

PROCESS INFORMATION RA-4

RA-4 chemicals are designed for the processing of a wide range of RA-4 compatible Colour Papers in various processor types, e.g. Minilab, Roller Transport and Continuous Flow (CF) machines, applied in different variants.

The Colour Paper passes through 3 processing steps: Colour Developer, Bleach Fix and Super Stabilizer. Instead of a Super Stabilizer, a water wash with at least two tanks can be used as an alternative.

Calbe RA-4 Colour Developers are available in several versions with different replenishment rates and sizes, which are applied depending on the laboratory's technical equipment and utilisation. All products are designed as single-part concentrates, ensuring particularly easy and safe handling.

With the Bleach Fix RA-4 BX-VR Vario Rate different replenishment rates can be set of either 70 ml/m² (Intermediate Rate), or 108 ml/m² (Medium Rate) or 215 ml/m² (Standard Rate), depending on different dilution of the 1-part BX concentrate with water. The choice for a replenishment rate is depending on the utilisation.

The Super Stabilizer is applied in a cascade of 3 or 4 tanks, with the replenisher fed into the last tank. From there, in each case the overflow enters the tank located in front of it. The overflow from the first tank is disposed of.

PROCESS RA-4

Processing step	Time	Temperature range	Replenishment range
Colour Developer	45 s	35°C- 38°C	60 - 160 ml/m ²
Bleach Fix	45 s	33°C- 39°C	54 - 215 ml/m ²
Super Stabilizer	90 s	33°C- 39°C	200 - 350 ml/m ²
Alternatively, instead of a Super Stabilizer:			
Water wash	≥ 90 s	32°C ± 3°C	≥ 6,5 L/m ² (2 Tanks) ≥ 4,3 L/m ² (3 Tanks) ≥ 2,2 L/m ² (4 Tanks)

RA-4 COLOUR DEVELOPER

Product	Code	Time	Temperature	Replenishment rate/m ²
Colour Developer <i>Standard Rate</i>	CD-R 160	45 s	35°C ± 0,3°C (!)	160 ml/m ²
Colour Developer <i>Medium Rate</i>	CD-MR 108	45 s	38°C ± 0,3°C	108 ml/m ²
Colour Developer <i>Low Rate</i>	CD-LR 80	45 s	38°C ± 0,3°C	80 ml/m ²
Colour Developer <i>Super Low Rate</i>	CD-SLR 60	45 s	38°C ± 0,3°C	60 ml/m ²

Product	Code	Pack	Yield	Art.No.
Colour Developer Replenisher <i>Standard Rate</i>	CD-R 160	for 4 x 10 L	for ca. 250 m ²	REF 12010
Colour Developer Replenisher <i>Medium Rate</i>	CD-MR 108	for 4 x 10 L	for ca. 370 m ²	REF 12210
	CD-MR 108	60 L for 600 L	for ca. 5,555 m ²	REF 12215
Colour Developer Replenisher <i>Low Rate</i>	CD-LR 80	for 4 x 10 L	for ca. 500 m ²	REF 12310
	CD-LR 80	10 L for 100 L	for ca. 1,250 m ²	REF 12315
Colour Developer Replenisher <i>Super Low Rate</i>	CD-SLR 60	60 L for 500 L	for ca. 8,333 m ²	REF 12410

RA-4 BLEACH FIX

Product	Application	Time	Temperature	Replenishment rate/m ²
Bleach Fix Replenisher <i>Vario Rate</i>	as Standard Rate BX-R	45 s	36°C ± 3°C	215 ml/m ²
Bleach Fix Replenisher <i>Vario Rate</i>	as Medium Rate BX-MR	45 s	36°C ± 3°C	108 ml/m ²
Bleach Fix Replenisher <i>Vario Rate</i>	as Intermediate Rate BX-IR	45 s	36°C ± 3°C	70 ml/m ²
Bleach Fix Replenisher <i>Vario Rate</i>	as Low Rate BX-LR	45 s	36°C ± 3°C	54 ml/m ²
Bleach Fix Replenisher <i>Low Rate</i>	Low Rate BX-LR	45 s	36°C ± 3°C	54 ml/m ²

Product	Code	Pack	Yield	Art.No.
Bleach Fix Replenisher <i>Vario Rate</i>	BX-VR	for 5 x 7-10 L	for ca. 232-357 m ²	REF 12660
Bleach Fix Replenisher <i>Vario Rate</i>	BX-VR	20 L conc. for 40 - 100 L	for ca. 465-740 m ²	REF 12662
Bleach Fix Replenisher <i>Vario Rate</i>	BX-VR	60 L conc. for 120 - 300 L	for ca. 1,395-2,222 m ²	REF 12665
Bleach Fix Replenisher <i>Low Rate</i>	BX-LR 54	for 2 x 10 L	for ca. 370 m ²	REF 12650

RA-4 SUPER STABILIZER

Product	Code	Time	Temperature	Repl. Rate /m ²
Super Stabilizer and Repl. <i>Standard</i>	STAB-WL	45 s	36°C ± 3°C	250 ml/m ² (4 Tanks) 350 ml/m ² (3 Tanks)
Super Stabilizer and Repl. <i>Ultra Performance</i>	STAB-WL	45 s	36°C ± 3°C	200 ml/m ² (4 Tanks) 280 ml/m ² (3 Tanks)

Product	Code	Pack	Yield	Art.No.
Super Stabilizer and Replenisher <i>Standard</i>	STAB-WL	for 2 x 10 x 10 L	for ca. 571-800 m ²	REF 12710
Super Stabilizer and Replenisher <i>Standard</i>	STAB-WL	2 L conc. for 400 L	for ca. 1,142-1,600 m ²	REF 16035
Super Stabilizer and Replenisher <i>Standard</i>	STAB-WL	60 L conc. for 12.000 L	for ca. 34,285-48,000 m ²	REF 12685
Super Stabilizer and Replenisher <i>Ultra Performance</i>	STAB-WL	for 4 x 20 L	for ca. 285 - 400 m ²	REF 12708

RA-4 STARTER FOR PREPARATION OF WORKING SOLUTION

Product	Pack	Yield	Art. No.
Colour Developer Starter CD-S	2 L conc.	for 33-80 L working solution	REF 12810
Bleach Fix Starter BX-S	2 L conc.	for 40 L working solution	REF 12910

CHOICE OF THE COLOUR DEVELOPER

The choice for the most suitable type of Colour Developer depends largely on the utilisation of the machine. The utilisation is defined as the ratio of tank capacity to the amount of paper processed within a certain period of time, e.g. within one week.

The larger the tank capacity and the lower the utilisation, the higher the replenishment rate should be – and conversely, the lower the tank capacity and the higher the utilisation, the lower the replenishment rate can be.

RA-4 CD-R 160 *Standard Rate.*

CD-R 160 is designed and intended for machines with low to normal utilisation.

Requirement: Throughput of $> 3 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week

RA-4 CD-MR 108 *Medium Rate.*

CD-MR 108 is designed and intended for machines with normal to medium utilisation.

Requirement: Throughput of $> 4.5 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week

RA-4 CD-LR 80 *Low Rate.*

CD-LR 80 is designed and intended for machines with medium to high utilisation.

Requirement: Throughput of $> 6 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week

RA-4 CD-SLR 60 *Super Low Rate.*

CD-SLR 60 is designed and intended for machines with high to very high utilisation.

Requirement: Throughput of $> 8 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week

CHOICE OF THE BLEACH FIX

The choice for the most suitable Bleach Fix applies the same principles as to the Colour Developer. The larger the tank capacity and the lower the utilisation, the higher the replenishment rate should be – and conversely, the lower the tank capacity and the higher the utilisation, the lower the replenishment rate can be.

RA-4 BX-R 215 ml/m^2 *Standard Rate*

For machines with low to normal utilisation.

Requirement: Throughput of $> 1.5 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week.

RA-4 BX-MR 108 ml/m^2 *Medium Rate*

For machines with normal to medium utilisation.

Requirement: Throughput of $> 3 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week.

RA-4 BX-IR 70 ml/m^2 *Intermediate Rate.*

For machines with medium to high utilisation.

Requirement: Throughput of $> 4.5 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week.

RA-4 BX-LR 54 ml/m^2 *Low Rate.*

For machines with high to very high utilisation.

Requirement: Throughput of $> 6 \text{ m}^2$ colour paper per litre of working solution in approx. 1 week.

CHOICE OF THE SUPER STABILIZER

The standard version of the Super Stabilizer is universally suitable for all machines and all types of paper.

For the development of Professional Colour Papers such as DP2, Maxima, etc. in machines such as Polieletronica, Theta, Chromira and Noritsu, the Ultra-Performance version offers enhanced resistance to the formation of bio-slime in the working tanks of the processors. Special optical brighteners ensure brilliant image whites. In addition, the reduced replenishment rate leads to a reduction in disposal costs.

OPTIONAL USE OF ADDITIVES

The requirements named for different Colour Developers and Bleach Fixes regarding the utilisation of the respective machines ensure a stable process and maximum processing reliability. If the utilisation is lower than the minimum requirement specified for a product, the image quality may be impaired due to progressive oxidation of the chemicals.

To improve the process stability, oxidation inhibitors for photographic chemicals can be used as an option: CD-Additiv Plus supports the shelf life of the RA-4 Colour Developer, while BX-Additiv prevents the RA-4 Bleach Fix from oxidation and decomposition. Addition is to the replenisher and to the working solution.

Addition of CD-Additiv Plus, REF 16222

Once, when mixing replenisher, as well as weekly to the working solution:

Replenisher: 4 ml CD-Additiv Plus per litre when mixing

Working solution: 2 ml CD-Additiv Plus per litre, once a week

Addition of BX-Additiv, REF 16450

Once, when mixing replenisher, as well as weekly to the working solution

Replenisher: 20 ml BX-Additiv per litre, when mixing

Working solution: 5-10 ml BX-Additiv per litre, once a week

ADDITIONAL INFORMATION

Product information on individual items, including additional notes and recommendation for use, are available on the Calbe Chemie GmbH website.

Further information about Calbe chemicals can be found in the instructions for use, which are included in printed form with every item. Instructions for use and product information can be downloaded from the Calbe website.