

# MZB DIVIDED DEVELOPER



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Characteristics:  
Fine grain  
High sharpness  
Reduces contrast

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## How to prepare the solutions

You have to prepare two solutions: Solution A (developer solution) and solution B (activator solution). You can use tap water to produce the solutions. Alternatively, you can use distilled water, but this is not necessary: Both powders contain enough chelating agents even for very hard water. Don't worry, if there are sediments after a few days. These are complexes of fixed calcium. They don't affect the development process. You should however not shake the solution until the sediments have dissolved again.

### *Producing Solution A (Developer Solution)*

- 1) Warm **two** liters of water to 60-80°C (= 140 -175°F).
- 2) Open bag **A1** and put content in water.
- 3) Stir until contents are diluted completely.
- 4) Open bag **A2** and put content in solution.
- 5) Stir until contents are diluted completely.
- 6) Pour Solution A in a clean container and close the lid. Solution A is now ready to use.

### *Producing Solution B (Activator Solution)*

- 1) Warm two liters of water to 60-80°C (= 140 -175°F).
- 2) Open bag **B** and put content in water.
- 3) Stir until contents are diluted completely.
- 4) Pour Solution B in a clean container and close the lid. Solution B is now ready to use.

## How long the developer lasts

If you do not use the solutions and store them correctly, they will last at least six months without becoming weaker.

## How many films you can develop with the solutions (tank development)

### *Solution A (developer solution)*

- Development times are suggested in the Table 1.
- You can develop at least eight 35mm films or ten roll films 120 in one liter of solution A. Consequently, the content of bags A1 and A2 are enough for up to twenty films.
- It does not matter, if you develop several films at the same time or one film after the other.
- During development, oxidants are produced. Oxidants slow down development. Thus, if you want to develop more films with the solution, you have to increase development times for films, starting from film nine (when using 35mm films) or eleven (when using roll films).
- Once you have used a certain amount of solution A, don't pour it back into the original container. If you want to reuse used solution, store it in an additional bottle or container.
- If you dilute solution A, you have to increase development times. This does not reduce contrasts as well as the undiluted solution does: The contrast curve becomes steeper.

### Examples:

- The smallest Jobo Tank (1510) has to be filled with 250ml of solution A. You can only fill in one 35mm film into this tank. In order to develop a 35mm film, you need less than 125ml of solution A. Thus you are developing the film in twice the necessary amount of Solution A – you can develop a second film in the Jobo Tank without increasing development time.
- You can put four films (35mm or 20mm) in a Jobo Multi Tank. You have to fill 910 ml (= 29 fl oz.) of solution A into the tank. In this tank, you can develop another four films without increasing development time.
- When developing a 35mm film in a Kaiser Tank, you have to fill it with 375ml (= 12 fl oz.) of Solution A. You can develop an additional two films. When developing a roll film in this tank, you need 590ml and can develop an additional four to five films. Don't forget to replace any amount of liquid that has been lost when pouring the solution in or out of the tanks.

### *Solution B (activator solution)*

- You pour solution B into the tank after pouring out solution A. Even if you try hard, you will never be able to pour out solution A completely. A tiny rest always remains in the tank and mixes with solution B, as you pour it into the tank. These tiny rests of solution A turn solution B into a developer solution in the long run. You could not reproduce negative densities. Therefore you should use Solution B only once. The utmost is to use solution B a second time.
- You have to dilute solution B before using it. Activating times are suggested in table 1. These are the times needed, if you dilute solution B 1+2. If you dilute solution B this way, you will end up with six liters of working solution, when using the whole contents of bag B. In most cases, this is far too much. You only need this amount of liquid at once when you develop several roll films in one large tank.
- Therefore before using a large tank, you should always ask yourself: Does it really have to be this large? An example is the Kaiser Tank. You have to fill the tank with 600ml of Solution B. You would only need 100ml of liquid. You can reuse solution A, but you would have to throw away solution B after using it once or twice. Therefore you would have wasted 500ml of solution B.

### **How to develop negatives with MZB (tank development)**

The general developing process is as with any other two bath solution:

- 1) You do not have to water the film or the tank before development, not even if development times are short.
- 2) You develop the negative in the developing solution (solution A) for the appropriate time. During the first minute of development, agitate the tank constantly. After that, wait 30 seconds, agitate the tank four times every ten seconds, wait 30 seconds, agitate the tank four times every ten seconds, and so on.
- 3) You pour out the developing solution completely. *Do not* water the tank between using the two solutions.
- 4) You activate the negative in the activator solution (solution B) for the appropriate time. During the first 30 seconds of activation, agitate the tank constantly. After that, wait 60 seconds, agitate the tank four times every ten seconds, wait 60 seconds, agitate the tank four times every ten seconds, and so on.

If you develop by hand and the temperature of both solutions is 24°C (= 75°F), development times are suggested in table 1. These times are just suggestions. You have to do your own tests in order to tune the development process to your own needs. You also have to test yourself, how different temperatures or tipping rhythms affect the development process.

### **How does Jobo rotation development differ from tank development?**

- When using the rotation development method, you need less liquid. Therefore you should use both solution A and solution B only once.
- When developing roll films, you need at least 65ml of each stock solution. You can develop about 32 roll films 120 with the contents of both bags.
- When developing 35 mm films, you need at least 75ml of each undiluted solution. You can develop about 25 135mm films with the contents of both bags.
- You have to dilute both solutions. Dilute solution 1+1. Dilute solution B 1+1.

Adjust development times listed in Table 1 for Jobo rotation development at 24° C (solution A diluted 1+1; solution B diluted 1+1):

- *Time for solution A:* Time in table \* 1,5
- *Time for solution B:* Time in table \* 0,85 to time in table \* 0,80

### **How does tray development of sheet films differ from tank development?**

- Theoretically, you can develop up to ten 4x5inch films in 250ml of solution A. Nevertheless, you should not develop more than five sheets: The sheet absorbs part of the solution and sets free bromide. Bromide increases development time. If you want to be able to reproduce your results, you should therefore not develop more than five sheet.
- Development Times are suggested in table 2. If you do not want to reduce contrasts, leave the sheet in solution B for an additional 30 to 40 seconds.
- As long as the sheet is placed in solution A, move the film constantly during the first minute. After that wait 30 seconds, move the film four times every ten seconds, wait 30 seconds, move the film four times every ten seconds, and so on.
- Move the sheet four times directly after putting it in solution B. Move the sheet four times every minute.

### **How does MZB effect negative densities?**

If you use the suggested times, the gradation curve becomes flatter from zone VII upwards. If contrasts during exposure were high, the densities of light areas remain printable. If you do not want this effect, you can straighten the gradation curve by increasing time in solution B and by agitating every 30 seconds in solution B.

**Zeiten für die Dosenentwicklung bei 24°C**  
**Suggested times for tank development at 24 C°(75°F)**

A unverdünnt, B 1+2, Keinesfalls zwischen A und B wässern  
 Solution A undiluted, solution B diluted 1+2, never water between solution A and B!

Film	Format	ISO	Zeit/Time A	Zeit/Time B
Ilford Delta 100	135	100	4:30	5:00
	135	80	4:15	4:30
	Roll 120	100	3:45	6:30
	Roll 120	80	3:15	5:30
Ilford Delta 400	135	<b>320</b>	<b>3:15</b>	<b>7:00</b>
	135	250	3:00	6:45
	Roll 120	<b>320</b>	<b>3:15</b>	<b>8:30</b>
	Roll 120	250	3:00	8:00
Ilford Pan F	135	50	4:30	4:30
	135	40	4:15	5:00
	135	<b>32</b>	<b>4:00</b>	<b>4:30</b>
	Roll 120	50	5:00	7:00
	Roll 120	40	4:15	7:30
	Roll 120	<b>32</b>	<b>4:00</b>	<b>6:30</b>
Ilford FP4	135	<b>100</b>	<b>5:00</b>	<b>5:00</b>
	135	80	4:45	4:45
	Roll 120	<b>100</b>	<b>5:30</b>	<b>7:00</b>
	Roll 120	80	5:15	6:15
Ilford HP5	135	<b>320</b>	<b>4:15</b>	<b>5:00</b>
	135	250	4:00	5:00
	Roll 120	<b>320</b>	<b>4:30</b>	<b>6:00</b>
	Roll 120	250	4:00	5:00
Kodak 100 Tmax	135	64	4:30	5:00
	Roll 120	64	4:45	6:00
Kodak 400 Tmax old	135	320	5:00	4:30
	Roll 120	320	5:45	4:30
Kodak 400 TMY2 new		250	6:15	3:00
Kodak Plus X		100	5:30	3:30
Kodak Tri-X 320		<b>250</b>	<b>6:00</b>	<b>4:00</b>
		320	6:30	3:30
Kodak Tri-X 400	Roll 120	250	5:30	3:15
	135	250	5:45	2:30
Kodak HIE		400-600*	5:30 – 6:30	5:30
Agfa APX100		100	4:30	6:30
		80	4:15	6:00
Fuji Acros 100		50	7:30	5:30
EFKE IR 820		50*	6:00	3:00
Rollei IR820/400		200*	7:30	6:00

\* Rating without IR-Filter

\* Filmempfindlichkeit ohne IR-Filter

## Zeiten für die Schalenentwicklung von Planfilmen Suggested times for tray development

Zeiten für Sollwerte N-Entwicklung bei 24°C  
Suggested times for N-development at 24°C (75°F)

Agitation:

Lösung A, erste Minute ständig, dann alle 30 Sekunden 4x  
Lösung B, zu Beginn und bei jeder vollen Minute 4x

Agitation:

Solution A: first minute constantly, then every 30 sec. four times  
Solution B: each minute for times

Film	@ ISO	logD Z I	logD Z VIII	Zeit/Time A	Zeit/Time B
FP4 125	100	0,12	1,26	4:45	5:00
Delta 100	100	0,13	1,25	3:35	6:45
HP5 400	320	0,14	1,25	4:00	5:00
EFKE 100	100	0,13	1,26	8:00	5:00
EFKE IR 820	64			7:00	4:00
T-max 100	100	0,13	1,24	4:15	5:00
TRIX 320	320	0,12	1,28	4:15	4:45
TRIX 320	250	0,12	1,28	4:00	3:30
Tmax 400	400	0,14	1,25	4:00	8:30
Acros	80	0,14	1,24	3:15	4:15

Zur Kontrasterhöhung ist die B-Zeit bei gleicher Filmempfindlichkeit um 20%-25% zu verlängern.  
Zur Kontrastreduzierung ist die B-Zeit um 10-15% zu verringern.

To enhance contrast, add 20-25% of time in solution B.  
To reduce contrast, shorten time in solution B by 10-15%.