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Lith printing technique – lesson 1: the basics

Some theory for a better understanding of the process.

Highly diluted hydroquinone developer causes coloured image tones if the print is excessively overexposed, especially if the oxidation products are not captured by sulphite, but instead take part in building up the image.

Lith developer contains only one developing substance, hydroquinone (HQ). Without any protection from oxidizing, HQ has only a limited lifespan in an alkaline solution. It oxidises to quinone. Quinone has no ability to develop. For lith printing the key precursor semi-quinone is used. If enough semi-quinone accumulated in the working solution, it can engage in the developing process. This happens either through use or through adding semi-quinone (“inoculating” with small amounts of used up developer – “old brown”). Semi-quinone reacts a lot more aggressive than its original substance hydroquinone, which is a lot slower. If developing seeds have reached a certain state, a reaction is induced by the radical semi-quinone. This reaction is called “infectious development”. The areas, where development has progressed the furthest – the shadows – turn black in a sudden burst. At this moment the developing process has to be stopped quickly. The blacks are not getting any deeper, but only spread further into adjacent areas. This means that the next shadow zone also turns black without separation!

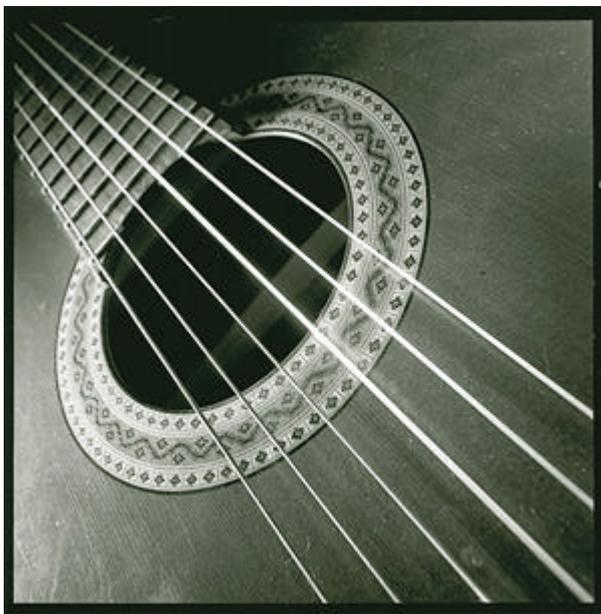
To generate a colourful image with delicate tone values, hydroquinone needs a lot of time. If the image is produced too quickly, there is little effect. As of 4 minutes of development time, you can consider your image a lithprint. The best results come about in developing times between 6 and 12 minutes. To reach these times, lith developers contain high amounts of substances to impede development. Generally speaking, it is potassium bromide. In a normal dilution of 1+9 SE5 LITH would still work too fast to cause colourful highlights. The term developer concentrate does not say much in a time where superlatives are used for marketing reasons. There is no lith developer on the market, with as high a concentration as SE5 LITH. You can see that in direct comparison. This means the developer has to be diluted more or you have to constrain it by adding impeding substances. Both is available to the user. Novices in the lith printing technique should start without using additives and only play around with the dilution.

On the basis of image examples I want to describe how you get to your desired result.

Lith prints need “overexposure”.

The more light the emulsion receives, the more colourful the result. The higher the amount of light, the more you have to dilute the developer. The experienced lith printer can estimate the degree of overexposure. For the first lithprint you can be more systematic. Make a normal print of your negative with a stopped down aperture. For the lithprint take the same exposure time while opening the aperture by 1 to 4 stops.

If you have only printed on RC paper so far, you do not have to change to fibre base paper or buy expensive special lith paper. Sufficient and without any loss of quality, a number of RC papers can be used, like e.g. our Select VC/PE, Forte or Classic Polywarmtone, Agfa MCP, Fomatone RC, Imago Lith RC.



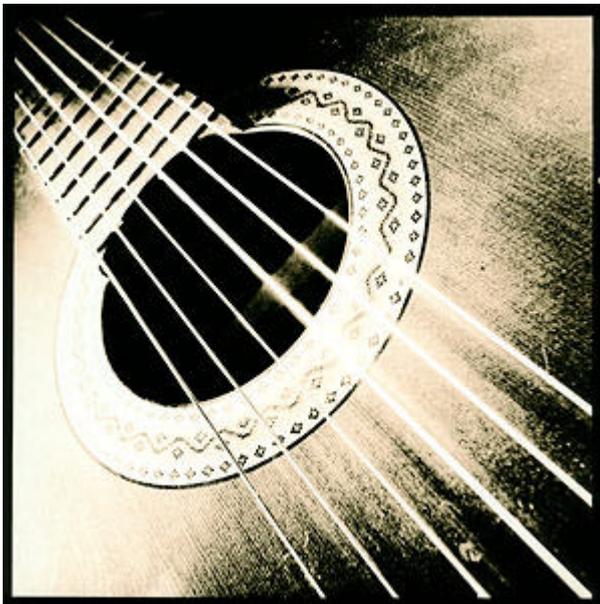
Select Sepia VC RC developed in SE3 COLD

To keep things simple, you can take over the filtration you used for the normal print for your first lithprint. Later you should use white light (with no filtration) if possible in order to achieve shorter exposure times. Filters absorb a huge amount of light. If you overexpose for up to 4 stops, this can lead to a battle with Schwarzschild effect. In lith printing, to control the contrast via filtration is absolutely dispensable.



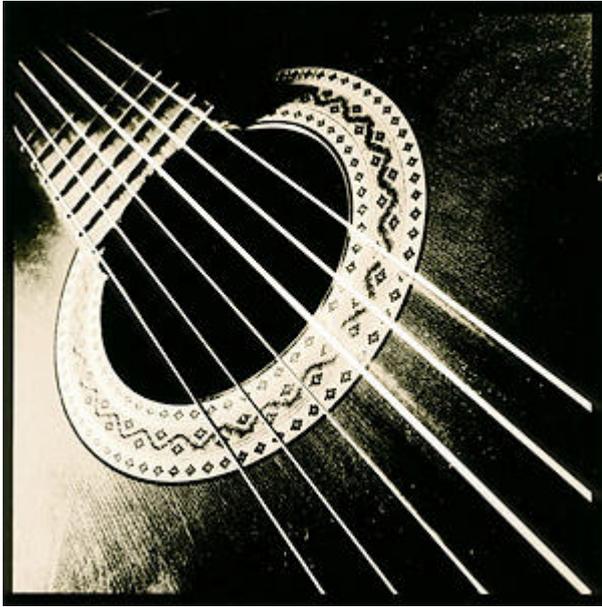
Select Sepia VC RC developed in SE5 Lith
exposure: + 1 stop
dilution: 1+20 (20ml A + 20ml B + 800ml of water)
developed for 11 minutes

Result: a pronounced lithprint with a high contrast and those dense shadows typical for lith. If you want more colour, increase exposure.



exposure: + 1½ stops
dilution: 1+20 (20ml A + 20ml B + 800ml of water)
developed for 10 minutes

Result: More colour and a softer gradation. Due to the higher amount of light we needed a shorter time of development. This resulted in smaller areas of lith black. But they still lack depth. In the following example the amount of light was again increased by half a stop and the developer diluted to 1+25 (20ml A + 20ml B + 1000ml of water)



exposure: + 2 stops
dilution: 1+25 (20ml A + 20ml B + 1000ml of water)
developed for 11 minutes

Result: For this amount of light and the same developing time, the developer is still too strong. The colour of the highlights and the contrast are correct, but the shadows are too rich. This means, we should have decreased the time of development.



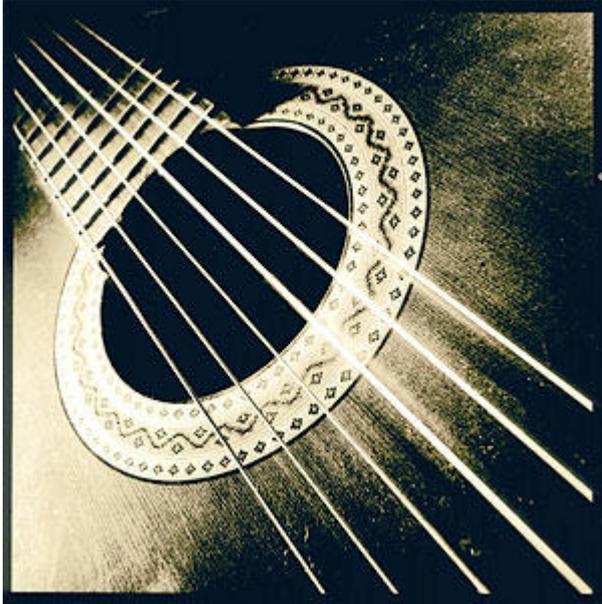
exposure: + 2 stops
dilution: 1+30 (20ml A + 20ml B + 1200ml of water)
developed for 11 minutes

Instead of decreasing the time of development, you can also dilute the developer further. You can go beyond 1+30 – as in here – but the developer will strongly change its effect with every print to come. On one side the developer is getting exhausted, which results in slower development. On the other side, weak configurations react stronger to oxidation products. The concentration of semi-quinone increases and the formation of bromide impedes the development.

This can only be compensated by regularly regenerating with fresh working solution in the same dilution.

So far only parts A and B were applied. The advanced user may want to make use of the advantages of additives that are included in delivery of the full MASTER SET. These additives can also be ordered separately. I will describe their effects later in detail. Here only one example for the additive LITH D, which has an impeding effect. Instead of using a higher dilution, you can slow down the developer with a retarder. This way you can keep the working solution stable for longer times. If you start with an artificially created high content of bromide, you can balance the increase of bromide that occurs naturally with every print that is developed, by regenerating with working solution in the same dilution without bromide.

To demonstrate the effect of additive D, an overdose of it was added to the working solution for the following example. This required more overexposure.



exposure: + 3 stops

dilution: 1+15 (20ml A + 20ml B + 600ml of water and 40ml ! D)

developed for 9 minutes

Compare this print to the previous print. Despite the increased amount of light due to a development time decreased for 3 minutes, you see a similar gradation with slightly cooler highlights. The shadows are significantly cooler and thus of a higher density.

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