Rec.Photo.Darkoom Frequently Asked Questions

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1 Introduction

Welcome to the *rec.photo.darkroom* FAQ. You should read this document before posting to rec.photo.darkroom in order to prevent you from embarrassments, such as asking questions that are answered in this FAQ. This version of the FAQ is labelled `$Revision: 1.10 $`.

This FAQ is available on the World Wide Web, in several formats:

- *HTML format* `<http://www.cdegroot.com/photo/darkroom-faq.html>`
- *SGML format* `<http://www.cdegroot.com/photo/darkroom-faq.sgml>`
- *plain text* `<http://www.cdegroot.com/photo/darkroom-faq.txt>`
- *PostScript* `<http://www.cdegroot.com/photo/darkroom-faq.ps>`

If you have any problems, suggestions, or questions, please contact the maintainer, *Cees de Groot* `<mailto:cg@pobox.com>`.

1.1 I don't have access to the Web

"You're pointing to Websites everywhere, but I don't have access to the WWW." Sorry, but I think that you are out of luck. To put it bluntly, I feel that if you can afford to put time and money into photography, you should be able to put time and money into the greatest information resource on photography - the Web. Furthermore, people *expect* you to have access to the Web, so they will respond irritated if you ask questions on the newsgroup that are one click away from this FAQ.

So do yourself a favour, and get a decent Internet account.

1.2 Acknowledgements

Jean-David Beyer for typing in the quote from Kodak's T-Max datasheet :-). *Tom Reed* `<mailto:treed@omicron.csustan.edu>` for suggesting the parts on VC paper (and supplying me with the table of filtration values).

1.3 Disclaimer, copyright

I've done everything in my power and limited time to make sure that the information in this FAQ is correct. However, neither I nor any contributors can be held responsible for the results of acting on this information or for any damages resulting from using the information in this document in any way.

(The copyright has my name on it because somebody has to own the copyright; however, I want stress the fact that the actual intellectual "owner" of this document is the collective readership of rec.photo.darkroom.)

2 General information

2.1 What is rec.photo.darkroom all about?

Darkroom work. In the broadest sense. There are people here trying to get started with developing 35mm film, people busy with alternative processes, professional darkroom workers, etcetera. There are many many topics which are discussed: materials, technique, equipment, etcetera. There are some questions, however, which are better discussed in other groups, like the quality of films (*rec.photo.film+labs*) and buying/selling equipment (*rec.photo.marketplace*).

Here's the newsgroups line and the charter of rec.photo.darkroom:

> **rec.photo.darkroom** Developing, printing and other darkroom issues This newsgroup will contain postings related to all aspects of photographic darkroom use. As such it will cover subjects such as the developing of slide and negative film, photographic printing from negatives and slides, photographic toning processes and alternative chemistry. This newsgroup specifically does *NOT* permit the posting of commercial advertisments for products or services, even if they are related to photography.

By the way, all the charters for the rec.photo groups are available on *Photo.net.* Read them, before you post...

2.2 What is The Link?

I'm going to introduce a new saying on the rec.photo newsgroups: *Use The Link, Luke* ;-).

The Link is *The Guide to rec.photo FAQs* `<http://www4.ncsu.edu/unity/users/j/jnweg/faq44.htm>`, and is simply a huge collection of pointers to other places. If you have any interest in photography, you should definitely bookmark this place.

2.3 Your Mileage May Vary?

"YMMV" is a well-known Usenetism to indicate that what works for me, may not work for you. This is especially true in photography. Although all photographic processes are subject to the laws of physics and chemistry, there is such a large variation of factors you need to take into account that it is impossible to say how something will work out exactly in somebody else's darkroom. Add to that personal preferences - what I call fine grain is horrible, golf-ball grain to the next guy - and you'll understand that the only way to find out is to experiment.

Especially questions containing the words "will ... make a difference?" are subject to this: probably, somebody with a well-equipped lab having access to advanced measuring instruments will always find a difference. But this does not matter. What matters, is whether *you* will see a difference. So, rather than ask the Net, you might as well see for yourself, because you're likely to get vague answers anyway.

Test And Experiment, you can only learn from it.

3 The darkroom

3.1 How do I build a darkroom?

There's an awful lot to say here, and it is all very dependent on what kind of space (big/small, permanent/nonpermanent) you have. Kodak has a lot of good, sound advice on darkroom building, and I'm aware of one links covering the topic:

- *http://www.darkroomsource.com*

1	Polyethylene terepthalate (PETE)	soft drink bottles
2	High Density Polyethylene (HDPE)	milk, juice and laundry product bottles, Nalgene laboratory ware and bottle
3	Polyvinyl Chloride (PVC)	cooking oil, water, vinegar and bleach bottles
4	Low Density Polyethylene (LDPE)	bags, margarine and ice containers
5	Polypropylene (PP)	yogurt cups and ketchup and syrup bottles
6	Polystyrene (PS)	clear: salad containers, disposable cups; expanded: insulating food container
-	(Poly)tetrafluoroethylene ((P)TFE)	Dupont Trademark "Teflon"; laboratory and environmental sampling contai

Table 1:

3.2 Can I use tapwater for ...?

Generally speaking: yes you can. The short answer comes from *David Manzi* `<mailto:dman3@mediaone.net>`, I quote:

```
Could you use it from a tap?
Yes you could, you little sap!
Could you use it for a mix?
Sure you could, without a fix!
Can I use it for a wash?
Absolutely, let is slosh!
But what about photo-flo?
Ooo I'm sorry, that's a no.
```

The general consensus is that normal tapwater doesn't contain any chemicals in high enough concentrations to influence photographic processes. This is assuming we are talking about water from a water company - well water may very well be unsuitable for darkroom work. The only exception is the final rinse with wetting agent (Photo Flo), where hard water may still leave drying marks; here it makes sense to use distilled water, water from an air dehumidifier, or bottled water (if it is soft enough).

This is only a general consensus, people have been complaining about their tap water's fitness for darkroom work. If you feel uncertain, you might want to consult others in the area (minilabs), your water company, etcetera.

3.3 How do I store chemicals?

A discussion that is coming up over and over again is what kind of bottles are best used to store chemicals. The best stuff, but you already knew that, is dark brown glass bottles with stops made for keeping chemicals in and air out. Glass doesn't let air through and is easy to clean, and these are the two most important considerations (brown glass also doesn't let light in that could harm your chemicals). These bottles are also the most expensive ones, so you might want to use them only for chemicals that oxidize easily, like developer.

Plastics are permeable to air, and not as easy to clean (chemicals can and will be absorbed by plastic and it'll never get out). The cleaning part is solved mostly by only using any given container for a single type of solution. How much oxygen can get to your chemicals depends on the type of plastic and its thickness (the thicker, the better). The best solution is metalized plastic, then PETE, HDPE, LDPE, PP, PVC, PS and last and worst Teflon. Here's an overview of plastics names, the numbers that appear inside the "recycling triangle" on containers from these materials, and what they're often used for:

(table and most of the information in this section from a posting by *Marc Hult* `<mailto:hult@cinternet.net>` in *rec.photo.darkroom*, Message ID <35545554.231656@news.one.net>).

3.4 How do I remove water marks?

A recipe by *Richard Knoppow* <mailto:dickburk@ix.netcom.com>, found in rec.photo.darkoom:

"Try the following. Soak the film for a few minutes in plain water, then treat it for a couple of minutes in stop bath. Swab the surface gently with cotton swabs. If there is anything left treat it with a wash aid like Kodak Hypo Clearing Agent for a minute or two and again try swabbing. This should remove any deposits left by the Photo-Flo. Then wash the film for five minutes and treat in a mixture of distilled water with about one ounce per quart of rubbing alcohol added (Mike Gudzinowicz correct this if wrong) and about half the amount of Photo-Flow recommended by Kodak. Hang it up to dry without further swabbing."

3.5 How do I get rid of my old chemicals?

This depends on your local circumstances. If you're connected to a sewage treatment plant, just down the drain with it. The stuff you produce day by day on the toilet puts more load on the system than the relatively small amounts of waste chemicals you collect in your darkroom. It's more hazardous, too, to collect and store large amounts of processed chemicals in order to bring them to a depot (if you have one in your area). If you're unsure whether you're allowed to do this (regulations may vary), contact the guys who process your water - I'm sure they'll be more than happy to give advice.

People have reported no problems dumping chemicals into their septic tank system, although some take the precaution to dump them together with large volumes of water, eg. when the washing machine pumps its water out. If you are not sure your septic tank will survive photochemicals, contact your dealer (at the very least, you've got somebody to sue :-)).

If you cannot or don't want to dump chemicals down the drain, an often-heard advise is to collect it in a large cannister which you leave open in order to have the water evaporate. You can then regularly collect the crystals from the cannister and get rid of them in whatever way you get rid of other dry chemical waste (which all depends on local regulations). Take precautions against spilling or leakage, like storing the cannister in a tray that can hold the volume of fluid in the cannister.

Note that all these rules apply to hobby darkrooms only. If you're a professional, you should contact your local environmental authority and talk to them; most places have strict rules about chemical storage and disposal for professionally-run darkrooms and photolabs.

3.6 What's the difference between the various enlarger types?

There are two main types of enlargers: diffusion and condensor enlargers. The difference is in the type of light that hits the film: a diffusion enlarger has a light mixing chamber and/or a diffuse translucent panel in order to shed an evenly distributed, diffuse light onto the negative. A condensor enlarger uses one or more lens elements in order to produce a colliminated light beam focused on the negative.

You cannot say that one type is better than the other - a lot of photographers have taken foot in one camp and defend their type of enlarger in an almost religous way, but you will be able to produce good prints with both.

There are some objective differences due to the nature of the light:

- The specular light from the condensor enlarger tends to enhance dust, etcetera, on the negative. You need to be more careful, but it's not a very big deal. A condensor enlarger also tends to show more grain in the print, but see the next point. On the other hand, the images are a bit sharper, which makes them especially popular for small formats like 35mm.

- The specular light also gives higher contrast. This is hard to explain in just a few words, but it's a well-known effect discovered by a Mr. Callier in the early days of this century: specular light gives higher density readings than diffuse light, and the ratio between these density readings is called the Callier Coefficient. I won't go into the details, but it means you need to shorten your development times in order to correct for this effect. Shorter development gives smaller grains and this offsets the higher grain from the previous point.

- Again due to the Callier effect, you will have a difference in contrast between contact prints and enlarged prints with a condensor enlarger: contact prints always show the diffuse densities in your negative, condensor enlarged prints show the higher specular densities. If you make a contact sheet, you will usually need a higher paper grade for this contact sheet in order to see the effect you'll get when enlarging the negatives. This is not a very big deal - you can match paper grades quite easily (it's normally one grade difference), and for good prints the grade indicated by a contact print is just a starting point, anyway (Ansel Adams used a very soft grade for his contact sheets in order to get maximal information, thus completely bypassing this problem).

4 Film processing

4.1 How do I process...

Did you check the manufacturer information? I don't mean the stuff printed on the inside of the box, but the full information readily available on the web or even as hardcopy? When starting with a new film/developer combination, make sure that you get and read the manufacturer datasheets of both developer and film first - most of the manufacturers have datasheets available on the Web:

- *Kodak* <http://www.kodak.com/ciHome/products/L1/>, or call 1-800-242-2424 ext. 19 if you are in the US;

- *Agfa* <http://www.agfaphoto.com/products/index.html>;

- *Ilford* <http://www.ilford.com/html/us_english/homeng.html>;

- *Fuji* <http://www.fujifilm.com/>.

Then, there is an incredible amount of information about processing film on the web maintained by individuals. A (very) short list:

- *Photo Source* <http://www.digitaltruth.com/>, with the Massive B&W Dev Chart, a gigantic list of development times for a lot of film/developer combinations.

and of course: Use The Link, Luke.

4.2 My Kodak Tmax film comes out purple - what happened?

Tmax (and other T-grain films like Ilford Delta) have sensitizing dies incorporated into the emulsion that cannot be washed out very easily. If you don't follow processing instructions carefully, this sensitizing dye gives a purple/pink/magenta hue. According to Kodak, a slight hue doesn't influence printing, but if the color is stronger, it adds to base+fog density.

First of all, get Kodak datasheet F-32. Via the Web (see above) or from your photographic dealer. If you read the instructions carefully and follow them, you won't have any problems. In a few words, you need to dump your fixer earlier (because these emulsions exhaust them faster), agitate vigourously when fixing, wash a bit longer, and use Hypo Clearing Agent. As this is FAQ number one on the group, I'll just quote F-32:

> "Fix at 65 to 75F (18C to 24C) for 3 to 5 minutes with vigorous agitation in KODAK Rapid Fixer. Be sure to agitate the film frequently during fixing. "Note: To keep fixing times as short as possible, we strongly recommend using KODAK Rapid Fixer. If you use another fixer, such as KODAK Fixer or KODAFIX solution, fix for 5 to 10 minutes or twice the time it takes for the film to clear. You can check the film for clearing after 3 minutes in KODAK Rapid Fixer or 5 minutes in KODAK Fixer or KODAFIX Solution.
>
> "Important: Your fixer will be exhausted more rapidly with these films than with other films. If your negatives show a magenta (pink) stain after fixing, your fixer may be near exhaustion, or you may not have used a long enough time. If the stain is slight, it will not affect negative contrast or printing times. If pronounced and irregular over the film surface, refix the film in fresh fixer.
>
> "Wash for 20 to 30 minutes in running water at 65F to 75F (18C to 24C) with a flow ratre that provides at least one complete change of water in 5 minutes. You can wash long rolls on the processing reel. To save time and conserve water, use KODAK Hypo Clearing Agent."

The Ilford datasheets for Delta films have similar instructions. If you have films with these residual dies in them, re-fixing followed by a long wash may help.

5 What's the advantage of diluting developer?

When you dilute developer, you change the chemical characteristics of the various components. The two effects most cited are that you get better sharpness, but at the same time slightly larger grain - both caused by the suppression of silver solvent action. You also can gain a bit more speed, and because of the extended developing times, it is easier to get even and consistent development. Dilute developer makes it economical to use it one-shot (throw it away after usage), which further adds to consistency.

In howfar the effects of dilute developer are visible, depends on the film/developer combination. When starting out with a new combo, test various dilutions and see whether you can make out any differences. Use what you like best.

6 Printing

6.1 Resin-coated of Fiber-based paper?

Which one you will use depends on a lot of things. First, the facts:

- FB paper has proven archival qualities (given proper processing). That's why collectors, musea, etc. often insist on FB.
- RC paper has shown good keeping qualities in accellerated aging tests. If it is just for yourself, friends and family, I think you can rest assured that it will keep the rest of your life. But, until RC paper has been on the market for another 100 years, it's not called archival.
- RC paper is much easier to process. It is especially easy to wash and dry, and it won't curl.
- FB paper is less sensitive to the temperatures in a dry-mount press.

Grade 2	45M/9Y
Grade 2.5	65M/12Y
Grade 3	95M/15Y
Grade 3.5	120M/20Y
Grade 4	200M/30Y
Grade 5+	200M

- FB paper can be kept wet for a very long time, whereas with RC paper, you risk separation of the layers.

Then the opinions: there are people who simply like the look and feel of FB paper better. You should decide that for yourself, of course. Invest in a small package of both, that will give you a better answer than asking the newsgroup.

6.2 Can I use brand A VC filters on brand B paper?

Yes, but there might be small differences in the grades you get. However, a #2 filter will always give a softer result as a #3 filter, no matter on which paper you use it.

My humble opinion: the subtle differences of mixing up filters and papers are probably smaller than the differences introduced by the fact that you probably use another developer, enlarger and darkroom than the factory test facility. So you need to test anyway (I test by contact printing a step tablet).

6.3 I have a color head, can I print on VC paper?

Yes, you can. Again, get the datasheets of the paper - manufacturers of VC paper normally have color filtration values for the various grades. A starting point:

6.4 Can I print color negatives on black-and-white paper?

Yes, you can. Normal B&W paper, however, is not panchromatic - it only responds to a narrow band of wavelengths of light. Graded paper just responds to blue light, and variable contrast paper responds to blue and green light (but the amounts of blue and green light influence the gradation of the paper). Generally speaking, printing color negs on B&W paper won't give natural-looking results.

Kodak has a panchromatic paper, Panalure, available in 3 grades. If you want to get good results printing from color negatives, you should use this paper.

Of course, using normal B&W paper *can* give interesting effects, comparable with using orthochromatic film - experiment!