



TETENAL
1847

DISCOVER THE MAGIC.

A guide to the development of color slide films at home. Have fun trying out, experimenting and discovering the magic of film development.

Film processing following the process E6

www.tetenal.com



Warm Welcome.

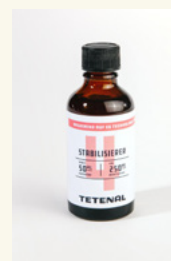
This Magic-Box contains all necessary concentrates for the mixing of the developing baths, which you need for the developing of your color slide film.

CONTENTS OF THE MAGIC BOX:

Development bath

Mixture

First Developer 1	50 ml Concentrate	+ 200 ml water for 250 ml working solution
Color Developer 2.1	50 ml Concentrate	+ 150 ml water for 250 ml working solution
Color Developer 2.2	50 ml Concentrate	
Bleach Fixer 3.1	50 ml Concentrate	+ 150 ml water for 250 ml working solution
Bleach Fixer 3.2	50 ml Concentrate	
Stabilizer 4	50 ml Concentrate	+ 200 ml water for 250 ml working solution





A quick Overview.

THE DEVELOPMENT PROCESSES:

01

In this manual we concentrate on developing your film outside of a photo lab (i.e. at your home) and without access to, for example, a JOBO Color Processor or a temperature control unit.

Your film passes through various chemical baths and waterings at 38°C before it is hung up to dry. All steps necessary for this, the temperature- as well as time information can be found in detail in this manual. Have fun!

02/
03

Alternatively, you can use a color processor (02) with automatic temperature and movement control. These processors, e.g. from JOBO, enable you to maintain exact and constant compliance of the processing parameters. The developing tank rotates motor-driven in a temperature-controlled water bath, which also keeps the bottles with the developing baths at temperature. For the suitable rotation speed, set the corresponding wheel on the JOBO to „F“. This process takes place at 38°C. The same temperature applies to a development with a temperature control unit (03), which is also supplied by Jobo (used). Here the bottles with the developing baths and also the developing tank heated to the preset temperature in a tempered water bath. The movement of the developing tank (180° turn upside down and back) is done manually in a 10 second tilting rhythm:

10 seconds movement - 10 seconds pause.

Recommended temperatures and times for processes 02 and 03:

	Temperature	Time
Preheat the developing tank:	38°C ± 0,5	05:00 Min.
First Developer	38°C ± 0,3	06:15 Min.
Watering	38°C ± 0,5	02:30 Min.
Color Developer	38°C ± 0,5	06:00 Min.
Watering	36°C ± 3	02:30 Min.
Bleach Fixer	36°C ± 3	06:00 Min.
Watering	36°C ± 3	04:00 Min.
Stabilizer	36°C ± 3	01:00 Min.



All you need is fun and:

A FEW AIDS:

- 1 absolutely dark room to insert the film (or a change bag)
- 1 developing tank (e.g. JOBO 1510/1520, Paterson, A&P.) with film spiral
- 1 Thermometer
- 1 Smartphone (or another clock to stop the times)
- 1 bowl (ideal in 30 × 40 cm with a high edge)
- 1 measuring cylinder (approx. 250 ml for measuring water)
- 1 measuring cup (approx. 1 litre for watering)
- 4 bottles, 250 ml each (as storage bottles for the freshly mixed baths)
- 1 waterproof pen to mark the bottles (you can also use adhesive labels)
- 2 clamps for hanging the developed film (e.g. clothes pegs)
- 1 pair of gloves

TIPP

You should set up everything you need once completely in front of you, in order to have a good overview and thus nothing is missing during the development. Better read the complete manual before you start.



01_ Preparing of the Film.

Everything you need to get the film into the development tank you should get ready first.

FOR THE FIRST STEP YOU NEED:

- the open developer tank with separate film spool and lid within reach
- your exposed film
- a film picker or simply a bottle opener
- scissors

TIPP

If you've never made this step before then it helps if you reel an old film into the film spiral of the developer tank in the light a few times.



The Light is going out.

As much as the light is your friend for the exposure of the film in the camera - so much is it now a uninvited guest, when it comes to getting the film into the development tank.

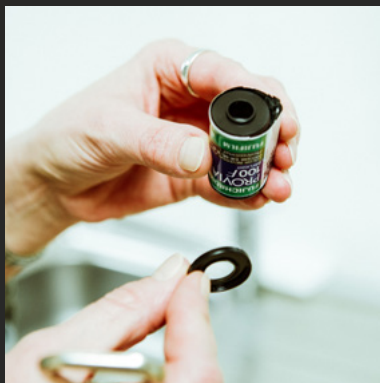
THIS IS HOW IT GETS REALLY DARK:

- room without a window (bathroom? chamber? change bag?)
- no light through a door gap (towel or similar)
- no light through a keyhole (tape)
- cell phone stays outside!
- fluorescent watches also



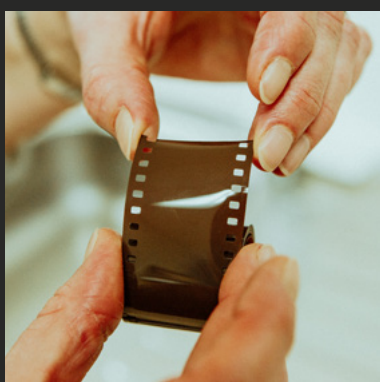
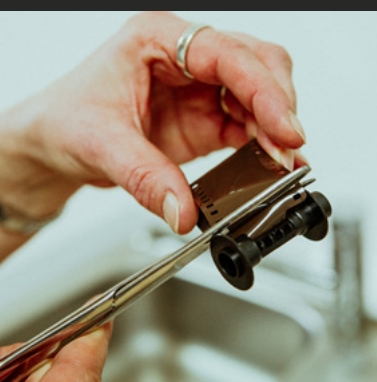
TIPP

Find a room that you can completely darken and arrange everything so that you can find and use it in the dark.



01_ Open the film can and prepare the film.

- open the bottom of the film can with the bottle opener.
- take out the film and separate it with the scissors from its core, to wind it onto the film spool.

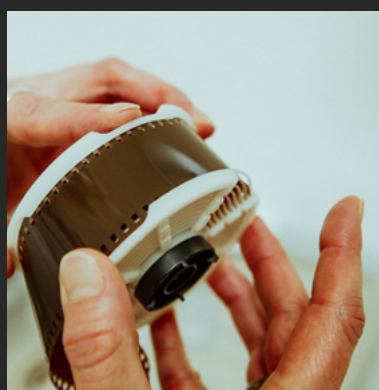


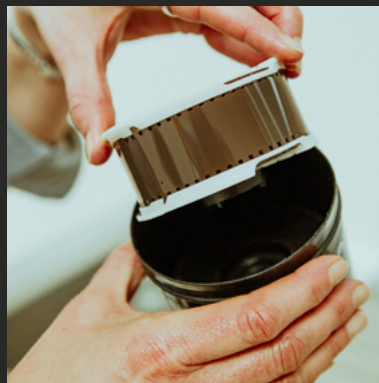
02_ Rewind the film.

- lead the film into the spiral.
- use the mechanics of the spiral to roll it up completely.

TIP

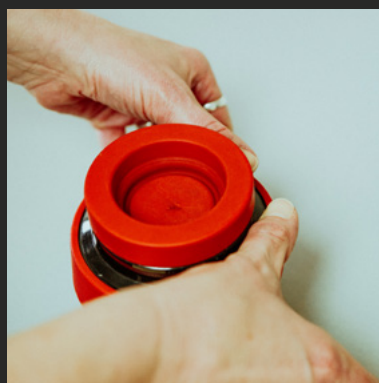
You can make the corners of the filmstrip round a little with scissors, to make winding easier.





03_ Inserting the film spiral.

- feel the side of the spiral with the attachment for the tank.
- with this side down you now put the film spiral into the development tank.



04_ Close the development tank.

- put the lid on top of the tank.
- press it firmly with both hands.
- then check briefly whether everything is firm and therefore light-tight.

Lights on! From here it goes on in the bright...



02_

Preparing the baths.

In this step it is important to label everything well and to prepare the pre-portioned concentrates with the correct quantities of water. The best thing to do is to fill the measuring cup with 700 ml and 40°C warm water to be ready to fill the bottles.

FOR THIS STEP YOU NEED:

- the four storage bottles for 250 ml contents
- the measuring cup and the measuring cylinder to measure the water quantities
- a waterproof marker
- gloves
- the big bowl for heating the baths
- the thermometer
- all concentrates from the Magic-Box
- a room with running water and corresponding space

TIPP

We advise you to wear something that can take a stain, because especially the color developer is very stubborn.



05_ Preparing the water bowl.

- fill the bowl with hot tap water.
- 40°C is the temperature that helps you to prepare your baths during the preparation time to 38°C.
- You can readjust with hot or cold water at any time.



06_ Labelling the bottles.

- it is important to be able to keep the bottles well apart later.
- Each of the four bottles is marked for its contents:
- First Developer, Color Developer, Bleach Fixer and Stabilizer.





07_ Water for concentrates

- pour the correct quantities of tap water into the respective storage bottles (700 ml in total; approx. 40°C)
- then you can fill the concentrates from the Magic-Box into the bottles, pay attention to the number and color code.



200 ml water +
1 × 50 ml concentrate
= 250ml solution



150 ml water +
2 × 50 ml concentrate
= 250ml solution



150 ml water +
2 × 50 ml concentrate
= 250ml solution



200 ml water +
1 × 50 ml concentrate
= 250ml solution

08_ Mixing the working solutions

- First Developer: 200 ml water and the blue concentrate 1 result in 250 ml in the bottle.
- Color Developer: 150 ml water and the 2 green concentrates 2.1 & 2.2 result in 250 ml in the bottle.
- Bleach Fixer: 150 ml water and the 2 yellow concentrates 3.1, 3.2 result in 250 ml in the bottle.
- Stabilizer: 200 ml water and the red concentrate 4 result in 250 ml in the bottle.

Don't use the concentrates and the solutions of the first developer and the color developer openly next to each other! Any contamination of the first developer with the color developer (fumes are sufficient here) will lead to a defective result.



09_ First Developer.

- pour 100 ml of water into the bottle.
- and then the First Developer Concentrate 1
- shake well a few times.



10_ Color Developer.

- pour 150 ml of water into the bottle.
- and then the two Color Developer Concentrates 2.1 und 2.2.
- shake well a few times.



11_ Bleach Fixer.

- pour 150 ml of water into the bottle.
- and then the two Bleach Fix Concentrates 3.1 und 3.2
- shake well a few times.



12_ Stabilizer.

- pour 200 ml of water into the bottle.
- and then the concentrate 4 (stabilizer)
- Shake well a few times.



One after the other the bottles should land together with the film development tank in the water bath to reach their process temperature of 38°C.

With the thermometer you can control the temperature and if necessary adjust with hot water in the bowl. When the First Developer has reached the right temperature of 38°C, you are ready to start.

TIPP

After each measurement of the temperature in the bottles you should rinse the thermometer under running water to prevent that parts of the solutions get from one bottle into another.



03_

Developing the Film.

The four development baths have been prepared and now the film passes through them in the tank one after the other incl. watering. It is important to be accurate with the times and to keep the tank in a certain tipping rhythm.

TIME & TEMPERATURE

	Temperature	Time
Preheat Development Tank	38°C	05:00 Min.
First Developer	38°C	06:15 Min.
Watering	38°C	02:30 Min.
Color Developer	38°C	06:00 Min.
Watering	38°C	02:30 Min.
Bleach Fixer	38°C	06:00 Min.
Watering	38°C	04:00 Min.
Stabilizer	38°C	01:00 Min.

- The indicated times are valid from the first contact of a bath/a watering with the film until the first contact with the following bath/watering.
- You start the time after you have put the respective bath/water into the developing tank. You should push the tank with the filled color developer hard onto a table top to remove adhering air bubbles from the film. Then tilt immediately for 10 seconds, 10 seconds pause in water bath, 10 seconds tilting, etc.
- After the bleach-fixing bath you can open the developing tank. Watering as well as the stabilizing bath can be carried out in the opened tank. But you can also do everything completely in the closed tank.
- After the stabilizing bath you can carefully remove the wet film from the film spiral, strip off between 2 fingers and hang up to dry.



13_ First Developer.

- if the First Developer in the bottle has 38°C it can start.
- set the timer to 06:15 minutes.
- fill the developer into the film tank and push it once hard on the working surface.



- immediately start tilting after that
- 10 sec. at a time you turn the film tank alternately upside down and back again
- then put the tank for 10 sec. into the warm water bath in the bowl and start tilting again after 10 sec.
- Shortly before the end of the 06:15 Min. you quickly tip the developer back into the bottle and close it.





14_ First Watering.

- *turn on the tap at about 38°C.*
- *set the timer to 02:30 minutes and let the water run into the film tank.*
- *during the 02:30 min. you should always dump the film can completely.*



15_ Color Developer.

- if the color developer in the bottle has 38°C it can start.
- set the timer to 06:00 minutes.
- fill the developer into the film tank and push it once hard on the working surface.



- immediately start tilting after that
- 10 sec. at a time you turn the film tank alternately upside down and back again
- then put the tank into the warm water bath in the bowl for 10 sec., after that tilt again for 10 seconds, etc.
- Shortly before the end of the 06:00 min. you quickly tip the developer back into the bottle and close it.





16_ Second Watering.

- *turn on the tap at about 38°C.*
- *set the timer to 02:30 minutes and let the water run into the film tank.*
- *during the 02:30 min. you should always dump the film can completely.*

TIPP

You should check adjust the temperature of the water bath in the bowl with the thermometer every now and then.

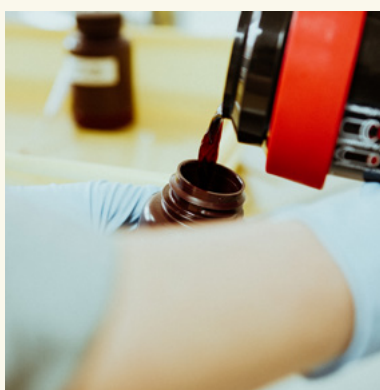


17_ Bleach Fixer.

- If the bleach fixer in the bottle has 38°C it can start.
- set the timer to 06:00 minutes.
- fill the bleach fixer into the film tank and push it hard onto the working surface.



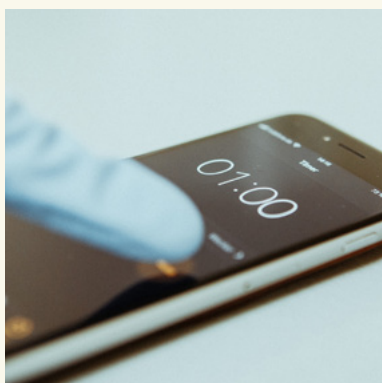
- immediately start tilting after that
- 10 sec. at a time you turn the film can alternately upside down and back again
- then put the can into the warm water bath in the bowl for 10 sec., after that tilt again for 10 seconds, etc.
- After the 06:00 min. you quickly tip the bleach fixer back into the bottle and close it.





18_ Last Watering.

- turn on the tap at about 38°C.
- set the timer to 04:00 minutes and let the water run into the film tank.
- during the 04:00 min. you should always dump the film tank completely.



19_ Stabilizer.

- If the stabilizer in the bottle has 38°C it can start.
- set the timer to 01:00 minute.
- Fill the stabilizer into the film tank and push it once hard on the working surface.





- immediately start tilting after that
- 10 sec. at a time you turn the film tank alternately upside down and back again
- then put the can into the warm water bath in the bowl for 10 sec., after that tilt again for 10 seconds, etc.
- after the minute you pour the Stabilizer back into the bottle and close it.



20_ Dry the film.

- your film is now developed - congratulations!
- you can now take it out of the tank.
- and strip it off between the fingers to hang it up to dry (e.g. with clothes pegs).

TIPP

The developer tank and the film spiral must be well cleaned, so that no residues of the stabilizer remain in it.



DISCOVER THE MAGIC OF FILM DEVELOPMENT.

Thank's for using the Magic-Box E6. We hope you enjoy maybe your first film development and the discovery of the magic that comes with it.



SOME FINAL CLUES:

- You should clean the development tank and film spiral after each development cycle thoroughly under running water (open film spirals)
- the cleanliness of your equipment is important, which also includes a clean water bath and the tightness of the developing tank.
- After each temperature measurement, please rinse the thermometer with water and never go directly from one bath to another.

TIPP

You can dispose of used chemicals at your local recycling centre.