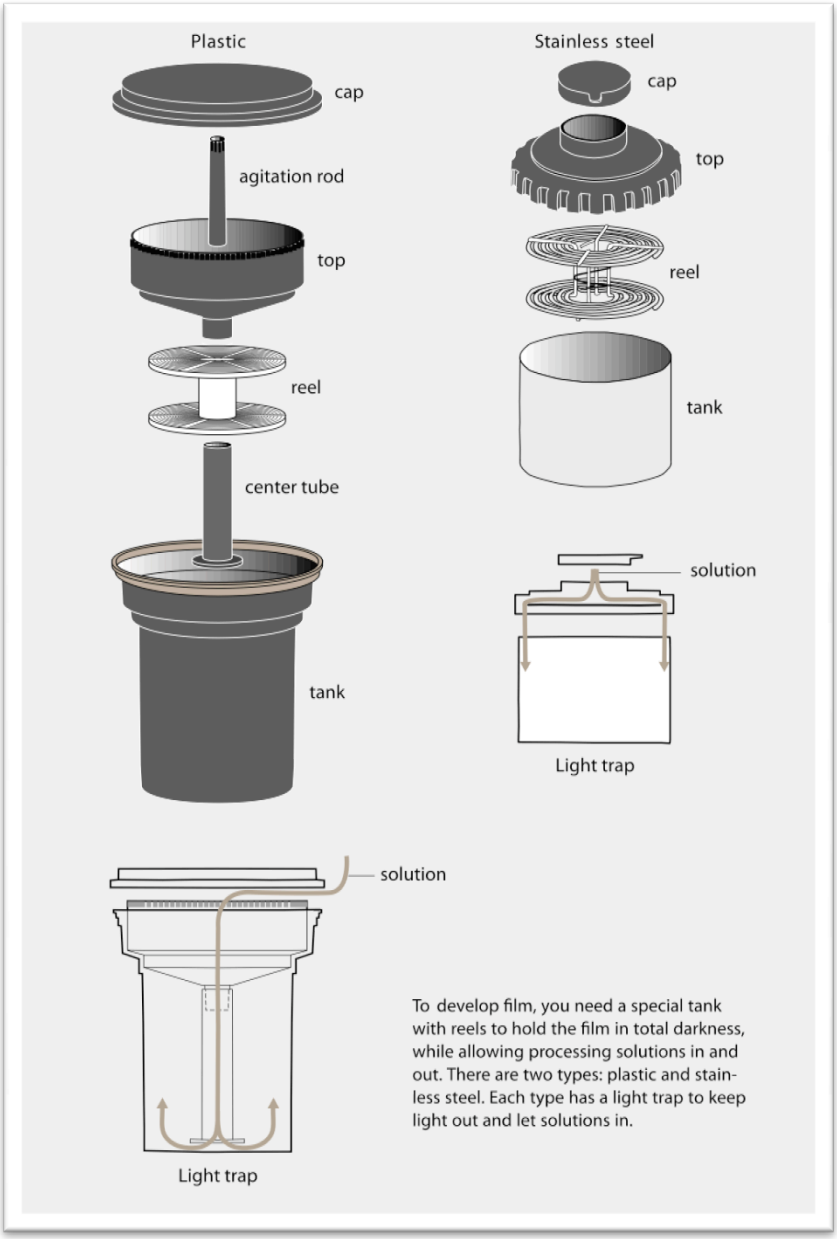
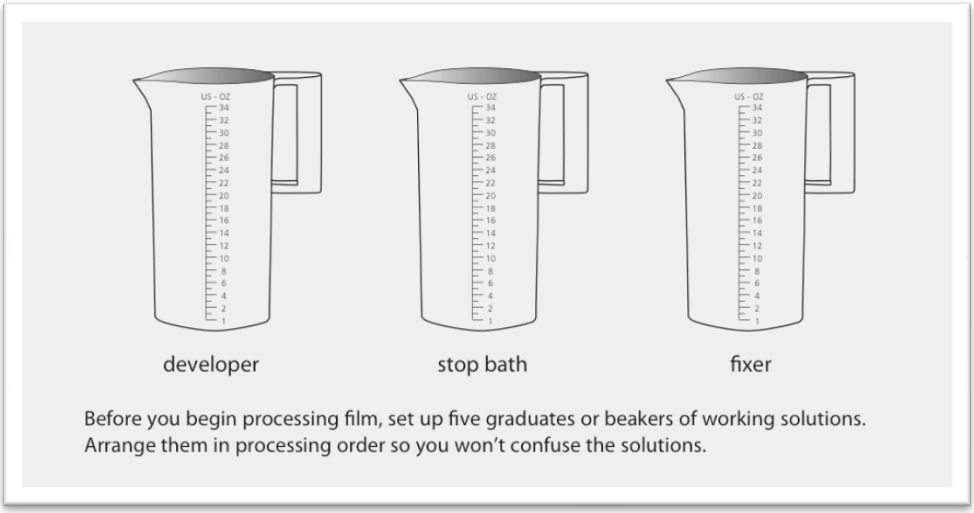
FILM DEVELOPMENT

Tank Basics & Mixing Chemicals

DEVELOPING TANKS: Since film is light sensitive, you must develop it in total darkness. To do this safely and efficiently, you turn off the lights in the inner and load exposed film onto a spiral reel. You then place the reel in a light-tight processing tank. Once the film is in the tank with the top secured, you can turn on the room lights; the top of the processing tank has a light trap, an opening designed to allow processing solutions in and out without letting in light.



IMPORTANT: ***Regarding the instructions in the following page, always wear safety goggles when mixing these chemicals and, if possible, wear rubber gloves as well. These chemicals are relatively corrosive and can irritate delicate skin, so avoid prolonged skin contact. If you get any of these chemicals in your eyes, flush them with water for 15 minutes. There is an emergency eye wash station in the inner darkroom that you can use if this happens.***



Before you begin processing film, set up five graduates or beakers of working solutions. Arrange them in processing order so you won't confuse the solutions.

DEVELOPER: The developer is the most important processing chemical because it forms the image, turning exposed film into negatives. It does so by reacting with the film emulsion's light-sensitive crystals and converting them to black, metallic silver. The greater the film exposure, the more dense the concentration of developed silver. Areas of the film that received a lot of exposure (light subject areas) turn darkest, while areas that received less exposure (dark subject areas) appear proportionally lighter or clearer on the negative. Depending on the brand of developer we have in the cabinets at the time, you must prepare and use stock solutions of developer in various ways. With some, you don't dilute the stock solution at all; the stock solution, in effect, also is the working solution. To make enough developer for one roll, you have to mix a total of 10 oz. (you can find this number on the bottom of the tanks stating how much developer you need for *each roll*) using the Concentrated-76 film developer. For the purpose of this guide, we'll be using the recommended 1:4 dilution rate (1 part developer to 4 parts water). In short: You'll be mixing 2 oz. of developer with 8 oz. of water; make sure you mix thoroughly with the stirrers. Remember that this only applies to one roll of film so, if you're developing 2 rolls in one tank, you'll need to double each of these portions. Also remember that these directions only observe our Tri-X 400 film shot with the camera ISO set to 400. Different speeds of film have different development times, so always read the label on the bottle in order to develop your particular development time. Use a thermometer to measure the temperature of the developer. The recommended temperature of the D-76 developer is 75º F. If it's hotter or colder, you'll have to adjust your development times accordingly. Please consult the time compensation time chart on the bulletin board inside the sink room or read it for yourself here.

STOP BATH: The developer will continue developing film until neutralized by a stop bath, which usually consists of a very mild solution of acetic acid. You can use a plain water rinse to end the developing action, but an acid stop bath is more effective and helps preserve the next solution, the fixer, which is far more critical to the developing process (and more expensive) than the stop bath. The Kodak Indicator Stop Bath solution we will be using is a very strong concentrate and uses a dilution of 1:63. This means that, for every liter of this stuff we make, we only need to add 40 ml. Most of the time, we'll already have the stop bath mixed and saved in our storage tanks, so all you'll have to do is pour yourself the proper amount that you'll need for your film and seal the tanks. We can also reuse the stop bath and the fixer solutions, which is why it's important to store it properly.

FIXER: After treatment in the developer and stop bath, all silver particles that were exposed to light in camera have darkened to form the image. However, the film still contains silver particles that were not exposed to light in camera. **Fixer,** sometimes called hypo, is the chemical that removes this unexposed (and thus undeveloped) silver, allowing the film to be viewed safely in the light. Left unfixed, unexposed areas will eventually darken with exposure to light and ruin the results. The fixer we have will use a dilution of 1:9 (1 part fixer to 9 parts water) but there will almost always be some fixer ready in the storage tanks for you to use, and can also be reused; please take proper measures to store it properly. Take care not to overuse the fixer, as a weakened or depleted solution may not work effectively. If in doubt about a fixer's freshness, use a **fixer check** by squeezing just a few drops of fixer check solution into a small container of used fixer. If a white, cloudy precipitate forms, the fixer is depleted and should be discarded; if no precipitate forms, the fixer is still fresh.