

## MOERSCH SPECIAL EDITION 5 LITH

This developer was specially designed for the lith printing technique. The two concentrates and additives C and D (E optionally as a shadow accelerator, grain additive) can be used to mix the optimal working solutions for all "lith-compatible" papers. ATTENTION: Additives **D** and **E** are highly concentrated. Dilute **1+4** with water before use (when using the table values) !

Chlorobromine silver emulsions without incorporated development accelerators such as Phenidone. The following suitability test is recommended for unknown papers: A strip of paper is sprinkled with B solution in the light. If the paper remains unaffected after two to three minutes, or at most shows traces of pink or brown, then it is clean or contains only hydroquinone and is worth a try. If there is significant blackening, especially if it appears immediately, a development accelerator is involved and the matter can be forgotten or the problem can be remedied by extensive pre-soaking.

### **Suitable papers for the lith print technique, sorted by difficulty level**

Best results with high color:

Fomatone/Rollei Vintage 131/132 and all still available Forte warm tone emulsions such as Polywarmton and Fortezo

A little less colorful:

Kentmere Kentona with greenish-black shadows, Fotospeed Lith with rich black

Creamy beige:

Agfa MCC and Adox MCC

Greenish yellow lights, rich grainy black:

Photochemistry Varikon, Adox Fne Print Classic VC

Brown to reddish brown lights, deep shadows, grain up to the midtones:

Fotokemika Emaks, Adox Nuance, Imago Lith

Yellow to reddish-yellow highlights, brown to green-brown shadows:

Kentmere Fineprint Warmtone, Wephota BN112

Difficult to lith, only recommended for experienced printers:

Ilford MGWT, Bergger Prestige VCCB (a special two-bath kit is offered for these papers)

Very grainy, with a pronounced tendency towards peppercorn:

Fomabrom fixed gradation (from production 2002) Fomabrom Variant III, Rollei Vintage 111, Slavich

Preparation of the working

solution: Example Paper

Fomatone 1000ml water + 25ml A + 250ml B + 15-20ml D

Before adding D solution, a small amount of developer (about 100-200ml) should be removed for regeneration.

If the exposure time for conventional processing is not known, inexperienced users should test the "normal exposure time" with their preferred developer and, if possible (due to the differences in exposure time), do so at least once a day. Schwarzschild) with the aperture closed as far as possible. The exposure time determined remains the same, and in this example the aperture is opened by three full stops. The expected development time is 6-8 minutes.

The print should be rocked during the entire development time. Floating and partial "drying out" must be avoided at all costs. In this process, visual inspection

be developed, at least towards the end! So, layer up, don't be afraid of the veil and keep moving. At first nothing seems to be happening.

With a few exceptions, the image tracking time is between two and four minutes. With high dilutions and high bromide content, the image build-up is extremely slow. This is absolutely necessary in order to maintain tonal differentiation in the highlights when there is a lot of color (yellow-brown, ochre, red-brown, pink). After half of the expected development time, the print must not yet show any pronounced differentiation between the highlights and shadows; under no circumstances must the shadow areas develop too quickly, otherwise the "lith band" (area of unstructured blackening) would be too wide in the finished print.

Until shortly before the end, the image still appears dull and powerless. Then the semiquinone strikes and the blackening spreads in a modulating manner from the deepest shadows - first hesitantly, then more and more rapidly from one zone to the next. Finding the right point to stop is a matter of experience. Now, with some papers, seconds can decide whether it ends up in the trash or in the frame.

Ready? Get out! Stop bath! Move!

Do not allow to drain as usual, it is better to renew the stop bath occasionally.

Increasing the temperature to 24°C or more significantly accelerates the entire development process without adversely affecting the result.

Basically, the more light, the warmer the image tone in highlights and midtones and the softer the gradation.

However, this then requires, at least when the exposure time is extended by more than half a stop, an adjustment of the developer by higher dilution or a stronger addition of bromide (starter), because otherwise the image would come too quickly and in extreme cases the highlights would already close before the "infectious development" of the shadows could begin.

The further the onset of "infectious development" is delayed, the more intense the effect.

Impatient practitioners can start right now.

Inquisitive systematists should read on first.

For **fine-tuning** and optimal **regeneration**, understanding the mechanisms of action is essential.

A detailed description of the complex processes would go beyond the scope of this manual (for more information, I recommend: Tim Rudman, The Master Photographers Lith Printing Course (ISBN 1-902538-02-1) - so I'll just give you the most important information in brief. The trigger for "infectious development" is the formation of semiquinone during the development process. Semiquinone is an oxidation intermediate of the developer substance hydroquinone, which is "captured" by antioxidants normally contained in developers, such as sodium sulphite. For this reason, lith developers may only contain small amounts of free sulphite, which unfortunately does not help durability. In this developer, the rapid formation of semiquinone is promoted by an additive. The often recommended "inoculation" (adding used, strongly oxidized solution) or "ripening" (semiquinone production is started by developing a strip of exposed paper) of working solutions is therefore not absolutely necessary; the first print is reliably lithified. This procedure is nevertheless useful for stabilizing the developer, otherwise reproducible results would only be expected after the third print. To prevent the semiquinone from intervening too early in the development process, barriers of varying heights can be set up. Bromides are usually used for this purpose, along with other retarders. Only when the semiquinone content of the developer exceeds a freely definable threshold value can it become effective on the developing silver nuclei. However, this then happens almost instantly, and its effectiveness is equal to that of a second super-additive developer substance.

Heavily used lith developers, especially those in extremely high dilutions, reach the limit of their buffer capacity due to acidic oxidation products. Sulfite is consumed, the alkalinity decreases, which means that the lights need more time than the semiquinone allows them.

What makes matters worse is that more and more bromide is released from the emulsion. To ensure consistent print results, regular regeneration is therefore necessary, at least for dilutions above 1+15. The type and amount of regeneration also depend on the paper used. Normally, regeneration with a working solution diluted to the same degree (without or with reduced bromide addition) is sufficient. More on this below.

encore

- + A solution: harder, more colorful, grainier, slower, less durable
- + B solution: softer, less colorful, faster, more durable
- + D/E/Bromide: delays the onset of the lith effect, requires more light
- + C Sulfite: Antioxidant and blackening killer, carefully dose against peppercorn

**Shelf life:** General information on the shelf life of lith developer working solutions is rough Nonsense! The following factors affect durability:

- 1.) Degree of dilution
- 2.) Composition: ratio A:B and additives such as sodium sulfite (solution C)
- 3.) Utilization: Fresh – Used – Consumed
- 4.) Oxidation surface: bottle filled to the brim or bowl filled to the width of a finger
- 5.) Amount of developer per oxidation area
- 6.) Regeneration

In the formulation of this developer, more emphasis was placed on a large number of usable Papers, rather than extreme durability, whereby the durability can always be increased by adding C solution if the paper used allows it.

Example 1 Paper Fomatone 1+10 without sulphite

500ml bowl 8x10inch without regeneration	5-8 prints 8x10 4 hours
1 Liter " Reg. total quantity 500ml 12-20Prints 8x10	8 hours

Example 2 Paper Adox Fineprint Classic 1+10 with sulphite 20ml/litre

500ml bowl 8x10inch without regeneration	5-8 prints 8x10 6 hours
1 Liter " Reg. total quantity 500ml 12-20Prints 8x10	12 hours

A visual indication of the state of the working solution is the color. When prepared, it is clear, becomes yellowish to amber in colour when used. At this point at the latest it must be regenerated. reddish brown color makes it difficult to control, dark red is the end of the line! Moderately used (yellow) Solutions can be stored in full bottles for several days.

#### **Shelf life of concentrates:**

**A** full/half empty bottles 8/4 years **B** full or partially filled - unlimited shelf life

**C** Sodium sulphite solution: The "20% antioxidant solution" contained in the master set is a stabilised Mixture of several sulphites. In unopened bottles it can be stored for at least two years without restriction. effective, with partially filled bottles the effectiveness decreases slowly due to the effect of oxygen but steadily. This can be prevented by decanting into smaller containers, by Squeeze the plastic bottle to release the remaining solution up to the cap or by displacing the oxygen with Protectan (Tetenal) or lighter gas.

**D, E, y** starter solutions almost unlimited

**Regeneration:** From the third to fifth print per litre, in the interest of consistent Results must be regenerated regularly. The following types of regeneration are available depending on the used paper alternatively possible:

- 1.) with working solution of the same dilution (halve the bromide addition compared to the starting mixture) either regularly with 10% of the starting amount or irregularly even more (if necessary also during the process, but then add slowly with vigorous agitation) 2.) with diluted B solution to keep the pH value stable (if the Lith-Point moves too much towards backwards) – do not overdo it, start with small amounts and see the effect check!
- 3.) with C-solution: Normally 2-5ml is sufficient, considerably larger amounts are not possible in some Papers necessary to avoid peppercorns and "black dots".

## TIPS AND TRICKS

**Processing temperature:** The normal temperature is 20°C as usual. Temperatures below 18°C are not good. To shorten the processing times, the developer temperature can be increased to 25-28°C. The speed gain from 20°C to 25°C is 40%. Solutions rich in bromide can be run at temperatures above 25°C, but it should be noted that when the temperature is increased, all chemical processes take place more quickly, including oxidation!

This formulation does not contain the formaldehyde normally found in lith developers. Therefore, even at high temperatures, there is no need to worry about unpleasant odors or health risks from emissions.

The developer temperature can be kept sufficiently constant between 18-26°C even in cooler rooms if the tray is placed on two bottles filled with warm water (30-50°C).

**Two-bath development:** Often the only solution for highlight drawing + lith black for high-contrast negatives and papers with a high silver bromide content. Example: First developer with high bromide addition (highlights stand still, shadows move up without lithing) change to second developer without bromide and sulphite addition, possibly even with a slight excess of A solution (more than 30-60 seconds are rarely required)

### **New - Lith y** This

concentrate is diluted 1+100 and used as a second bath after fat lith developers. This solution contains ammonium carbonate and no antioxidant to increase the color intensity and at the same time increase the blackness. However, this method is only effective with papers with a low silver bromide content such as Fomatone or Forte.

This print variant reduces the process time by about half; another advantage is the longer shelf life of developer solutions that are used in large quantities and are also only used for a relatively short time. The second bath naturally only has a limited shelf life and must therefore be replaced as soon as the solution turns a dark red color.

**Toning:** Lith prints take toning extremely readily. Selenium or gold toning (or combinations) are often a must.

Selenium toner undoubtedly offers the most versatile options. Depending on the dilution and exposure time, only the shadows can be intensified or retoned, or all tonal values can be changed in their image color. Some papers (lithified with a lot of bromide) do not produce maximum blackness. Here, selenium works wonders when used sharply and for a short time (1+3 to 1+9 10-30 seconds!).

**Hardening:** Some papers (especially those with matt surfaces and factory-fresh emulsions) should be hardened with development times longer than 8 minutes before toning in aggressive baths such as Iron blue, sulfur or selenium (below 1+15) to avoid coloring of the image whites.

Gelatin hardening is basically possible at all stages of the processing:

- 1.) Hardening before development (alkaline hardener): Disadvantage: complexity – each individual print needs three to four minutes of additional processing time
- 2.) Addition of hardener to the stop or fixation bath: Advantage: common hardener additives available in the trade; Disadvantage: Increased water consumption due to considerable extension of the soaking time
- 3.) Hardening after fixation and short soaking with one of the known acidic preparations, or our special lith hardener. Before selenium toning, the paper must be watered again, or alternatively the acidic paper felt can be neutralized in a watering aid.

**What else?** The off switch for the lith effect If you only want

the bright colors and the lith effect is a seemingly necessary evil, then simply switch it off! There are two alternative methods for this:

1.) Very small amounts of any positive developer: Since, with very few exceptions, all developers on the market contain at least two developer substances, the hydroquinone of the lith developer reacts super-additively with at least one other developer substance and "lithing" is impossible. The image tone shifts more or less strongly towards greenish.

2.) High dose of sodium sulphite: The exact right amount depends on the Paper between 40% and 200% of the A solution amount.

Very beautiful brown tones can be created, especially with warm-tone papers.

Example Forte PW: Dilute 1+8 tone brown and 1+15 tone reddish brown Water

830 + A 60 + B 50 + C 50 Water 1600 + A

Exposure +1 stop, development 6 minutes

60 + B 50 + C 50

Exposure +2.5 stops, development 10 minutes

**Detailed process descriptions with image examples can be found here: <http://www.moersch-photochemie.com/daten/knowhow.htm>**

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