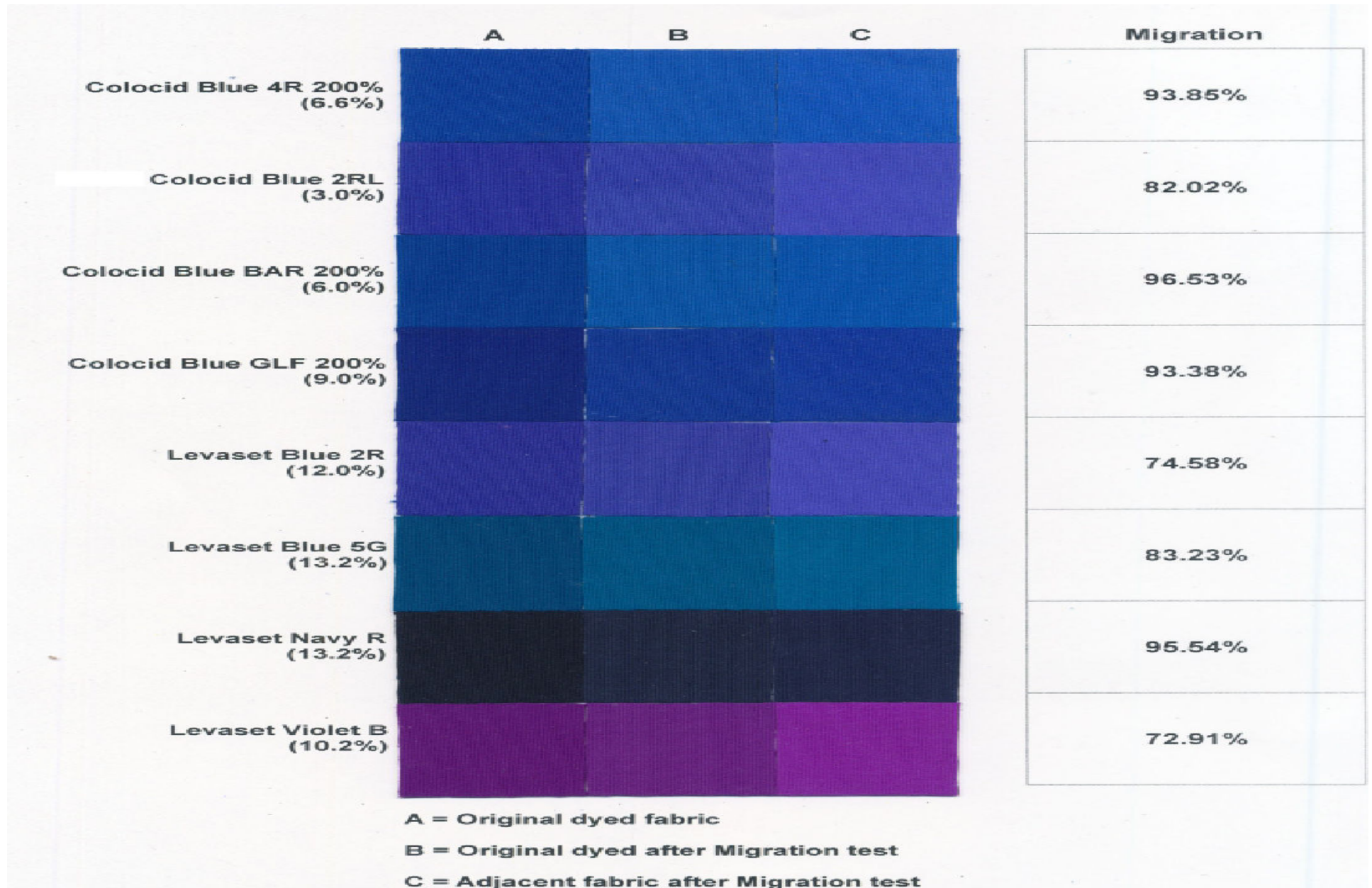
	A	B	C	Migration
Colocid Red 2B 200% (3.9%)				92.41%
Colocid Red FRL (3.0%)				97.34%
Colocid Red C2F (9.6%)				92.78%
Colocid Red A3G (6.0%)				86.67%
Colocid Red NBL (5.1%)				92.40%
Colocid Red M2BN (6.6%)				92.26%
Levaset Red G (6.0%)				81.32%
Levaset Bordeaux B (5.7%)				81.74%

A = Original dyed fabric

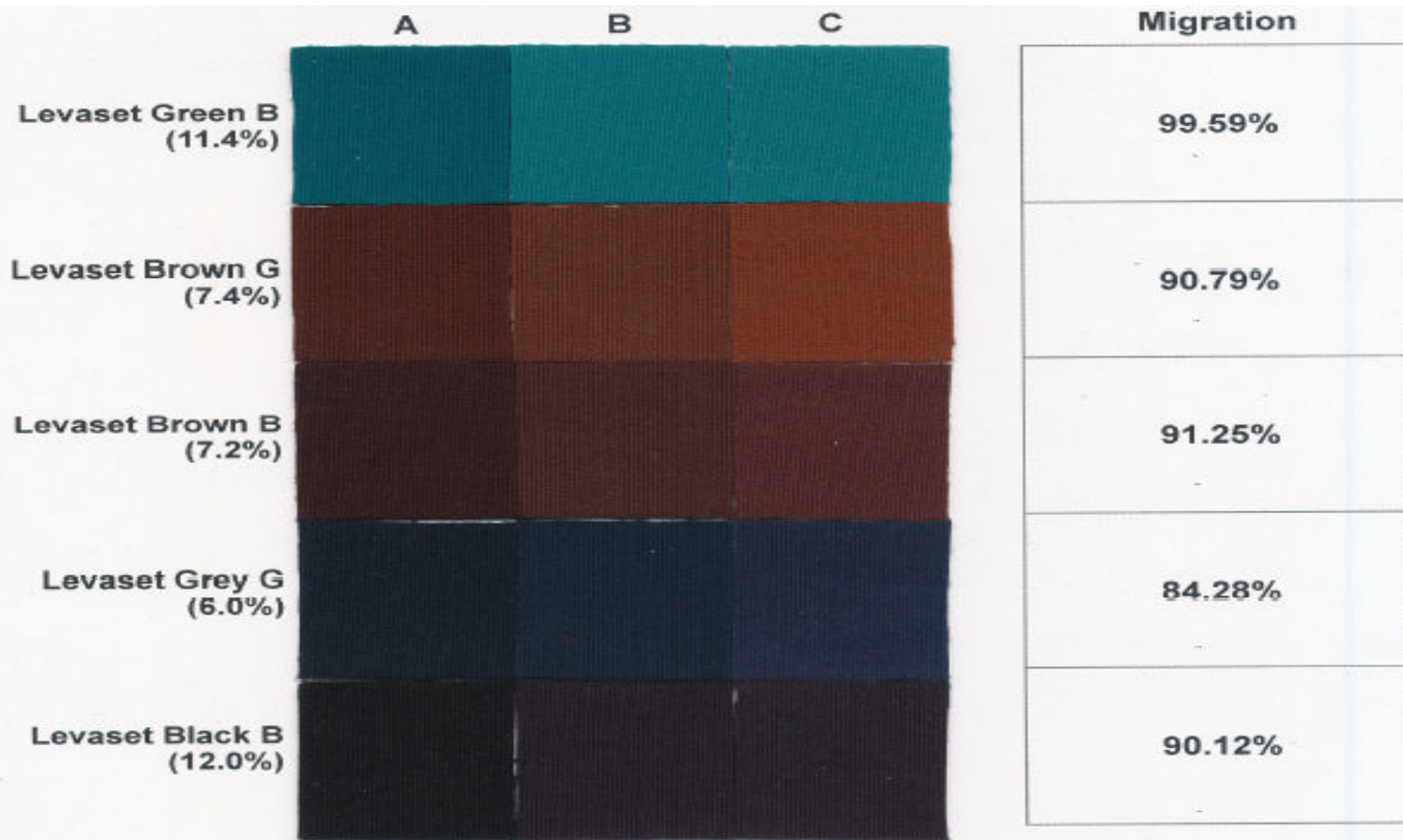
B = Original dyed after Migration test

C = Adjacent fabric after Migration test

## Migration behaviour of Colocid and Levaset dyes



# Migration behaviour of Colocid and Levaset dyes



**A = Original dyed fabric**

**B = Original dyed after Migration test**

**C = Adjacent fabric after Migration test**

## Popular Swimwear shades with fastness (after dyefixing)

### Jubilee

#### Recipe

Colocid Red C2F	0.015%
Colomill Red M2BN	1.192%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 4-5 Cotton 5



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 5



Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 4-5

### Scarlet

#### Recipe

Colocid Yellow 4R	0.525%
Colocid Red NBL	0.530%
Colomill Red M2BN	0.910%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 4 Cotton 3-4



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 4-5



Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 4-5

### Marinho

#### Recipe

Levaset Yellow 2R	0.450%
Colocid Red A3G	0.100%
Levaset Navy R	2.800%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 4



Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 3

Original					
SECONDARY CELLULOSE ACETATE (Diel)	BLEACHED UNMERCERIZED COTTON	NYLON (6.6)	POLYESTER (TERYLENE)	ACRYLIC (COURTELLE)	WOOL WORSTED

## Popular Swimwear shades with fastness (after dyefixing)

### Cherry

#### Recipe

Colocid Yellow 4R	0.120%
Levaset Bordeaux B	1.200%
Levaset Brown B	0.160%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 4



Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 2

### Carmim

#### Recipe

Colomill Red M2BN	0.996%
Levaset Violet B	0.087%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 4-5 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 4

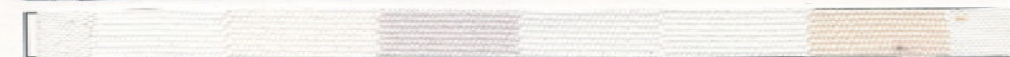


Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 3

### Preto

#### Recipe

Levaset Red G	0.120%
Levaset Black B	3.150%



Fastness to washing (ISO 105 C06 C2S)  
Staining :- Polyamide 3-4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)  
Rating of Shade Change : 4-5



Fastness to Chlorine (ISO 105 E03 50ppm)  
Rating of Shade Change : 3

#### Original

SECONDARY CELLULOSE ACETATE (Diac)	BLEACHED UNMERCERIZED COTTON	NYLON (6.6)	POLYESTER (TERYLENE)	ACRYLIC (COURTELLE)	WOOL WORSTED
------------------------------------	------------------------------	-------------	----------------------	---------------------	--------------



## Popular Swimwear shades with fastness (after dyefixing)

### Choco

#### Recipe

Levaset Yellow 2R	1.500%
Levaset Red G	0.600%
Levaset Grey G	0.900%



Fastness to washing (ISO 105 C06 C2S)

Staining :- Polyamide 4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)

Rating of Shade Change : 4-5



Fastness to Chlorine (ISO 105 E03 50ppm)

Rating of Shade Change : 4

### Grafite

#### Recipe

Colocid Yellow 3RL	0.230%
Levaset Red G	0.110%
Levaset Navy R	0.820%



Fastness to washing (ISO 105 C06 C2S)

Staining :- Polyamide 4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)

Rating of Shade Change : 4-5



Fastness to Chlorine (ISO 105 E03 50ppm)

Rating of Shade Change : 3

### Remirez

#### Recipe

Colocid Red NBL	0.177%
Colomill Red M2RN	1.115%
Levaset Violet B	1.007%



Fastness to washing (ISO 105 C06 C2S)

Staining :- Polyamide 4 Cotton 4-5



Fastness to Chlorine (ISO 105 E03 20 ppm)

Rating of Shade Change : 3



Fastness to Chlorine (ISO 105 E03 50ppm)

Rating of Shade Change : 1



Original

SECONDARY CELLULOSE ACETATE (Died)	BLEACHED UNMERCERIZED COTTON	NYLON (6.6)	POLYESTER (TERYLENE)	ACRYLIC (COURTELLE)	WOOL WORSTED
------------------------------------	------------------------------	-------------	----------------------	---------------------	--------------

A photograph of three children (two girls and one boy) wearing colorful swimsuits and sunglasses, smiling and posing on a beach with blue water and a clear sky in the background. The boy is in the center, wearing a blue swimsuit with a yellow fish graphic. The girl on the left is wearing a white swimsuit with colorful polka dots. The girl on the right is wearing a pink swimsuit with a large bow. They are all wearing colorful sunglasses. A yellow banner with the text "Thank you..." is overlaid at the bottom.

**Thank you...**