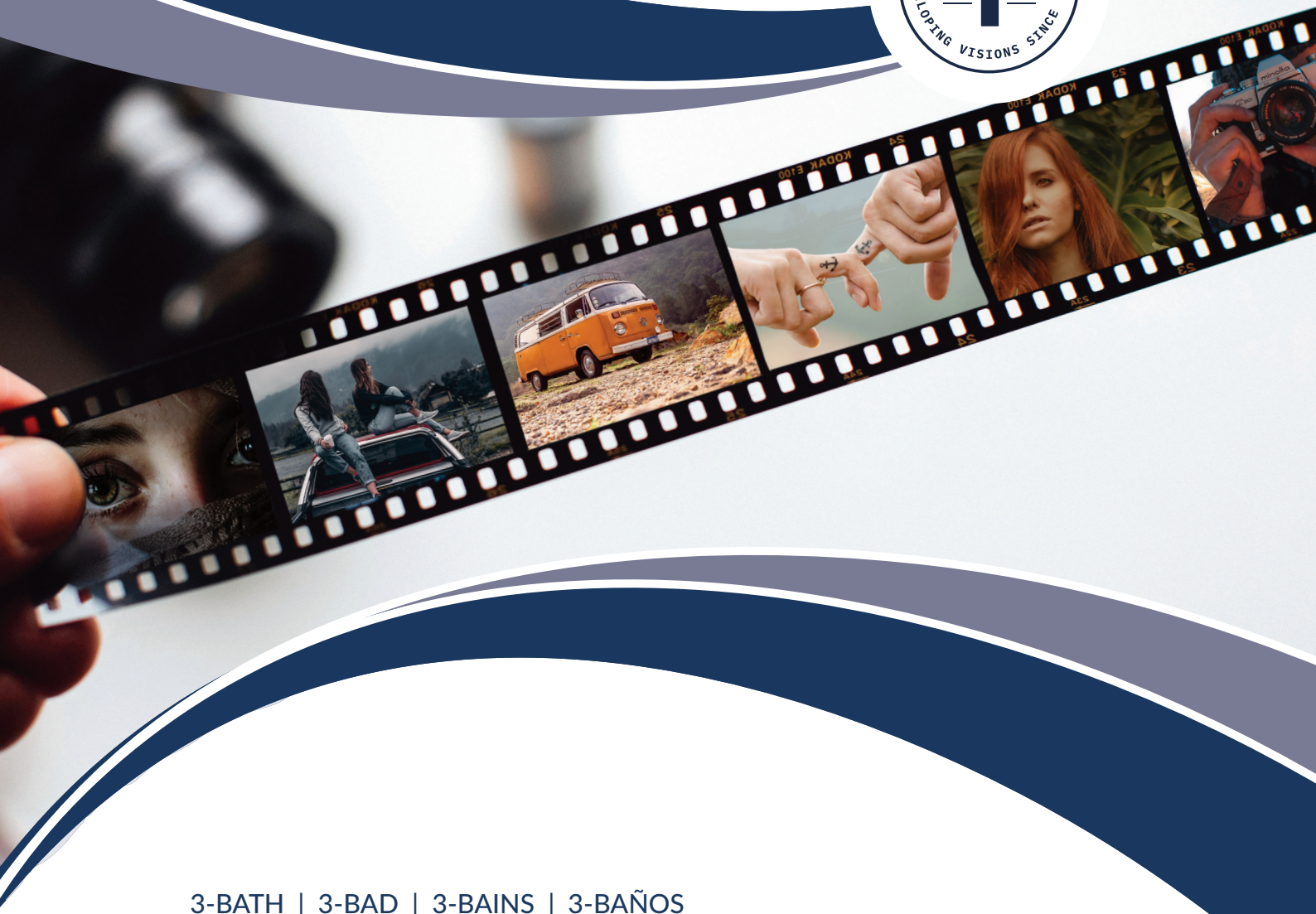
TETENAL

COLORTEC© E-6

INSTRUCTION FOR USE



3-BATH | 3-BAD | 3-BAINS | 3-BAÑOS

3-BADEN | 3-BADS | 3-KĄPIELOWY

INSTRUCTION FOR USE

Kit for · für · pour · para· per · voor · för · na **1 L** | **Art.Nr. 102035**

Kit for · für · pour · para· per · voor · för · na **2,5 L** | **Art.Nr. 102036**

COLORTEC E-6 3-BATH PROCESS

TETENAL COLORTEC E-6 3-BATH chemicals enable the development of colour reversal films designed for process E-6 in developing tanks – for inversion or rotary development. COLORTEC KITS contain concentrates for mixing all processing baths: First Developer, Colour Developer, Bleach Fix and Stabilizer.

COLORTEC E-6 3-BATH

Kit for 1 litre Art. No. 102035
Kit for 2.5 litres Art. No. 102036

CAPACITY

Film format	135-36	120	220	4x5“
Kit for 1 litre	12	12	6	49
Kit for 2.5 litres	30	30	15	124

The maximum capacity for the individual film formats is achieved by optimally loading the developing tank and by multiple use of the processing chemicals. Please see additional information in the chapter "Temperatures · Times · Filling quantities".

General rule: As many films as possible should be developed at a time in order to keep the number of development cycles low and thereby minimise the load on the chemicals.

PACK CONTENTS

		Kit for 1 litre	Kit for 2.5 litres
First Developer	**FD**	200 ml conc.	500 ml conc.
Colour Developer	**CD Part 1**	200 ml conc.	500 ml conc.
Colour Developer	**CD Part 2**	200 ml conc.	500 ml conc.
Bleach Fix	**BX Part 1**	200 ml conc.	500 ml conc.
Bleach Fix	**BX Part 2**	200 ml conc.	500 ml conc.
Stabilizer	**STAB**	200 ml conc.	500 ml conc.

E-6 3-BATH PROCESS

The E-6 3-Bath process passes through different chemical baths and water washes in succession.

- **First Developer**
  Water wash
- **Colour Developer**
  Water wash
- **Bleach Fix**
  Water wash
- **Stabilizer**
  Drying

Films to be developed are wound onto film reels in **complete darkness** and inserted in a developing tank, after which the developing tank must be closed light safe by putting on the lid carefully. The development can then take place in room light / daylight.

DIFFERENT OPTIONS FOR THE PROCESSING METHOD

Depending on the available laboratory equipment, the developing process can be carried out in different ways - manually or automatically. The simpler the equipment, the more difficult is the required exact adherence to the process parameters. The requirements for exact and constant temperature control of the chemicals are particularly high - they are easiest and safest to fulfil when using a colour processor.

OPTION: **COLOUR PROCESSOR**

(automatic temperature control · automatic agitation)

Colour processors, e.g. from JOBO, enable an exact and constant adherence to the processing parameters. The developing tank is motor-driven and rotates in a temperature-controlled water bath that also keeps the bottles with the processing chemicals at the right temperature.

OPTION: **TEMPERATURE CONTROL UNIT**

(automatic temperature control · manual agitation)

When using a temperature control unit, the bottles with the processing chemicals as well as the developing tank are heated to the pre-set temperature in a temperature-controlled water bath. The agitation of the developing tank (180° turn upside down and back) is done manually. During the first 15 seconds, tilt constantly, then tilt once every 15 seconds.

OPTION: **WATER BATH**

(manual temperature control · manual agitation)

If neither a tempering unit nor a colour processor is available, a manually tempered water bath can be used as an alternative. A photo tray with a high rim is ideal. In this case, both the developing tank and the bottles with the processing chemicals are tempered. To keep the temperature constant, hot or cold water can be added. The agitation of the developing tank (180° turn upside down and back) is done manually. Tilt constantly during the first 15 seconds, then tilt once every 15 seconds.

MIXING OF THE PROCESSING CHEMICALS

First Developer, Bleach Fix and Stabilizer can be mixed in one and the same vessel - provided it is cleaned thoroughly with plenty of water after each mixing.

The mixing vessel and the mixing rod for the Colour Developer must never be used for the preparation of any other chemicals.

Ideally, the processing chemicals should be prepared in different vessels with separate mixing rods to exclude a potential contamination of the individual baths.

Cleanliness of the equipment used is very important, including a clean water bath and perfect tightness of the tank lids. After each temperature measurement, the thermometer must be rinsed well with water - never change directly from one bath to another.

Never leave concentrates and working solutions of First Developer and Colour Developer open next to each other! Some plastics adsorb traces of Colour Developer strongly and permanently. Therefore clean tank, lids and film reels thoroughly with water after each development run and dry completely before the next run, e.g. with a hair dryer. Any contamination of the First Developer with Colour Developer (also vapours) will lead to an error result, the deep blacks will then only be grey.

FIRST DEVELOPER FD

Water	+	FD concentrate	=	Working solution
200 ml		50 ml		250 ml
264 ml		66 ml		330 ml
400 ml		100 ml		500 ml
528 ml		132 ml		660 ml
800 ml		200 ml		1000 ml
2000 ml		500 ml		2500 ml

The First Developer should always be prepared first. Close the bottle with the working solution immediately after mixing to prevent from a possible contamination of the First Developer by the Colour Developer or by vapours from the Colour Developer.

COLOUR DEVELOPER CD

Water	+	CD Part 1	+	CD Part 2	=	Working solution
150 ml		50 ml		50 ml		250 ml
198 ml		66 ml		66 ml		330 ml
300 ml		100 ml		100 ml		500 ml
396 ml		132 ml		132 ml		660 ml
600 ml		200 ml		200 ml		1000 ml
1500 ml		500 ml		500 ml		2500 ml

The part concentrates of the Colour Developer must be measured out very precisely, even small deviations can change the colour balance. Freshly prepared Colour Developer working solution is violet coloured, after some standing time it turns yellowish.

BLEACH FIX BX

Water	+	BX Part 1	+	BX Part 2	=	Working solution
150 ml		50 ml		50 ml		250 ml
198 ml		66 ml		66 ml		330 ml
300 ml		100 ml		100 ml		500 ml
396 ml		132 ml		132 ml		660 ml
600 ml		200 ml		200 ml		1000 ml
1500 ml		500 ml		500 ml		2500 ml

STABILIZER STAB

Water	+	STAB concentrate	=	Working solution
200 ml		50 ml		250 ml
264 ml		66 ml		330 ml
400 ml		100 ml		500 ml
528 ml		132 ml		660 ml
800 ml		200 ml		1000 ml
2000 ml		500 ml		2500 ml

Demineralised water should be used for mixing the Stabilizer.

TEMPERATURES • TIMES • FILLING VOLUMES

Precise **adherence to the time and temperature** specifications is important for **high quality development and for reproducibility of the results.** This is especially the case for the First Developer.

In the interest of a particularly economical processing, **multiple (2nd and 3rd use) of the working solutions is possible** in principle - in the **interest of the greatest possible and constant quality,** the chemicals should only **be used one time (1-shot),** ideally applying an optimal loading of the tank with films.

			1-Shot	2nd use	3rd use
Filling volume 250 ml			**Film 1***	**Film 2* Film 1 & 2*****	**Film 3***
Filling volume 330 ml			Film 1,2*	Film 3,4**	/
Filling volume 500 ml			Film 1,2**	Film 3,4**	Film 5,6**
Filling volume 660 ml			Film 1,2,3**	Film 4,5,6**	Film 7,8**
Filling volume 750 ml			Film 1,2,3**	Film 4,5,6**	Film 7,8,9**
Filling volume 1000 ml			Film 1,2,3,4**	Film 5,6,7,8**	Film 9,10,11,12**
			⬇	⬇	⬇
	Temperature °C / °F		**Time**	**Time**	**Time**
Pre-warming the tank	38 ± 0,5	100 ± 1	2:00	2:00	2:00
First Developer FD	38 ± 0,3	100 ± 0,5	6:15	6:30	6:45
Water wash	38 ± 0,5	100 ± 1	2:30	2:30	2:30
Colour Developer CD	38 ± 0,3	100 ± 0,5	6:00	7:00	8:00
Water wash	33-39	91-102	2:30	2:30	2:30
Bleach Fix BX	33-39	91-102	6:00	7:00	8:00
Water wash	33-39	91-102	4:00	4:00	4:00
Stabilizer STAB	20-39	68-102	1:00	1:00	1:00

* developed separately
** developed separately or at a time
*** developed at a time

Film = 135-36
Time = minutes

Filling volumes specified by the manufacturers of the developing tanks must not be undercut - on the other hand, slight overruns of the filling volumes are unproblematic.

Times given apply from the first contact of a bath / water wash with the film to the first contact with the respective following bath / water wash. Therefore, the time for pouring out still belongs to the previous bath in each case.

As an alternative to **pre-warming** the developing tank with the inserted film reels (approx. 2 minutes), a **pre-washing** with warm water (approx. 2 minutes at 38°C ± 0.5°C) can be carried out to ensure uniform development. Pre-washing is especially recommended for the development of sheet films and roll films in the rotation. It is not necessary to extend the time for the First Developer.

Washing is done with running water or in the water-filled developing tank with a water change every 30 seconds. After the Stabilizer the wet film is removed from the film reel, gently wiped off and **hung up to dry (max. 45 °C).**

PUSH AND PULL PROCESSING

To achieve the best possible quality, films should be exposed exactly according to the manufacturer's instructions. Under- or overexposed colour reversal films E-6 can be corrected within limits by a modified First Developer. To compensate, time and/or temperature of the First Developer must be adjusted. Basically, speed-increasing development (pushing) as well as speed-reducing development (pulling) is a compromise in terms of development quality.

2 f-stops underexposed	Push 2	FD time plus 5:30 minutes
1 f-stop underexposed	Push 1	FD time plus 2:00 minutes
1 f-stop overexposed	Pull 1	FD time minus 2:00 minutes
2 f-stops overexposed	Pull 2	FD time unchanged, FD temperature on 31 °C
3 f-stops overexposed	Pull 3	FD time unchanged, FD temperature on 29 °C

The recommended corrections are guideline values. They only affect the First Developer, the other processing baths remain unchanged.

Pushing films puts more strain on the First Developer than normal development passes, the capacity is correspondingly lower than with standard development.

First Developer capacity per 500 ml: 4 films 135-36 with Push 1

First Developer capacity per 500 ml: 3 films 135-36 with Push 2

Underexposed and overdeveloped films have a higher contrast, while the maximum density (blacks) is reduced at the same time. **Overexposed and underdeveloped** films show lower contrast. In both cases, this can lead to shifts in the colour balance. Rule of thumb: the greater the deviation from the standard process, the greater the loss of quality.

STORAGE

COLORTEC KITS should be stored in a dry place, protected from frost and inaccessible to children. The maximum temperature range is between 5°C and 30°C. Storage temperatures between 10°C and 20°C are ideal.

SHELF LIFE

		Fresh working solution	Used working solution	Opened concentrates
First Developer	FD	8 weeks	2 weeks	24 weeks
Colour Developer	CD	12 weeks	6 weeks	24 weeks
Bleach Fix	BX	12 weeks	12 weeks	24 weeks
Stabilizer	STAB	12 weeks	6 weeks	24 weeks

COLORTEC KITS in unopened, originally sealed bottles have a shelf life of approx. 2 years. After partial removal of concentrates the residual volumes are to be protected by using an antioxidant air displacement gas - such as Tetenal Protectan Art. No. 105193 - to protect against premature oxidation. Keep working solutions in completely full bottles.

OCCUPATIONAL SAFETY

Handling of photographic chemicals is safe if used properly and protective measures are followed. Hazard and precautionary information can be found on the label (H and P phrases, hazard symbol) and in the safety data sheet. Personal protective equipment (PPE) should include safety goggles or face shield, protective gloves and a lab coat or apron.

DISPOSAL

Photochemicals - concentrates or working solutions - must be disposed of in compliance with all local and national regulations.

TROUBLE SHOOTING

Result	Possible cause	Measure
Slides too light	Overexposure	Check camera / exposure settings
	FD temperature too high	Reduce FD temperature
	FD time too long	Shorten FD time in steps of 15 30 s
	FD agitation too intensive	Reduce FD agitation
	Contamination of FD	Mix FD freshly, clean equipment
Slides too dark	Underexposure	Check camera / exposure settings
	FD temperature too low	Increase FD temperature
	No pre-warming / pre-washing	Pre-warming / pre-washing
	FD time too short	Prolong FD time in steps of 15-30 s
	FD agitation too poor	Intensify FD agitation
Maximum density (blacks) is green	Contamination of FD or CD with Stabilizer	Rinse reels and tanks thoroughly with plenty of water after each run
Maximum density grey instead of black, red brown to green	Contamination of FD with CD	See chapter „Mixing of the processing chemicals”
Uneven colour areas, stripes and colour streaks	Insufficient movement, tank filling too slow, processor is not level right	Fill in chemicals more quickly, especially the FD. Level the processor. Intensify agitation
Colour fog, wrong colours	Contamination of FD or CD with another bath. Developing equipment or mixing vessel not clean	See chapter „Mixing of the processing chemicals”
Lime spots on dried film	Stabilizer was mixed with hard tap water	Use demineralized water for mixing the Stabilizer. Rub stains carefully with an antistatic cloth.

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