MOERSCH

SPECIAL EDITION 5 LITH UPDATE June 2025

This developer was specially designed for the lithprint technique. From the two concentrates and the additive D (E optional as shadow accelerator, grain additive), the optimal working solutions can be mixed for all "lith-capable" papers. ATTENTION: Additives D and E are highly concentrated. All quantities refer to a solution diluted **1+4** with water!

Lithable papers are those with Chloro-Bromide emulsions without incorporated development accelerators such as phenidone. To test whether a paper is lithable carry out the following: Sprinkle strip of the paper under normal room lighting with the B solution. If nothing happens after 2-3 minutes (or if traces of pink or brown appear) then either it is clean or contains only hydroquinone and is worth trying. If blacks appear, particularly if they appear suddenly, then a development accelerator is present which renders the paper useless for lith processing.

Suitable Lith papers, listed by difficulty:

Best results, distinctive colouring:

Fomatone/Rollei Vintage 131/132 and all those Forte-Warmtone emulsions such as Polywarmtone and Fortezo that are still available.

Somewhat less colorful:

Kentmere Kentona with green-black shadows, Fotospeed Lith with saturated blacks.

Creamy beige:

Agfa MCC und Adox MCC Only early batches are suitable; older batches contain larger amounts of phenidone.

Greeny-yellow or reddish yellow highlights, saturated, grainy blacks:

Fotokemika Varikon, Adox Fine Print Classic VC

Brown – red/brown highlights, deep shadows, grainy in the middle tones:

Fotokemika Emaks, Adox Nuance, Imago Lith

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

Kentmere Fineprint Warmtone, Wephota BN112

Difficult to lith, only recommended for experienced lith printers:

Ilford MGWT, Bergger Prestige VCCB

Very grainy, with a distinct tendency to peppercorn:

Fomabrom fixed grade papers (after 2002) Fomabrom Variant III, Rollei Vintage 111,

Slavich Unibrom

Only two lith-capable papers from Foma remain from current production.

Fomatone 131 and 132, as well as the RC variants 331 and 332

and Foma Retrobrom.

ATTENTION Fomatone papers manufactured after December 2022 are no longer suitable for the lith process.

Update April 2025

Fomatone 131 (batch 079648-2) and Fomatone 132 (batch 079648-6) are lithable again.

Approach of the working solution:

Example Fomatone paper

Older mixing suggestions with high dilution can no longer be used since the resulting development times of more than 6 minutes with Fomatone papers show the so-called snowball effect

1000ml water + 505ml A + 50ml B + 25-50ml D (diluted 1+4!)

Before adding D solution, a small amount of developer (about 100-200ml) can be taken out for later regeneration.

To exclude the above-mentioned error, overexpose until the print is fully developed at a development time of about 6 minutes. The higher the dose of D, the longer exposure time is required. The longer the exposure, the more colourful the print will appear.

Foma Retrobrom

In the batches so far, no snowball effect has occurred with development times of 9-12 minutes. It is therefore possible to expose a little shorter if the dosage of D is reduced at the same time.

Agitate the print continuously in the developer and take care to ensure the print stays submerged to avoid dry areas caused by the print floating to the surface. Develop by inspection at least towards the end. So: emulsion side up, don't worry about fog and keep the print moving. For a while nothing will appear to happen. The image will start to appear – with a few exceptions – between two and four minutes. With high dilutions and high amounts of Bromide the image will take a very, very long time to develop. This is absolutely necessary in order to maintain many colours (yellow-brown, ochre, redbrown, pink) as well as tonal differentiation in the highlights. After half the expected development time has elapsed there should not be any predominant appearance of highlights or shadow differentiation, the shadow areas should not appear too quickly or the ‚lith-band' (areas of unstructured shadow) will be too broad in the final print.

The image will appear to be flat and weak right up to the end then the semi-quinone kicks in and starting in the deepest shadows the modulated blacks start to spread, tentatively at first and then ever rapidly from one Zone to the next. The correct 'Snatch point' at which development is arrested can only be determined by experience. Now's the time to decide, with some papers, whether it does in the bin or frame. Finished? Out! Stop bath! Agitate! Don't stop to let developer drip off the paper – better to renew the stop bath more often.

Increase temperature to 24°C or more speeds up the whole development process without any detrimental effect upon the result.

The following fundamentals hold true:

The more light, the warmer the highlight and middle tones with a softer gradation. This is conditional on extended exposure times of over a half of 1 stop, the best match of both developers to the paper in terms of dilution or by the addition of more Bromide (starter), otherwise the image develops too quickly with the highlights tapering off before the infectious development of the shadows can get going. The longer this infectious development is delayed, the more intensive the effect.

Impatient worker can now get going. Those wishing to learn more may read on.

An understanding of the action mechanism is an absolute requirement for **fine calibration** and optimum **regeneration**. A detailed description of the complex processes would exceed the framework of this introduction (for more information, we recommend Tim Rudman, *The Master Photographers Lith Printing Course* ISBN 1-902538-02-1), so here only the most important things in brief. The trigger for the "infectious

development" is the formation of semiquinone during the development process. Semiquinone is an intermediate oxidation product of the development substance hydroquinone, which is normally "picked up" by the antioxidants (such as sodium sulphite) contained in the developer. For this reason, lith developers cannot contain more than traces of free sulphite, which unfortunately has adverse effects upon the working life of the solution. The rapid formation of semiquinone in this developer is enhanced by an additive. For that reason, the often-recommended "inoculation" (addition of used, heavily-oxidized solution) or "maturing" (starting semiquinone production by developing a strip of exposed paper) of working solutions is not necessarily required; even the first print will be dependably "lithed". These methods are nevertheless useful for stabilizing the developer; otherwise one cannot count on reproducible results until after the third print has gone through. Barriers of different levels of effectiveness can be constructed to prevent the semiquinone from kicking in too soon in the development process. In addition to other restrainers, bromide is generally used in this regard. It is not able to begin to be effective upon the partially-developed silver molecules until the semiquinone content of the developer has exceeded the predetermined threshold level of the user's choice. Then, however, its effect is very sudden, equalling in its effect a second, superadditive developer substance.

Lith developers which are severely exhausted, particularly those with extremely high dilutions, reach the limits of their buffering capacity through acidic oxidation products. Sulphite is used up, alkalinity falls off, which leads to the situation where the highlights need more light than the semiquinone allows. An additional difficulty is the increasing amounts of bromide are released from the emulsion. For that reason, to ensure consistent print results, regular regeneration is required, at least with dilutions greater than 1+15. Regeneration type and quantity are also dependent upon the paper used. Normally, regeneration with a working solution of the same dilution (with either zero or reduced bromide additive) is sufficient. More on this below.

Adding	
+ Solution A:	harder, more colourful, grainier, slower, shorter working life
+ Solution B:	softer, less colourful, faster, longer working life
+ Bromide:	delays the onset of the lith effect, requires more light

Working life: general specifications regarding lith developer working solutions are very misleading! The following factors have an effect upon working life:

1.) Degree of dilution

2.) Composition: relationship A:B

3.) Amount of use: fresh - used - used up

4.) Oxidation surface: bottle filled to the top or tray filled to the depth of a finger

5.) Developer quantity per oxidation surface

6.) Regeneration

A visual point of reference for the condition of the working solution is the colour. When freshly mixed, it is clear; as it is used it becomes yellowish to amber in colour. It must be regenerated no later than this point. When it reaches the point of being reddish-brown, monitoring is difficult; dark red means it's all over! Solutions that have been somewhat used (yellow) can be stored for a few days in filled, tightly-stoppered bottles.

Life of the Concentrates:

A full/half-full bottles at least 8/4 years

B full or partially-full bottles: unlimited life

In unopened bottles it is fully effective for at least 2 years, in partly full bottles the effectiveness gradually reduces as a result of slow but continuous oxidisation. This can be avoided by the use of smaller containers, by squeezing a plastic container to expel the air or by the use of a neutral gas (Tetenal Protectan) or cigarette lighter gas.

D, E, Starter solution practically unlimited.

Regeneration: In the interest of consistent results, regeneration should be carried out regularly, starting with the 3rd-5th fifth print. The following types of regeneration are possible, depending on the paper used, as alternatives:

1.) using working solution of the same dilution (using half as much bromide as in the initial solution), either with 10% of the initial quantity on a regular basis or more on an irregular basis (during the process if need be, but then gradually adding it, accompanied by vigorous agitation)

2.) with diluted Solution B, in order to maintain stable pH value (in case the Lith Point moves downward too much) -- don't overdo it, start with small quantities and monitor effects!

TIPS AND TRICKS

Operating temperature: The normal temperature, as always, is 20°C. Temperatures under 18°C are unsuitable. The developer temperature can be raised to 25-28°C to shorten the process times. The speed savings when going from 20°C to 25°C is 40%. Bromide-rich solutions can be taken up over 25°C, although one must remember that elevating the temperature speeds up all chemical processes, meaning oxidation as well!

Formaldehyde, which usually appears in lith developers, has been dispensed with in this formula. That means that there are no unpleasant odours or emission-related health risks to be concerned about, even at high temperatures.

The temperature of the developer can be maintained with some degree consistency at 18-26°C in cooler rooms when the tray is placed upon 2 bottles filled with warm (30-50°C) water.

Two-bath development: Often the only solution for highlight definition + lith black with high-contrast negatives and papers with high levels of silver bromide.

Example: first developer with high bromide content (highlights hold, shadow areas develop without lithing), changing into second developer without bromide or sulphite, even perhaps with a slight excess of Solution A (more than 30-60 seconds is rarely necessary).

Toning: Lithprints accept toning extremely readily. Selenium or gold toning (or combinations) are often a must.

Selenium toner undoubtedly offers the most versatile possibilities. Depending on dilution and exposure time, only the shadows can be strengthened or retoned, or all tonal values can be changed in their image colour. Some papers (lithet with a lot of bromide Lith D) do not produce maximum blackening. Here selenium sharp and short (1+3 to 1+9 10-30 seconds!) works wonders.

Hardening: Some papers (especially those with matt surfaces and factory-fresh emulsions) should be hardened before toning in aggressive baths such as iron blue, sulphur or selenium (below 1+15) to avoid colouring the image whites.

Gelatine hardening is basically possible at all positions of the processing procedure:

1.) Hardening before development (alkaline hardener): Disadvantage: time-consuming - each individual print requires three to four minutes of additional processing time.

2.) Hardener addition to the stop or fixing bath: Advantage: common hardener additives available in the trade; Disadvantage: increased water consumption due to considerable extension of the soaking time

3.) Hardening after fixing and wash with our acidic hardener. Prior to selenium toning, the material must be washed once again for 5-10 minutes