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## Pyrocat-HD Film Developer

### In your Pyrocat-HD Kit:

#### **Solution A:**

Solution A is shipped dry to increase shelf life. Add distilled water to the neck of the bottle. Shake well and let stand 10 minutes before using.

#### **Solution B:**

Is sent in solution and is ready to use.

Pyrocat-HD is a semi-compensating, high-definition developer formulated by Sandy King as an alternative to PMK. The advantages over PMK that Mr. King cites for his formula include an approximately 1/3-stop greater effective film speed, 10-15% shorter development times, more consistent staining action, lower toxicity, and no streaking or mottling with reduced agitation. Other users have reported reduced printing times with UV light sources compared with PMK negatives (for alt process work) due to the different stain color, as well as reduced base plus fog density compared with PMK and Rollo Pyro negatives in rotary processors.

Sandy King's experiments have centered on sheet film, as he works primarily in large format (4x5, 5x7, 7x17, and 12x20). His development recommendations are as follows:

**Sheet film in trays, normal agitation:** standard working solution, with agitation for 10 seconds every minute (or 5 seconds twice per minute), 70° F.

**Sheet film in trays, minimal agitation:** standard working solution, with agitation for 10 seconds every three minutes, 70° F. Development times are approximately 50% longer than for normal agitation.

**Sheet film in trays, semi-stand agitation:** special working solution of 1 part A with 1 part B with 200-400 parts water. Agitation is for one minute at start of development, followed by 30 seconds at the half-way point. Development time for slow and medium-speed films is 40-50 minutes, 70° F. Development time for fast films is 50-60 minutes. Dichroic fog may result from extended development of high speed films. If this is a problem in your work use a 1:1: 200 dilution and reduce development to about 30 minutes.

**Sheet film in rotary processor, continuous agitation:** use a minimum of 75 ml of the standard working solution per sheet of 4x5 film (or equivalent for larger formats).

**Recommended developing times** for sheet film in rotary processor are as follows: FP4+ (EI 100) for 8 minutes, BPF-200 (EI 100) for 9 minutes, T-MAX 400 (EI 320) for 12 minutes, and HP5+ (EI 320) for 13 minutes, all at 70° F.

Presoak film for two minutes. Use a plain water stop bath for one minute. Use an alkaline fixer (rapid fix without hardener) for 5 minutes. Wash in running water 10-15 minutes.

The working solution can be made quite a bit more energetic (faster working) by doubling the amount of B solution. For example, with a 1:1:100 dilution, Ilford FP4+ develops to a CI of .52 in 8 minutes. With a 1:2:100 dilution, development time to the same CI is only 5:30. This fact makes the 1:2:100 dilution very useful for zonal expansion, especially for negatives intended for use with alternative processes.

## Test Results with 120 Roll Film by Ed Buffaloe

I'm not running a scientific test here. I shoot, develop, print and see if the results were worth the trouble. Thus far, I have been very satisfied with Pyrocat-HD. Since I don't have a densitometer, I can't measure densities to see if I am really getting a one-third stop speed increase. My Pyrocat negatives are beautiful-- very clean, sharp, high-contrast images. I am taking advantage of Pyrocat's even development to reduce agitation to once per minute for 10 seconds (whereas for PMK I use twice per minute for 5 seconds each). When I wrote to Sandy King to tell him of my preliminary results, he responded as follows:

My original tests indicated that Pyrocat-HD with the 1:1:100 dilution required slightly shorter development times than PMK, but those tests were all done with sheet film and constant agitation in tubes (floating them in a water bath). However, Pyrocat is a much more energetic developer if diluted 1:2:100 and I use this dilution for all of my development of 7x17 and 12x20 film which are intended for printing with the carbon process. The 1:2:100 dilution also works well for zonal expansion of about 2 steps, keeping time and temperature the same.

My first test with 8x10 sheet film photographs indicated that the developing times for PMK and Pyrocat-HD would be very similar. I think you could go to my chart of developing times for PMK and use them for Pyrocat-HD as a starting point. That is exactly what I have been doing. However, Sandy King recommends reducing PMK times about 20%. What follows is a chart of films I have tested so far and the times I recommend. The bolded times are the ones I actually used.

Film	EI	70°	75°	80°
Ilford HP-5+	200	13 min	<b>10 min</b>	<b>8 min</b>
Kodak T-Max 100	64	14 min	11 min	<b>9 min</b>
Kodak T-Max 400	400	15 min	12 min	<b>10 min</b>
Kodak Verichrome Pan	125	9 min	<b>7.5 min</b>	<b>6 min</b>

All the above times are for the 1:1:100 dilution.

One difference between PMK and Pyrocat-HD is the color of the stain. PMK's stain has a strong yellow-green color, which inhibits blue and magenta. When printing on graded paper, the yellow-green stain adds effective density to the negative and boosts contrast. When printing on variable contrast paper, the PMK stain tends to reduce contrast, particularly in the high values. Pyrocat-HD's stain is brown in color. Pyrocat negatives print much like PMK negatives on VC papers, but require less exposure on graded papers than similar PMK negatives, because the brown stain doesn't inhibit the blue light that paper is sensitive to as much as a yellow stain would. Sandy King has stated that alternative process printers who print with UV light sources find their exposure times reduced with Pyrocat-HD when compared with print times from pyro negatives.

Here is a photograph from a T-Max 100 negative developed in Pyrocat-HD. The subject is my father when he grew his beard out. It was taken in open shade on a sunny day with a #22 yellow filter. The print was made on Ilford Multigrade FB with no filtration, and demonstrates a very long tonal scale with good detail throughout.

#### Semi-Stand Development

I had a roll of Delta 3200 from my vacation that I was certain I had underexposed. I wanted to try to salvage it, so I used Pyrocat-HD with semi-stand development. I gave it 30 minutes development in Pyrocat-HD diluted 1:1:200 at 70° F. I agitated for one minute at the beginning and 30 seconds in the middle of development. Not only is the roll printable, it has extremely high acutance--the prints from it appear almost unreally sharp. (Later, I developed another roll using semi-stand development, only this roll was of a very high-contrast scene, and I thought I could reduce contrast using this development method. But the bromides released by the intense development in the heavily-exposed areas diffused out and caused uneven development in surrounding areas. The roll was ruined and I lost some great shots. It seems that with subjects like this at least some intermittent agitation is required. Additionally, the solutions were old.)

#### More on Semi-Stand Development by [Michael Emanuel](#)

I have been experimenting with pyrocat HD and I believe I have found a method with Delta 100 35 mm. that is quite amazing in terms of results: incredible acuity, smoothness of tonality, finer grain than with any other pyro developers, excellent shadow separation, full film speed (IE 100 ).

This technique is as follows: 2 ml pyrocat A, 2 ml. pyrocat B, 500 ml. distilled water at 20 C. Initial agitation for 30 seconds followed by 2 inversions every 10 minutes for a total time of 45 minutes. Ed buffalo mentioned the amazing sharpness he attained with 120 film and a modified stand development. He also mentioned the problem he had with bromine drag. With the method I use I can see no evidence of bromine drag. Also the emulsions seem to have no imperfections. Needless to say it is also very economical.

