LITH 2nd pass

Basic considerations

1) Overexposure: one half stop, sometimes more, sometimes less depending on the paper and the desired effect.
2) Choice of paper: not all papers are equally suitable for this process and each paper has a special tone after redevelopment.
3) Choice of the first developer: every developer will do, however the differences between cold tone and warm tone developers could have an influence to the final tone. Slow working developers with a high content of bromide or benzotriazol have advantages regarding separation of the shadows, especially when overexposed.
4) Every working step requires attention and strict discipline. Agitation in every single bath is a precondition for proper results. Stripes and streaks, wether visible or not after fixing, will be clearly visible after the redevelopment.
5) Two fixers are better than one. At least use a fresh one.
6) Wash as long as usual for a final wash. Of course a wash aid like HCA shortens the time in the wash. Do not use a soda bath for this purpose, it might soften the gelatin too much.
7) The bleach: copper and ferricyanide bleaches are possible. As a rule copper sulfate bleach provokes more intensive colours and split tones. Ferricyanide bleaches from sepia toner kits can be used. Homemade bleach, wether ferricyanide or copper sulfate based should contain a halide: potassium bromide, sodium bromide, ammonium bromide, sodium chloride or potassium iodide. If one not want to play with solarization, the print should be bleached completely. Depending on the paper, kind of bleach and dilution, this can take between 30 seconds and four minutes. Complete means, that there is nothing remaining. As long as one can see two colours it is not completely bleached. The whole print should look pale yellowish.
8) Wash for some minutes in a tray. Do not use a vertical washer at this stage, uneven washing might take place.
9) Redeveloping: dilute your lith developer 10x – 30x stronger than you usually do. Depending on the used paper, quantity of exposure, kind of bleach, dilution and temperature of the lith developer, the snatch-point can be between one to five minutes. I develop between 30 and 90 seconds at about 40°C. The shorter the development, the more colour. If the print was exposed too short, longer times in the developer are necessary. But with an extended development the result could be very close to the original stage - without colour. The print will brighten in the fixer, therefore the right snatch-point is somewhat later, when the lights are clearly developed to a higher density as desired. The problem is, that the blacks come first, sometimes too fast. That´s why the developer should be weak. It may be helpful to mix the developer with a surplus of A in order to decrease the alkalinity of the working solution. If you have the impression, that the blacks are right soon, but the lights are still pale, move the print into a tray with warm water and the lights will catch up rather quickly. If not enough, go back into the developer for 10-20 seconds and switch over again. Instead water one can use a weak alkaline bath (1-2ml B per liter). If this 2nd bath is too strong the whole print will darken. Lith Omega as a 2nd bath is not a good idea – when the print is close to the snatch-point But I have done it with success, when the 1st bath is not a normal mix of A+B but

only A (hydroquinone). Let the paper suck developer (lets say 5-10ml A per liter water) and develop in Omega between 1+500 up to 1+1000.

10) A stop bath is absolutely necessary. Stay longer in this bath as usual, especially when the white edges are not clean. After some prints you may notice a light dyeing from the copper (only if you have used the copper bleach of course).

11) Fixing and final wash: fix short, 15 seconds are sufficient and wash as usual.

Papers

Ilford MGIV, MG Classic, MG Cooltone and MG Warmtone

Ilford MG Classic

This is how dark a print should look before bleaching.

Overexposure 0.7 f-stops,
developer Eco 4812 1+14
3 minutes.

Lith Copper bleach 1+3

Redeveloping
Easy Lith 4+4+500ml 1 minute,
followed by a hot water bath
30 seconds

In all Ilford Multigrade papers the copper bleach works as we know it from other bleaches. The bleaching process starts in the highlights. Bleaching should be continued until even the deep shadows have disappeared. Only in exceptional cases should the bleaching be stopped in order not to bleach the shadows completely, because the density of the shadows is sufficiently high even if they are not completely redeveloped. Remember, the print was overexposed.

Ilford MG Cooltone in Catechol, Copper bleach,
Easy Lith 5+6+500 42°C 30 seconds + hot water bath 30 seconds

The Ilford MG IV shows a wide (reproducible) range of hues when redeveloped and is therefore ideally suited for beginners. The degree of overexposure of the original print, the acidity of the bleach and the dilution and temperature of the lith developer have an influence on the colour tone and gradation.
For this paper, a dilution of the lith developer of 1+25 to 1+50 has proven to be optimal. At temperatures between 25-40°C the re-development is completed after two to four minutes. The print should then appear slightly too dark, especially highlights and mid-tones are lightened by the fixer.

Ilford MG Warmtone

Two tray development
Catechol and Sepia,
lightly overexposed,
with softer (half gradation)
filtering compared to a "normal print".

Photo taken by
Markus Rottländer

Ilford MG Warmtone

SE6 Blue, Copper bleach, Easy Lith 4+4+500ml 40°C one minute followed by a hot water bath30 seconds.

Ilford MG Warmtone

SE4 Neutral, Copper bleach, Easy Lith

MGIV in SE2 Warm,
copper sulfate bleach,

two tray re-development

1st Easy Lith 1+80 1 minute followed by a hot water bath 1 minute and
2nd Glycin developer: 600ml water 1ml Lith G + 1,5ml Ammonium chloride 20%
2ml Lith B 90 seconds

MG Cooltone FB in SE4 Neutral
exposure + 0,5 f-stop

Lith Bleach (copper sulfate)

Easy Lith 3+4,5+600ml
90 seconds at about 35°C

MG Cooltone FB, two tray
Catechol & Eco 4812,
exposure +0,7 f-stop

copper bleach

Easy Lith 3+3+500 36°C 1:30 mins

Ilford Art 300 and Ilford Galerie

Ilford Art 300 in Eco 1+14
copper bleach, redeveloped in Easy Lith 3+3+800 40°C 3,5 minutes

Ilford Galerie

exp. +70% Catechol 1+7,
copper bleach, Easy Lith 1+50
25C 4:30 minutes

Acid content per litre
concentrate:

Sulfuric acid 20% 20ml

Acid content per litre
concentrate:

Sulfuric acid 20% 80ml

The different colour tone after re-development is caused by the acid content of the bleach concentrate. All other processing steps are identical.
The bleach offered in the shop contains 40ml/litre of sulphuric acid 20%.

Adox Variotone (manufactor Harman Technology)

Adox Variotone

copper bleach

Easy Lith
1+200 at 35°C

Adox Variotone in Amidol

copper bleach
redeveloped in Easy Lith
1+300 at 48°C (118°F)

After the lith copper bleach (with 40ml acid) and redevelopment in a lith developer, the Variotone reacts in two colours. The highlights appear reddish yellow, the shadows in a green or blue-green tone.

Easy Lith 1+1+200ml 35°C one and a half minutes, with a followed hot water bath (40 seconds) for a higher density of the lights.

Adox Variotone

SE1 Sepia

copper bleach

Easy Lith 4+2+1000 36°C 2 minutes

Kentmere Fineprint VC matt

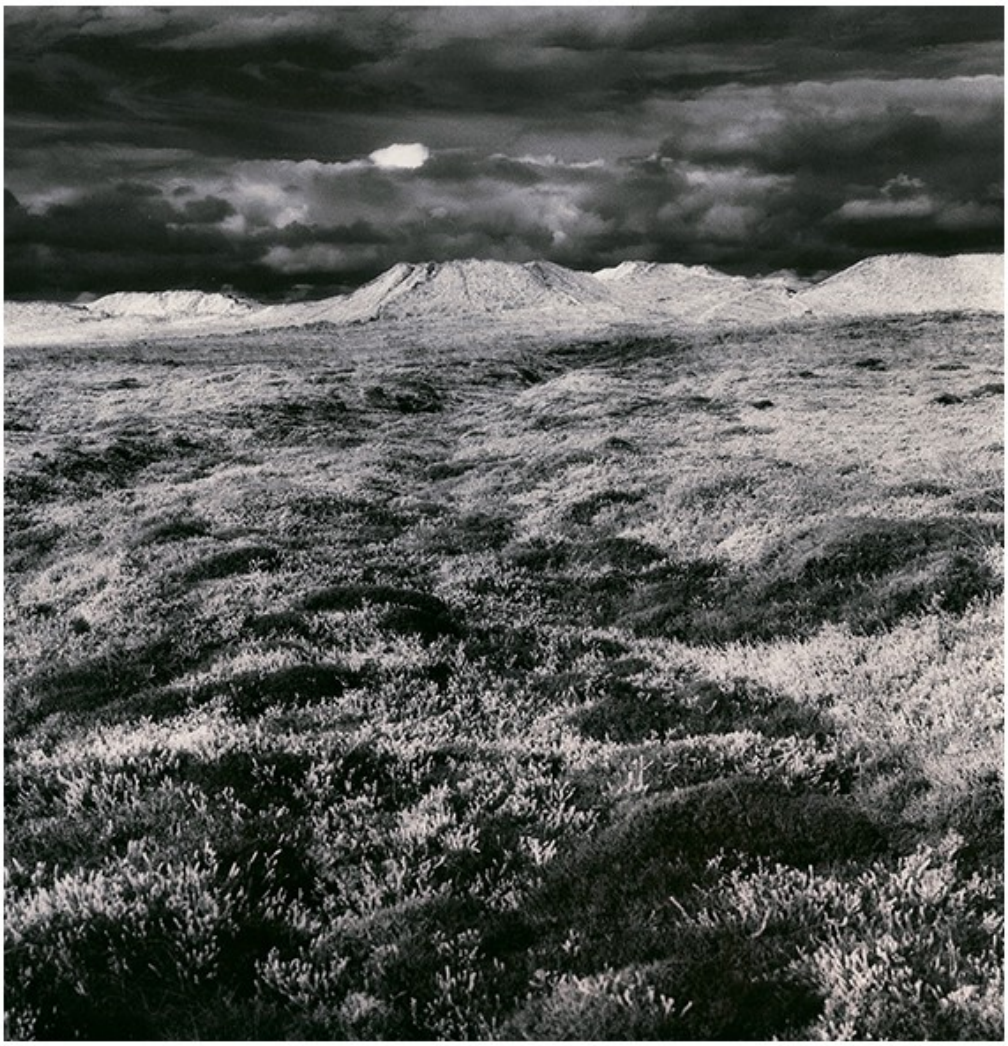
A half f-stop overexposure, two tray development Catechol and Sepia.

ATTENTION different further processing

Bleach potassium ferricyanide/bromide (from MT3 toner kit) 1+40 4 minutes, the deep shadows remain.

Redeveloped with SE5 Lith 1+80 (5mlA + 5mlB + 800ml Wasser) 30°C 8 minutes.

Kentmere Bromide



Efke IR820 in Tanol.

Stained negatives are generally unsuitable for prints on graded papers, because the colour of the stain increases the contrast enormously on such papers, especially with infrared films. However, a two tray development with a soft second developer can produce sufficient density in the lights.

Kentmere Bromide, VGT developers normal and soft.

Lith Copper Bleach 1+3 and redeveloped with Easy Lith 4+4+500ml.

Adox Lupex

Lupex is a contact paper with low sensitivity, unsuitable for enlargements. Similar to negatives for alternative printing techniques, small formats (here a cropped 35mm film) can be scanned and printed on inkjet film.

Lupex exposed about 3 minutes (Just Normlight)
Copper bleach
Redeveloper Easy Lith 2,5+2,5+500ml about 35°C one minute, followed by a hot water bath 30 seconds. Refixed 15 seconds.

Slavich Unibrom

Unibrom is popular for direct lith prints because of its high contrast and deep black. However, with the overexposure that is then necessary, imperfections usually appear, caused by uneven coating of the paper, which do not occur with normal processing. The degree of overexposure for the 2nd pass is much lower and streaky defects do not appear.

Holga 120N, Efke IR 820 in efd
2nd pass lith with a surplus of Lith A in order to achieve reddish lights,
Easy Lith 4+2+800 2 minutes at 38°C

Slavich Bromportrait

Slavich Bromportrait in SE1 Sepia,
copper bleach, redeveloped in Easy Lith 1+1+500 36°C 3,5 minutes

Fomabrom 113 BO
SE2 Warm
copper bleach
Easy Lith 4+4+500ml

Fomabrom N 112

SE2 Warm
overexposed only 2/10 f-stop

strong bleach required
1+1,5 two minutes

Easy Lith
4+4+400ml hot
one minute

Fomabrom 123

SE2 Warm

fully bleached in
copper bleach

Easy Lith

Fomabrom N 112

fully bleached in
copper bleach

Easy Lith
3+3+600ml

Oriental New Seagull G3

copper bleach

Easy Lith

Oriental New Seagull VC

copper bleach

Easy Lith
2+2+500ml

Kodak Ektalure

Kodak Ektalure was one of the most beautiful papers for direct lith development. Because of the high amount of developing retarders, the already strong base fog of this about 30 years old paper does not appear with direct lith development. With all other developers, the content of anti-fogging agents is too low to obtain clean image whites. Potassium bromide, Lith D, or the Restrainer Neutral Tone made for this purpose is suitable as an additional anti-fogging agent.

SE2 Warm + Restrainer Neutral Tone 3ml per litre
Copper bleach
Easy Lith 3.5+3.5+500ml 35°C two minutes

Agfa Brovira

Brovira

SE2 Warm

copper bleach

Easy Lith
3+3+500ml 35°C
two minutes

Agfa Record Rapid

RRN 111

VGT developer

copper bleach

Easy Lith 3+3+500ml
40°C 2 minutes

Agfa MCC und Adox MCC

MCC

SE2 Warm

copper bleach

Easy Lith 4+4+600ml
40°C one minute,
followed by
a hot water bath 40 seconds

MCC

Catechol and Meritol

copper bleach

Easy Lith 1+1+700 30°C
one and a half minutes,

followed byLith Omega 1+800
30 seconds

Pinhole 4x5
Adox MCC
to get a subtle colour only 3/10 f-stop overexposed
copper bleach, EasyLith 1+1+200 40°C 2 minutes

MCC in SE1 Sepia
5/10 f-stop overexposed

copper bleach

Easy Lith 2+1+500ml
5 minutes at about 30°C.

One more paper, suitable in the past, but the last two batches of Adox MCC do not stand the copper bleach - if you harden the gelatin or not. Transparent star-spaced spots will be released in the bleach after some seconds (background). With ferricyanide/bromide bleach it does not happen.

Bleached until solarisation takes place and redeveloped in Easy Lith.

Foma Retrobrom

When processed directly in lith developers, the colour is high and a split tone with red-yellow highlights and green shadows is produced. With 2nd pass lith the colour is more subtle, especially when bleached with ferricanide/bromide.

Developer VGT
Hexacyanoferrate/Bromide bleach 1+20 2 minutes
Easy Lith 5+5+500ml 35°C 2 minutes

For this paper, the copper bleach should be diluted less if you do not want to end up with times above 5 minutes.

Developer SE2 Warm

Copper bleach 1+1.5
2 minutes

Easy Lith 5+4+500ml 35°C
1:20 minutes
Water bath for highlight tones 30 seconds

Fomatone

Fomatone 131 in SE4 Neutral

Fully bleached, a little longer than the solarisation of the lights disappears.

copper bleach 1+1

Easy Lith 1+80 35°C
one minute,
water bath 40°C 15 seconds

If the solarisation effect is to be used, the bleach should be diluted more strongly in order to have enough time to judge the progress of the solarisation.

copper bleach 1+4
Bleached until the mid-tones disappear, lights are solarized.

Easy Lith 1+80 35°C
45 seconds,
water bath 40°C 15 seconds

Forte PW14

Select Sepia (PW14)

ECO 4812

Lith copper bleach

redevelopment Easy Lith 3+3+600ml at 45°C 1 minute + 45 seconds hot water.

Bergger Prestige CB in SE1 Sepia

copper bleach

Easy Lith 1+200

Bergger Prestige CB in SE2 Warm

copper bleach

Easy Lith 1+150

Two tray redevelopment with Lith (Hydrquinon) and Lith G (Glycin)

Ilford MGWT

SE2 Warm

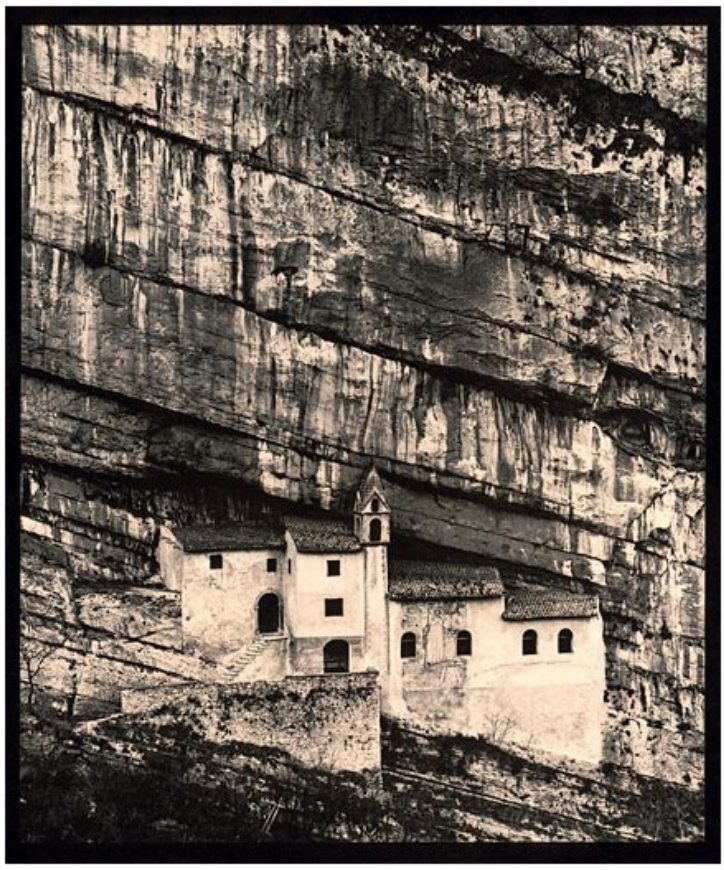
copper sulfate bleach

two tray redevelopment

Easy Lith 5+5+800 45°C 1 minute - water bath 45°C 1 minute followed by

Lith G 1ml + Lith B 1,5ml + Ammonium chloride 20% 1ml +600ml water 20°C 45 seconds

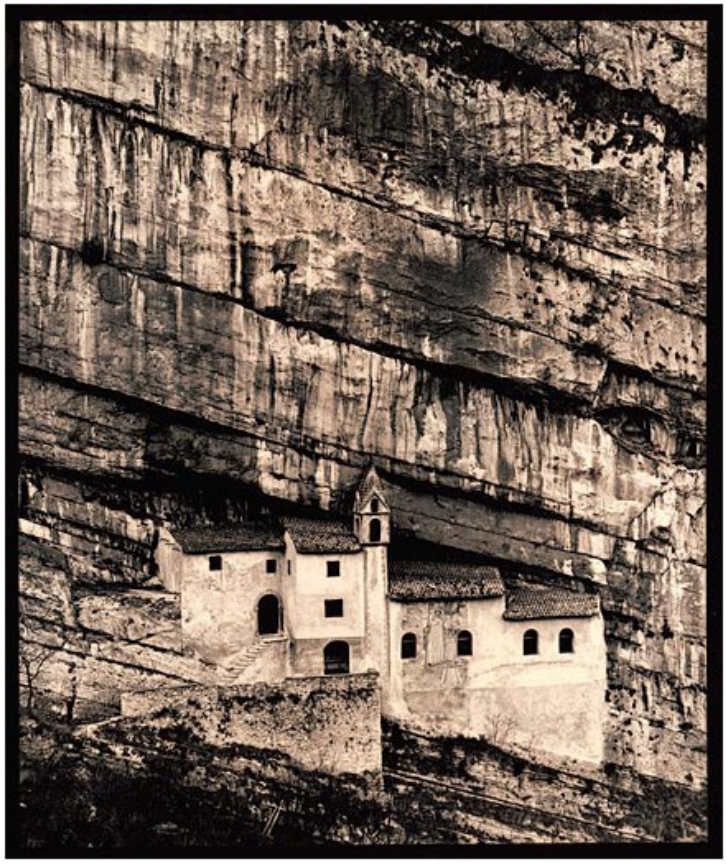
For colour comparison Agfa MCC and Ilford NGWT



Agfa MCC

copper bleach

Easy Lith



Ilford MGWT

copper bleach

Easy Lith

Playing with solarisation

During bleaching, the metallic silver is transformed back into a developable silver salt. If not completely bleached, partial silver remains.
Solarisation does not occur with every paper/bleach combination. They occur regardless of whether bleaching is done with bright light or red light.

When bleaching with ferricyanide/bromide, the shadows can solarise, especially if there is a lot of overexposure.

With copper bleach, solarisation of highlights usually occurs if bleaching is not complete. Strictly speaking, there is always a solarisation for a few seconds shortly before the end of the bleaching process with the copper bleach. If this is undesirable, stay in the bleach until the highlights have also disappeared. If solarisation is desired, the bleach should be diluted higher to be able to judge the degree of solarisation. This can only be judged in bright light, also the redevelopment should be done in light, because the development has to be stopped before the whole silver salt is developed to silver.

Unlike ferricyanide bleach, the bleaching process with copper bleach (for most papers) starts in the mid-tones, then the shadows are reached and at the same time the highlights start to solarise.

Suitable papers for solarisation:

all Fomatone papers

Fomabrom 123 and some Fomabromfest gradations

Forte Fortezo and Polywarmton, as well as the Select Shedlight and Sepia VC,
Bergger CB and Adox Polywarmtone

Fotokemika EMAKS, Adox Nuance

Agfa MCC, Adox MCC

Ilford Multigrade IV

Wephota Baryt Brilliant

Copper bleach

Bleached with solarisation

Redeveloped with Easy Lith

PW14 fully bleached, Easy Lith

Fomabrom 123 solarised, Easy Lith

Wephota Baryt Brillant

Fomabrom 123

Art 300 fully bleached, Easy Lith

Fomabrom 123 solarised, Easy Lith

Fomatone 132

copper bleach 1+4

Easy Lith 3+3+500ml 38°C one minute

Fomatone in Eco 4812, copper bleach 30 seconds, Easy Lith 3+3+800ml 1 min at 36°C

Fomatone 132, Eco4812, Copper bleach, two try redevelopment: Easy Lith followed by a weak Glycin (Lith G) developer

Printed from a digital negative made for a Kallitype.

PW14, Eco 4812

coper bleached to an early stage of solarisation

Easy Lith hot 3+3+600ml

Fotokemika Emaks, Eco4812 1+14 3 minutes, Lith Copper Bleach 1+4 until solarisation, Easy Lith 3+3+700ml 50 seconds at 40°C

Fotokemika EMAKS
in Se1 Sepia

copper bleach

Easy Lith 3+3+700ml 40°C
1,5 minutes

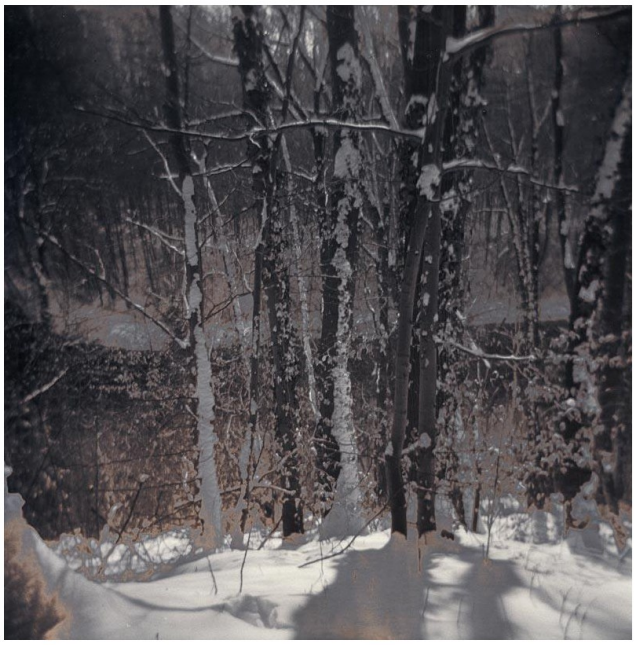
Select VC in SE2 Warm, copper Bleach with light solarisation, Easy Lith

Select VC (PW14), 2nd pass lith after strong solarisation in copper bleach.

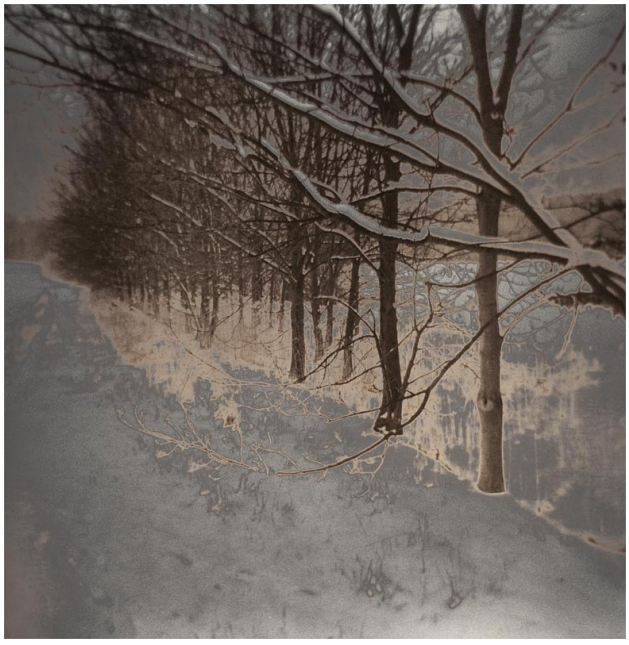
Fomabrom N 111
SE6 Blue, Ferricyanide-Bromide Bleach 1+20, slightly solarised.
Easy Lith 3+3+500 warm 2 mins.

Fomatone 131,
SE6 Blue, Copper bleach 1+2 1:30 mins with solarisation,
Easy Lith 3+3+500ml 40°C 1:30 mins.

Ilford Art 300
two tray dev.: Catechol and SE2 Warm
copper bleach 1+5 2 minutes, solarisation
Easy Lith 4+2,5+800 38°C 2 minutes



Fomabrom N 111
copper bleach 1+5 2 minutes
until solarisation
Easy Lith 2+1+500 2 minutes at 40°C



Fomatone 131
bleach 1+5 until solarisation two minutes
Easy Lith 2+1+600 38°C one minute

Fomatone 532
copper bleach1+3 until solarisation
Easy Lith 2+2+500ml 40°C one minute

Standard bleach (hexacyanoferrate/bromide) from the MT3 Toner Kit 1+10 one minute.

Unlike the previous tests with other papers, even with complete bleaching (approx. 3 minutes), solarisation can occur during redevelopment, although not quite as pronounced as here. In this print, however, the effect was intentional and already visible during bleaching.

When rehalogenating with bromide, the developer should be a little richer.

Re-development in Easy Lith 10+10+800 40°C 1:45 minutes

Fomatone 132 in SE6 Blue,

Lith Copper Bleach 1+3 45 seconds until the lights are solarised,

Easy Lith 3+3+500ml 40°C 1:30 minutes, followed by hot water 30 seconds.

Fomatone 132

Trial with a paper batch (077848-17) from December 2022, which proved to be completely unusable for a direct lith.

SE2 Warm 1+10 two and a half minutes, copper bleach until the lights solarise.
Easy Lith 3+3+500ml a minute and a half at 35°C.

Fomatone

Fomabrom 123

Fomabrom N 111
SE2 Warm

Copper bleach1+3 about one and a half minute, with subtle solarisation of the lighter areas.

Redeveloper Easy Lith 3+3+500 40°C one minute, followed by a hot water bath 30 seconds.

Fomabrom N 112 in SE6 Blue

Lith Copper bleach 1+3

Easy Lith 4+4+500ml
40°C 1:30 minutes

Fomatone 532

Eco 4812

Kupferbleicher

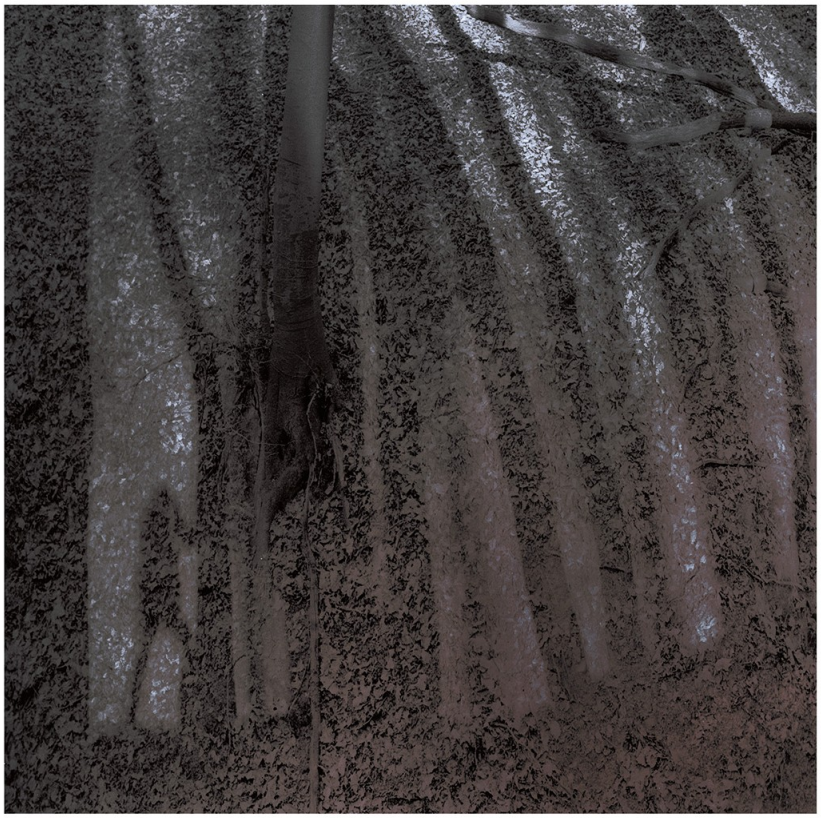
Easy Lith 3+3+500ml 40°C one minute followed by hot water 30 seconds.

Fomatone 131

SE1 Sepia

Kupferbleicher

Easy Lith



Fomatone 131

SE4 Neutral

Lith Copper bleach

Easy Lith 3+3+500ml
40°C two minutes

Fomatone

SE2 Warm

copper bleach 1+4 4 minutes

Easy Lith 2+2+500ml
45 Sseconds ati 45°C
+ hot water bath 30 seconds

Fomabrom 123

Catechol and Sepia

copper bleach
with slight solarisatin

Easy Lith

Fomabrom 123

Catechol and Sepia

copper bleach
with strong solarisation

Easy Lith

Fomabrom Variant 111, Kcopper bleach with slight solarisation, Easy Lith

Paper comparisons

Select Shedlight

Fomabrom 123

Kentona

Ilford MGWT

Influence of the filter grade on colourfulness

A fundamental requirement for the success is an overexposure between about 60-80%. But also the filtering of vc-papers has its influence to the final result.

filter
grade 3,6

29 seconds

Grade 4,4

26 seconds

Ilford Art 300

Developer Eco 4812 1+14 3 minutes, Copper sulfate bleach, redeveloped in Easy Lith 3+3+800ml at about 37°C 50 seconds, followed by a hot water bath to increase density and saturation of mids and lights. Refixed 15 seconds.

Bleaching and redeveloping of Kallitypes

Instead of toning Kallitypes, it is also possible to redevelop it after bleaching. Optimal for this purpose is a special lead bleach.
If not overexposed, only a different hue is produced, not an overall higher colourfulness.

Kallitype on Hahnemühle Platinum Rag,
Sodium acetate developer, Lead bleach,
Easy Lith 8+8+1600ml +4ml Lith Omega 52°C 4 minutes

Hahnemühle Platinum Rag

slightly overexposed

Sodium acetate developer

Lead nitrate bleach

Lith A 5ml + Lith B 2,5ml + NH_4Cl 4ml + Lith Omega 3ml 38°C two minutes

Hahnemühle Platinum Rag

Sodium acetate developer

Lead bleach 30 seconds

Easy Lith

A+B+Omega+water
10+8+4+1400ml
52°C 4 minutes

Lead bleach
50 seconds

Easy Lith

A+B+Omega+water
10+10+2+1400ml
46°C 1 minute

after redeveloping a
sulphur toning is possible
without loss of density

MT4 Siena (polysulphide)
1+400 2 minutes

Kallitype on Hahnemühle Platinum Rag,
acetate/oxalate developer,

Lead bleach 1:45 minutes

Lith A 5ml + Lith B 2ml + NHCl 20% 3ml + Omega 3ml to 600ml water 45°C 7 minutes

MT4 Siena 1+50 20 seconds

Errors and avoidance

Smear formation
unclean first development, too little agitation
exhausted stop bath
Copper bleach used or too little agitation

Streaks
Watering after bleach with vertical washer at high water pressure, streaks in nozzle direction.
Remedy: Water only in the tray. Repeated water changes with agitation.

Isolated round spots after copper bleach
Cause: gelatine damaged
Remedy: Completely dry the prints before applying the copper bleach. This hardens the gelatine, making it more resistant to the extremely acidic bleach.

Fomatone 132, copper bleach and redevelopment directly after the wash.

Copper bleach 1+3 4 minutes with solarisation after intermediate drying and redevelopment with Easy Lith 3+3+500ml 35°C 2 minutes.