Technical Information

(vol.14)

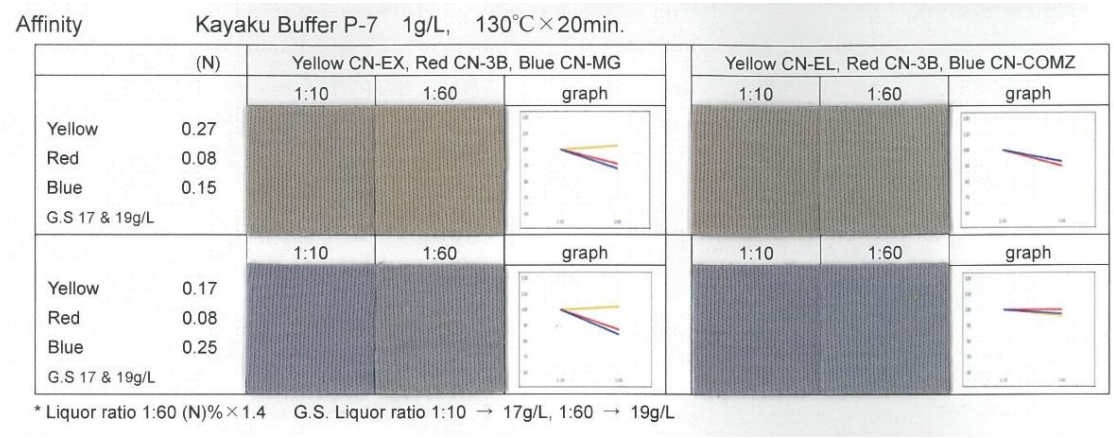
Nippon Kayaku (Thailand) CO., LTD.
Technical Service Center

[New Kayacelon React trichromatic colors]

*KYR = Kayacelon React
For an introduction on the properties and use of Kayacelon React series in general, please see Kayacelon React introduction (PDF).

(1) KYR new trichromatic color: Liquor ratio dependency

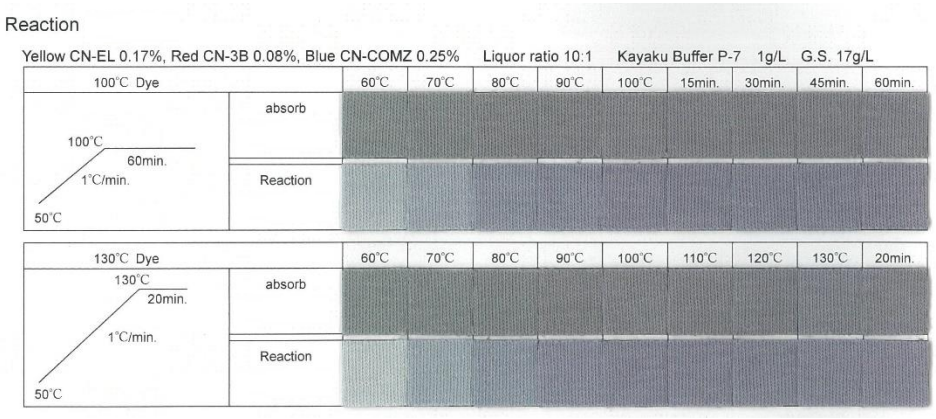
- The new KYR trichromatic colors have matching affinity of the trichroma due to the development of new yellow and blue colors compared to the previous KYR trichromatic colors of KYR Yellow CN-EX, Red CN-3B, and Blue CN-MG.
- We believe that the improved matching of affinity and excellent dyeing reproducibility of the new KYR trichromatic colors will help significantly reduce the dyeing loss and will greatly contribute to improving customer dyeing efficiency.



Graph 1: Liquor Ratio dependency (Affinity) of KYR new trichroma

- Graph 1 shows the liquor ratio dependency of the previous KYR trichromatic colors to the new KYR trichromatic colors at liquor ratio 1:10 and 1:60. The new KYR trichroma shows much less change or dependency on the liquor ratio.

(2) KYR new trichromatic color: Step dyeing



Graph 2: Step-dyeing (Reactivity) of KYR new trichroma

- The rate of dyeing of each of the new three primary colors shown in Graph 2 are almost the same as the previous three primary colors, and the reaction speed of KYR Red CN-3B is slightly slower. With 100℃ dyeing, reactive dye fixation is completed in about 45 minutes.
- If the customer has an atmospheric pressure dyeing machine, the maximum temperature will be 97-98℃. In this case, it is recommended for the customer to dye at this maximum temperature for 60 minutes.
- High temperature dyeing is recommended for customers with high-temperature high-pressure dyeing equipment because at high temperatures, even if the temperature fluctuates a little, the fixation is more stable.
- The required time of dyeing will differ depending on the dyeing machine, machine stirring rate, and dyeing concentration at 100℃ and 130℃.
- From previous tests, it has also been confirmed that for KYR dyes, the fixation at 130℃ x 20 minutes is equivalent to the fixation at 115℃ x 45 minutes, so the dyeing temperature chosen will depend on the customer's situation.

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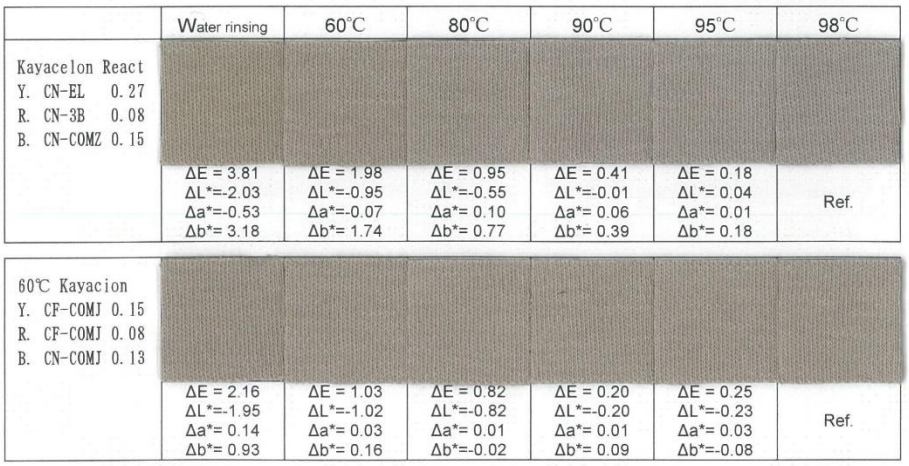
(3) KYR new trichromatic color: Soaping



Graph 3: Soaping properties of KYR new trichroma

- Graph 3 shows a comparison of the wash-off properties of the three new KYR primary colors. The recommended soaping temperatures for the new KYR trichromatic colors are 90℃ or higher at 0.1% o.w.f. (preferably 95℃ or higher) and 95℃ or higher at 0.5% o.w.f.
- In comparison, the recommending soaping temperature of the 60℃ reactive dye series KCN CF-COMJ trichroma is 80℃ or higher at 0.08% o.w.f. and 90℃ or higher at 0.4% o.w.f.
- Usually, when excellent reproducibility of KYR dyes cannot be achieved, it is due to insufficient soaping temperature.
- Although some customers who use KYR dyes perform soaping at 60-80℃, KYR wash-off properties are inferior to that of 60℃ reactive dyes, possibly resulting in less reproducibility or color shift due to insufficient soaping temperatures.

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(4) KYR new trichromatic color: Fastness

- Graph 4 shows a comparison of the fastness of the new KYR trichromatic colors compared with the previous trichromatic colors (Yellow CN-EX, Red CN-3B, Blue CN-MG).
- The new KYR trichromatic colors display the same level of light fastness and perspiration light fastness as the previous trichroma, but with slightly better chlorine water fastness.

Fastness Test		Light (Xenon-arc) Grade 4	Perspiration Light (Xenon-arc)	Chlorinated water 10ppm	
				original	Change
		4	4		3-4
KYR Yellow CN-EX	0.054				
KYR Red CN-3B	0.016				
KYR Blue CN-MG	0.030				
		4	4		4
KYR Yellow CN-EL	0.054				
KYR Red CN-3B	0.016				
KYR Blue CN-COMZ	0.030				

Graph 4: Fastness properties of KYR new trichroma

- The new KYR trichromatic colors can replace the previous KYR trichroma as it is. KYR Yellow CN-EL has been developed as an approximate color to KYR Yellow CN-EX, and KYR Blue CN-COMZ has also been developed as an approximate color to KYR Blue CN-MG.
- Although the technical information and recommended recipes in this document are based on our latest knowledge, we recommend preliminary tests in all cases because they are limited laboratory test data. When considering test or use, please confirm under your current dyeing conditions.

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