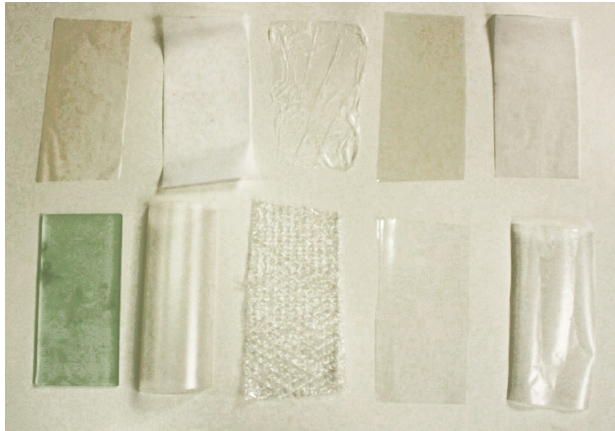


Materials

Drawing substrates for UV light exposure

- Polyester, acetate, transparent or frosted plastics, glass, or any other translucent sheets*.

* For digital prints use polyester or acetate substrates and the print must be as black as possible.



For tonal drawing use tusche and toner wash.

Drawing media for autographic positives

- Blocking light drawing tools such as: opaque or permanent markers, lithographic crayon and ink, china ink...



Exposure equipments and materials

- Presensitized offset plate
 - UV light source: screen printing exposure unit with vacuum / mercury vapor lamp
 - Positive (digital/ autographic/photofilm)



Materials for development

- Offset developer: "DIAZODEVELOP P975" + water (proportion 1:9 = 100ml of developer + 900ml of water)
 - Tray
 - Measure tool

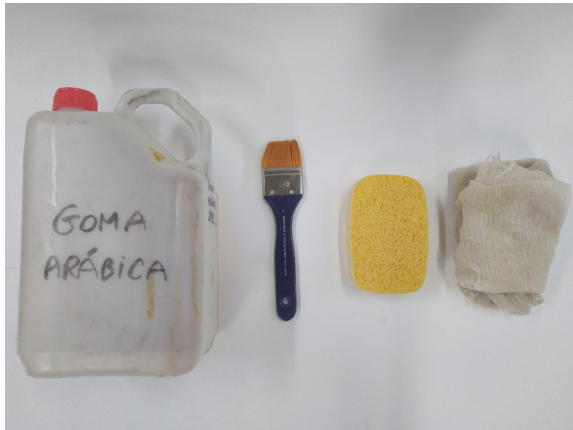
Correction

- Corrector marker "abezeta offset plates erasing" or liquid "CORRETTORE FP correction fluid for presensitized positive plates" or alcohol
- Adding marker



Materials for processing (and closing the plate later on for storage)

- Arabic gum
- Soft brush
- Lithographic sponge
- Gauze



Materials for printing

- Cauchu
- 2 bowls (one of which with clean cold water and another empty)
- Proofing paper (newsprint) and edition paper
- Inking slab
- Spatula
- Dabber
- Roller
- Lithographic sponge
- Lithographic ink (see details on next page)



- Lithographic ink (Charbonnel brand 3 kinds of black available in Porto. for now - CRAYON light black, DRAWING medium and VELVET deep*.

*Online there are more brands and colours available.



Materials for cleaning

- Vegetable cleaning agent (NOVASOL)
- Rags



SULFITE

SULFITO

POLIESTER

POLIESTER

SACO PLASTICO

PLASTIC BAG

ACETATE

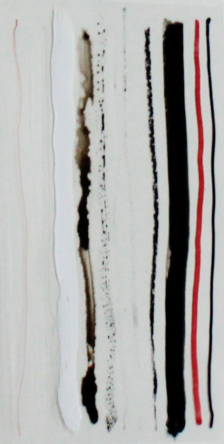
ACE TATO

PAPEL VEGETAL

TRACING PAPER

PAPEL DA SEDA

SILK PAPER



VIDRO GRANIADO

GRAIN GLASS

TRUE GRAIN

PLASTICO DE BOLHA

BUBBLE PLASTIC

MIKA

TRANSPARENT PLASTIC SLEEVE

PAPEL DA CEBOLA

ONION PAPER

Samples from several tests strips, where both drawing substrates and drawing materials were tested.



PERMANENT MARKER
RED PHOTO OPAQUE MARKER
SOLID MARKER THERMAL RESISTANCE
LITHOGRAPHIC CRAYON
CRAYON
CHARCOL
PENCIL 6B
CHINESE DRAWING INK
LITHOGRAPHIC DRAWING TUSCHE
OPAQUE WHITE ACRIL
PILOT BLACK PEN
WHITE HYBRID GEL
OPAQUE RED(F)



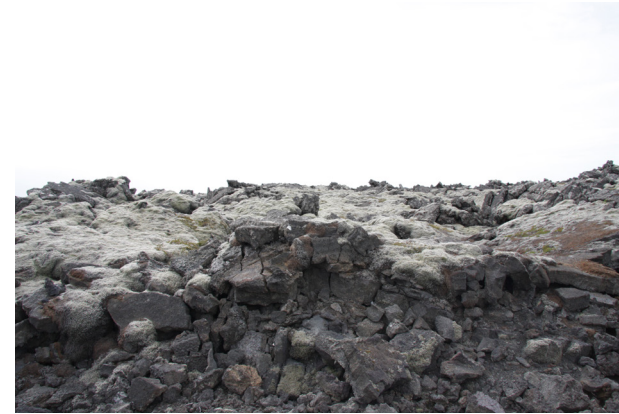
PROCEDURES

Positives preparation (drawing)

#1.1

Collecting and defining the best supports and tools possible to construct/draw positives.

(please see next page for details)



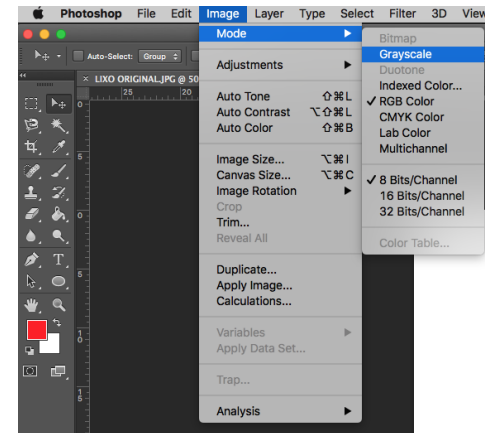
Positives preparation (digital)

#1.2.1

Open ORIGINAL image on Photoshop.



Testing tonal range by using toner powder and lithographic tusche, mixed with alcohol and with distilled water.



Positives preparation (digital)

#1.2.2

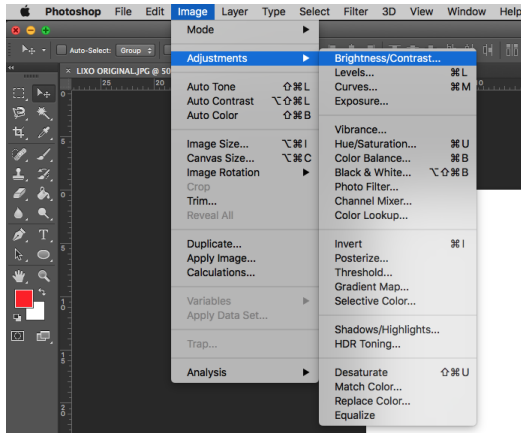
Go to menu IMAGE then MODE, then GRAYSCALE.



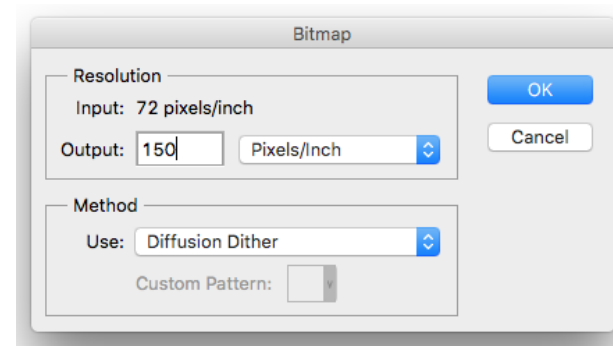
Tonal drawing on polyester.



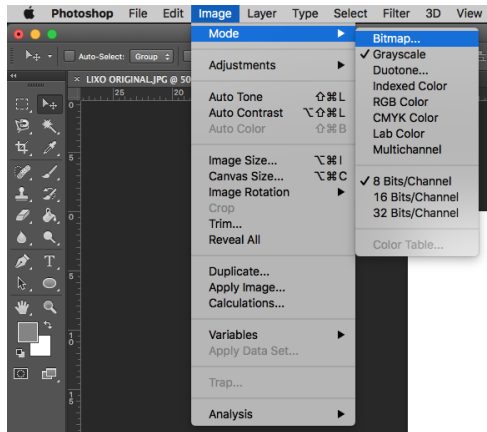
GRAYSCALE image.



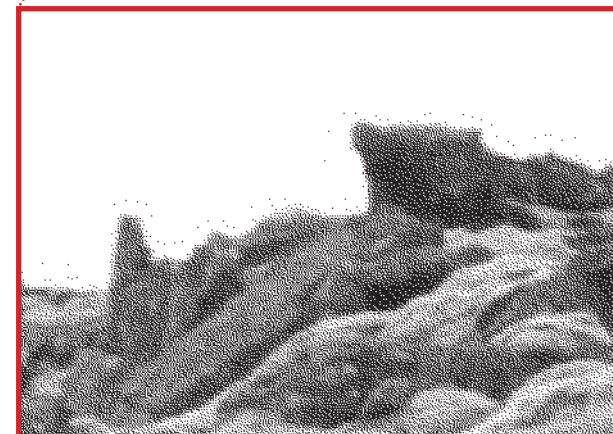
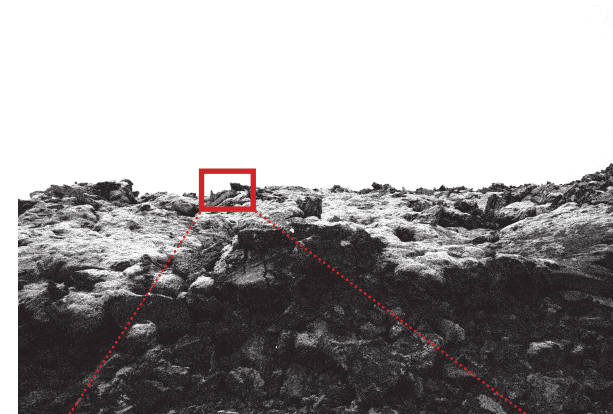
Do any ADJUSTMENTS you like, such as change brightness/contrast, levels, curves, etc.



Here you can vary output and method, resulting in very distinctive images. Change parameters according to what you wish to obtain and if possible do test prints on normal paper before printing on transparent substrates, to make sure the dot size is good (mainly not too small) and the image is really only black and white. No greys are allowed, as they will interfere with UV light translation.



Go to menu IMAGE then MODE, then BITMAP.



When this dialog box appears press OK.

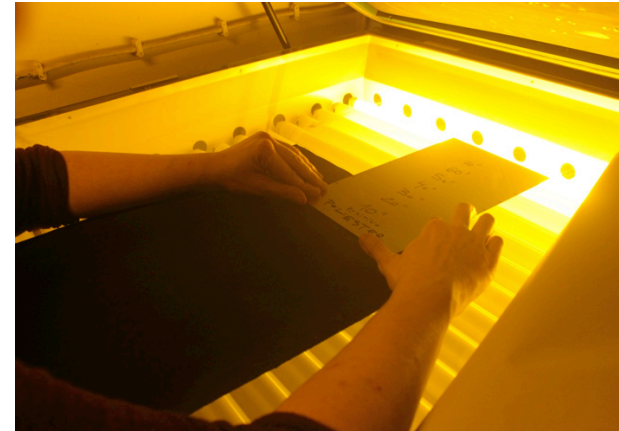




Using UV light machine

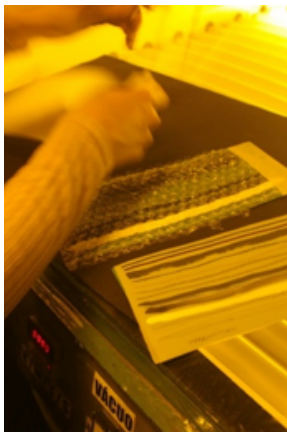
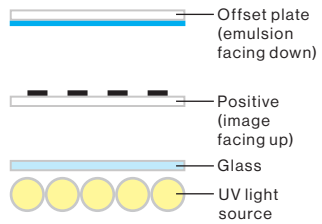
#2

Cut the presensitized offset plate in the dark room.



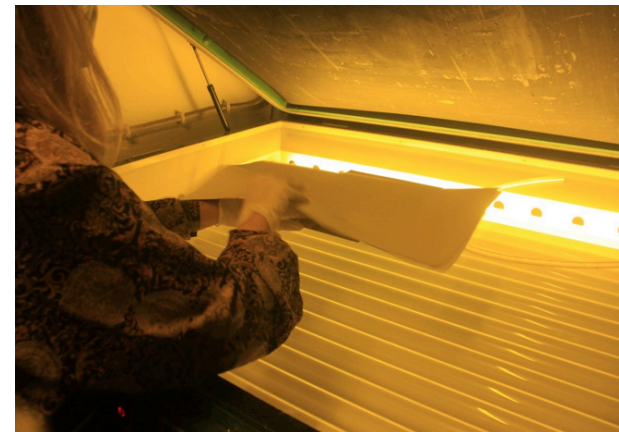
#4

Test time exposure related to chosen positive and drawing tool, facing presensitized side to the glass.



#3

Match positive with drawing (or digitally printed image) facing the photosensitive side of offset plate (please see scheme on the side for better understanding and please note that **if UV light source is coming from top instead then you need to mirror everything**).



#5

Cover the plate with sheets of blank newsprint.



5cm margin all around



Remember to leave margins (4 to 6 cm), when it is final work, to make sure roller does not touch the borders which are sharp, while printing.



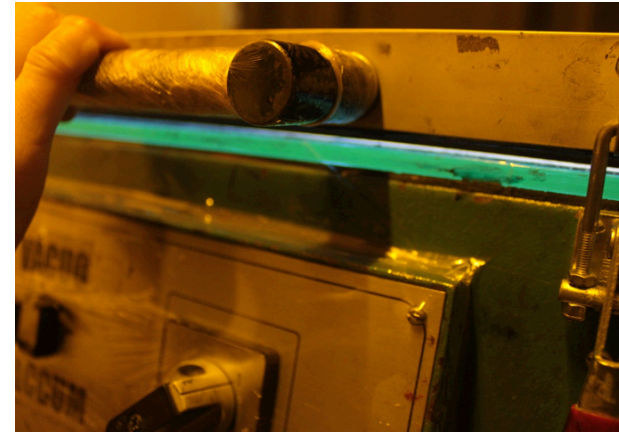
#6

Close the machine.



#7

Set time exposure (illuminated timer might not work, so please rely on manual - below).



Keep in mind that UV light can cause vision damage, so obey the rules.



#8

Press VACUUM and wait until the noise stops. The rubber will ensure firm contact once all air as been expelled.



#10

After exposure, press VACUUM and wait until machine has air again below the black rubber. DO NOT tug the handle, because it might rip off the cover.



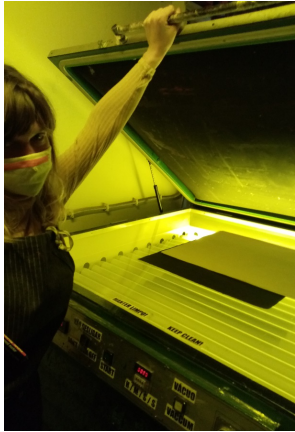
#9

After vacuum, machine is ready, so press START.



#11

When ready, unlock both sides of the machine.



#12

Gently open the machine.



#13

Make sure to always leave the surface of the glass clean and ready for another person's use.

To clean first try with dry rag but if it does not work use alcohol.

OBSERVATION NOTES

- Image with the drawn side should face the sensitive side of the plate, therefore the image you will obtain after development will be mirrored. But then, during the printing process, it will print as initially, as a positive. Remember to keep margins around image to protect the roller while printing;

- To draw directly on presensitized offset plates, you have to do it in the dark room, and dry the plate completely before exposure;

- The approximate exposure time is about 1 minute, but we suggest to test it first;

- After using available facilities, clean the glass of vacuum machine with alcohol and store the used developer in a separate bottle, as it is reusable.



RECOMENDATIONS

Timetables

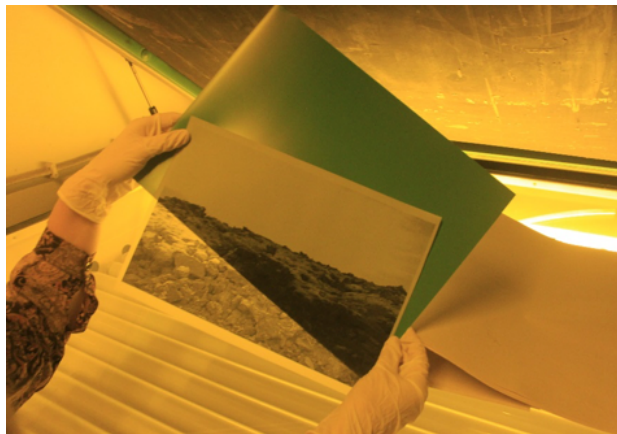
For tonal range set the exposure time to approximate 37 seconds.

If you still want to test tonal range, you may create a plate just composed of tests strips.

In this plate, paper strips sample of different drawing materials were tested



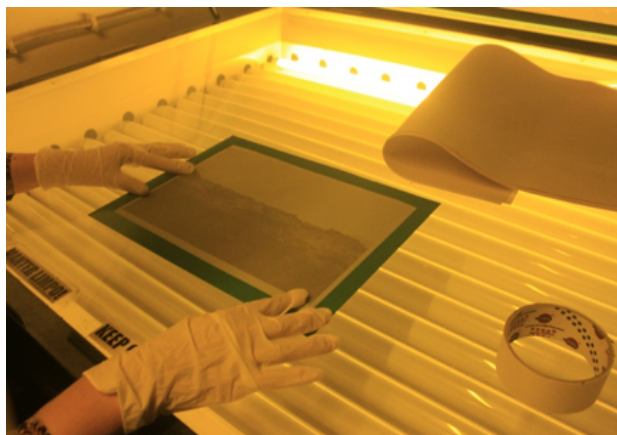
Direct drawing on plate has to be done in dark room and has to dry completely before exposure.



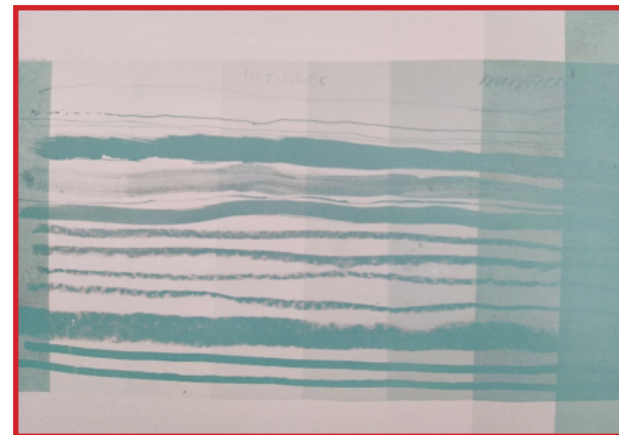
Digital printed positive using a HP Laser Jet 1022n needs an exposure time between 37 - 57 seconds.



After the exposure you have to take off parts that might interfere with the developer, like tape.



The printed side of image has to be faced in contact with sensitive side of plate (blue).



The best time for lines was verified between 30 to 70 seconds.

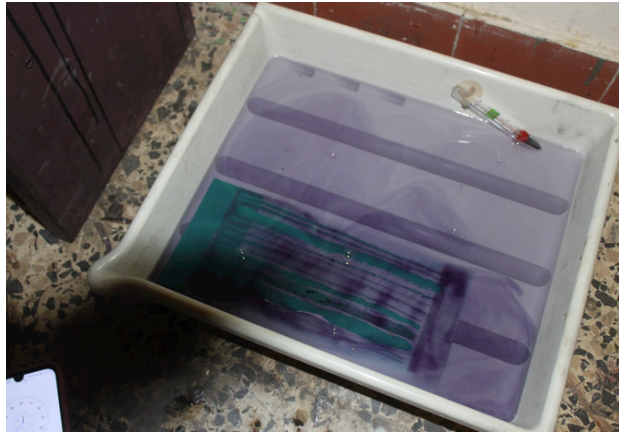


Plate development and processing

#13

Place plate in prepared DIAZODEVELOP P 975 - 1+9. Dilute 100 ml of product with 900ml of water. The working temperature is 20-24 degree Celsius and immersion time in developer should not extend 30 seconds, while rocking the basket. Wear mask and gloves all the time you have to manipulate chemicals potentially harmful.



#16

Gently stretch with gaze and leave it to dry.



#14

After developing rinse the plate with cold running water.

This step can be already conducted on daylight.



Find the most satisfying result and choose proper time for further work.



#15

Gently pour arabic gum and spread with lithographic sponge.



In this tests we used 37 seconds of exposure, except the line drawing that was verified from 10 to 70 seconds.



Printing

#17

Take the ink from recipient by using spatula (one spatula for each ink) and roll up the ink until a very fine and even coat is obtained in the inking slab.



#20

Roll on lithographic printing ink and as mentioned before, don't touch the borders of the plate with the roller.



#18

Prepare two bowls, one with clean water and another empty to collect dirty water.



#21

Repeat the previous action of wetting with sponge and inking with roller until the image is fully replenished with ink.

This step may take some time and insistance, depending on the image.



#19

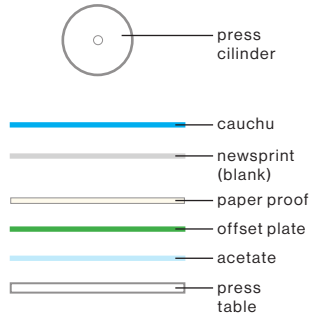
Clean the plate with water, using lithographic sponge. Always keep the plate wet.



#22

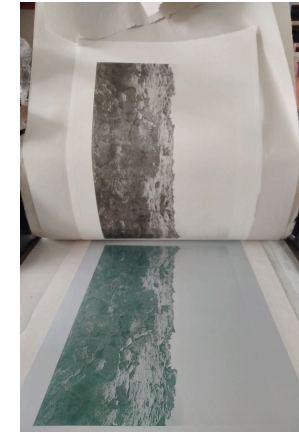
Wet the back of the proof paper with lithographic sponge.

Make sure a very fine layer of water is placed and absorbed by paper fibers from the back of the printing paper.



#23

Place the plate on the intaglio press with the image facing up. See the scheme on the side to understand how different layers organize on the press.



Remember to have clean hands while operating with press and clean the acetate under the plate with alcohol after using.

Make sure no alcohol splits on the plate as it will erase the emulsion.



#24

Place the paper on top of the plate.

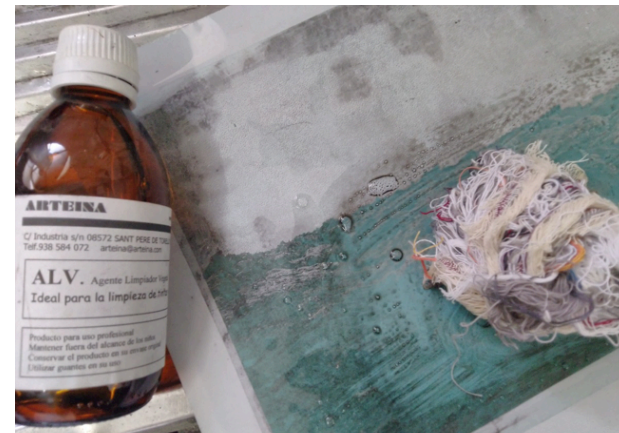


Compare the prints to understand if you are satisfy with the results.



#25

Cover everything with a few sheets of blank newsprint to make sure you don't get the felt dirty. Felts are delicate and expensive material that should be consciously preserved.



#26

Clean plate with VCA/ALV* and rinse with water. Close plate with arabic gum, same way as before. Clean all tools and working place.

* Vegetable Cleaning Agent/ Agente Limpiador Vegetal - Universal, biodegradable, non-toxic and ecological emulsifiable detergent, based on vegetable oil [https://www.artemiranda.es/novasol-s2-alv-vca-detergente-universal-biodegradable-no-toxico-y-totalmente-ecologico/4311]



Transfer from offset plate onto prepared arabic gum based transfer paper

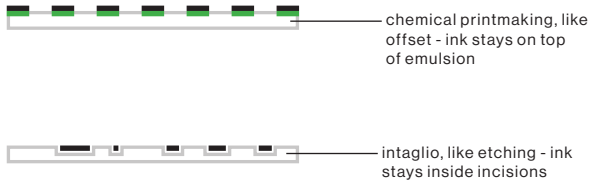
OBSERVATION NOTES

- If you want to obtain a positive printed image after transfer from offset onto metal plate and further process as intaglio, namely etching, you have to place a negative (inverted) image onto presensitized offset plate, because what is white in the beginning is what will become black, after etching (see scheme on the side for better understanding);

- You have to prepare metal plate as for normal etching, which can be zinc or aluminum and we recommend to finish with 1200 grain of sandpaper;

- You have to degrease the plate as usual, before the transfer;

- You have to protect the back of the plate before etching;



#27

Prepare the metal plate by starting to sand with 600 grain sandpaper and finish with 1200 grain, in round movements.



#28

Round the edges of the plate with a file.



#29

Degrease using chalk. First put water on plate and then rub with chalk in round movements until you cover the whole plate and rinse with water. Take it out from runny water and the remaining water on the plate should be completely flat, as if there is no water at all over the plate. So if you can still see watermarks (see image below on the left) it means you still need to degrease it again until you obtain a completely flat surface like on the right.



You can also use potato. In this case you do not wet the plate first, but you immediately rub potato onto plate and then rinse with water.





#30

Dry the plate.



#32 DIRECT METHOD (2)
USING OFFSET TRANSFER
FROM PRINTING ROLLER

Dry inked plate with hair dryer to remove any water before transferring onto clean big rubber roller.



#31 INDIRECT METHOD (1)
USING TRAFER PAPER

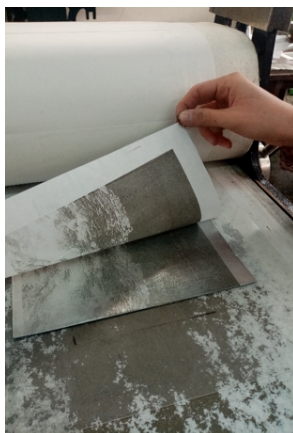
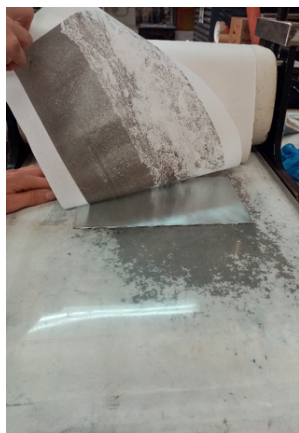
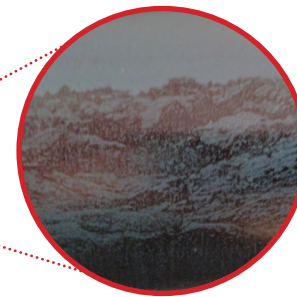
Print from offset plate using intaglio press onto a transfer paper - pre gummied paper used in classical lithography - or nonabsorvent paper such as tissue or glassine paper.



#32.1

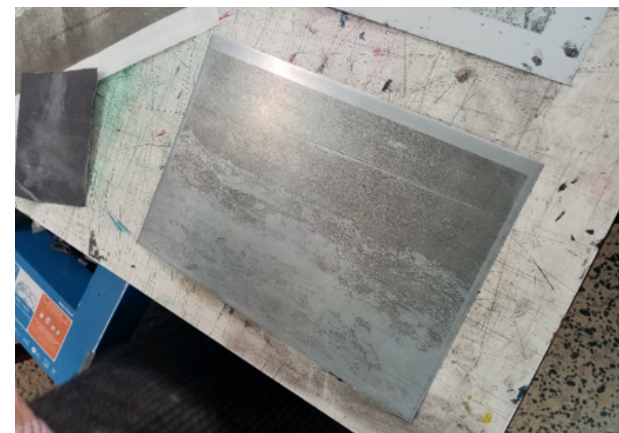
Keep in mind that roller needs to have proper size (diameter) to be able to transfer all image.

Pass the roller over the offset plate only once and slowly.



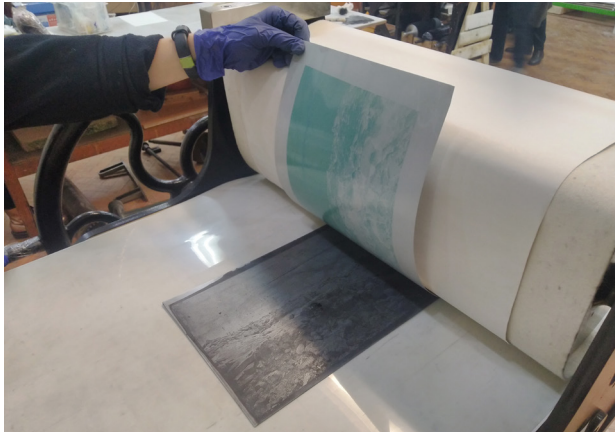
#31.1

With fresh proof on transfer paper pass it through the press as to offset the ink layer on the metal plate.



#32.2

Roll on the image from the roller onto the metal plate and this should be the result.



#33 METHOD (3)

Print directly from offset plate onto prepared metal plate by using the press.

#35

Cover the back of the plate with shellac and let it dry.



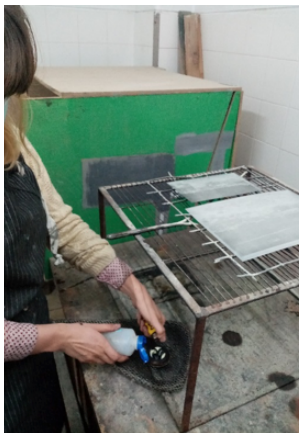
#33 (WEAR PROTECTION GEAR!)

The ink content transferred into the intaglio plate needs to be reinforced. The ink, working as a traditional ground is covered by a resin that will consolidate the ink image and create a tone in the open areas. Spin aquatint box a few times and wait a few seconds, so the dust "cloud" becomes thin enough (bigger resin grains fall faster). Gently place metal plate inside, gently close the box and leave it there for around 3 minutes. Then take it out and observe: porportion of resin should be around 50% over the plate.



#36

Immerse the plate in saline solution and wait the proper time, meaning if you want a deeper image you should wait longer. Whenever needed and before you rinse the plate in running water please place the plate in the water basket, so solids residues remain there and are not poured into plumbing, as they **damage environment and its species** - please see manual 18, page 5 for safe disposal [<https://gravura.fba.up.pt/home/investigacao/>]

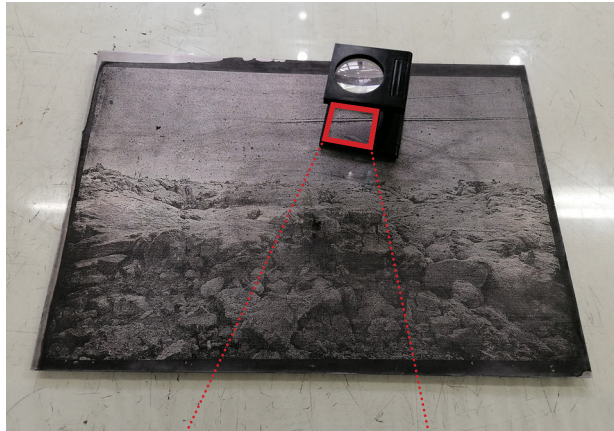


#34

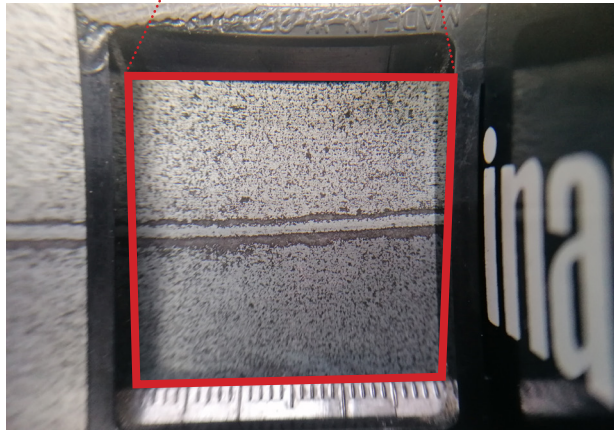
Heat the plate with flame and be aware not to overheat it. The resin dust melts and becomes transparent, meaning it is ready. Let the plate cool down.



Printed result after etching.



Detail of bite from saline solution mordant.



Bibliografia

- Chappell, Warren (1970) A short history of the printed word, Knopf, New York
- Cumming, David (1948) Handbook of lithography, London
- Fishpool, Megan (2009) Hybrid Prints
- Hird, Kenneth F. (1991) Offset lithographic technology, Goodheart-Willcox, USA
- Hoe, Robert (1902) A short history of the printing press and of the improvements in printing machinery from the time of Gutenberg up to the present day. R. Hoe, New York.
- Hughes, Ann d'Arcy and Vernon-Morris, Hebe (2008) Printmaking, traditional and contemporary techniques. RotoVision, Switzerland.
- Jones, Stanley (2010) Stanley Jones and the Curwen Studio, Herbert Press, England.
- Jose Julio Rodrigues (1879) Procédés photographiques et méthodes diverses d'impressions aux encres grasses, Paris.
- Knigin, Michael and Zimiles, Murray (1977) The Technique of Fine Art Lithography, Van Nostrand Reinhold Company, USA.
- Machado, Graciela & Belkot, Marta (2019) Drawing for reproduction: toward recreating surface prepared papers for making prints and exploring creative practice. 7th International Conference on Illustration and Animation, Portugal.
- Ruth Pelzer-Montada, (2018) Perspectives on contemporary printmaking, Manchester University Press
- Sacilotto, Deli (1982) Photographic Printmaking techniques
- Senefelder, Alois (1819) A complete course of lithography, R. Ackermann, London.
- Seymour, Alfred (1903) Practical lithography. Scott, Greenwood & co.; London.