PYRO 48

Speed and Developing Times
Update September 2025

Normal dilution is 1+2+100 (aqua demin.)
1 or 2 films 120: 1+2+100 (5+10+500) - 1+2+90 (5+10+450) – 1+2+110 (4,5+9+500)
1 film 135/36: 1+2+100 (2,5+5+250) - 1+2+90 (3+6+270) - 1+2+110 (2,25+4,5+250)

Permanent agitation for the first minute, please refer to the table for the following cycles.
Example: 60/60 means agitation permanently for the first minute, then 2 tilts every 60 seconds, 60/90 2 tilts every one and a half minutes.
The minimum quantity of developer (A+B) is 2.5+5ml per film. Demineralised water is recommended for preparing the working solution. The use of tap water may result in different sensitivity values (usually 1° DIN lower).

It is advisable to use pipettes or syringes to withdraw small quantities of the concentrates.
Never use one pipette for both solutions without rinsing it several times!
This developer does not oxidise as quickly as other pyro-developers. There is therefore no need to rush after preparation.
No acidic stop bath is recommended to interrupt the development. Changing a water bath twice before fixing is sufficient.
Fixing bath recommendation: Neutral or alkaline fixers. It should be noted that the stain density can be reduced when using acidic baths. However, if the stain appears too high, it can be weakened after fixation in a weak acid bath (stop bath).
Fixing time: According to the manufacturer's instructions (ATS alkaline 1+5 4-5 minutes), rinsing time 10 minutes.

Due to its low susceptibility to oxidation, this developer can also be used in rotation. But because of the higher-contrast gradation curve with permanent movement, a shortening of the development time is necessary. However, this also leads to a reduction in film speed of around 1° DIN and a slightly lower impression of sharpness.
The development times in the table can be used for developing of sheet films. With tray development a higher agitation is recommended (three inversions every 30 seconds).

The development times were determined for prints on variable contrast papers with filter settings between 3 and 4.5.
For prints on fixed graded paper, these negatives are only suitable for soft grades (0-2).

Film	ISO	Dilut. 1+2	24°C	22°C	Invers.
APX 100	100/21°	+100	14:00	17:00	60/60
Ilford Delta 100	100/21°	+100	13:00	16:00	60/30
Foma 100	80/20°	+100	19:45	24:00	60/30
Foma 200	125/22°	+100	18:30	22:30	60/60
Ilford FP4 plus	125/22°	+100	18:10	22:00	60/45
Ilford Delta 400	400/27°	**+90**	25:30	31:00	60/60
Ilford HP5 plus	320/26°	**+110**	21:20	26:00	60/20
Kodak 100Tmax	100/21°	+100	19:40	24:00	60/30
Kodak 400 Tri-X	400/27°	**+110**	15:15	18:30	60/60
Kodak 400 TMY	400/27°	+100	14:20	17:30	60/60
ADOX CHS II Planfilm	100/21°	+100	14:00	17:00	60/60

Films not listed here are either not suitable for this developer or the test results were unsatisfactory in some way.

N+ and N- development according to the zone system
N- per 1° DIN = 1/3 f-stop overexposure, the development time must be reduced by approx. 20%.
N+ per 1° DIN = 1/3 aperture underexposure, the development time must be extended by 20-25%. Instead of extending the development time, the developer can be diluted less (minus 10 parts water) for N+1 and (minus approx. 20 parts water) for N+2.