

MARTA BELKOT

(SFRH/BD/149042/2019)

GRACIELA
MACHADO

(i2ADS)

Lithographic
crayons

2020–22

- Black, white and grey
lithographic crayon
- Black and white drawing
lithographic ink and black
slate crayon

Research projects: Pure Print/i2ADS,
GroundLab/i2ADS

Researchers: Graciela Machado (IP:
i2ADS/FBAUP). Marta Belkot (SFRH/
BD/149042/2019, Rafaela Lima

Illustrations: Marta Belkot and Kasia
Harczarek

Acknowledgement: The great
contribution, involvement and
fascination of the late Sandra Costa
Brás to this research.

Before the invention of lithography¹, and, consequently, of lithographic crayons and inks (tusche), the usual crayons or chalks used for drawing on paper, could consist of various binders such as: ale (beer), gum tragacanth, gum Arabic, size (any of various sticky materials), milk or oat milk, sugar, olive oil or linseed oil, apart from the usual pigments, according to Robert Dossie's "The handmaid to the arts" (1796). Until Senefelder's contributions, soap, comprised of saponified oils and fats, was only used for cleaning pictures, and saponified waxes mixed with pigments were used as painting mediums (WARD, 2008). Senefelder carried out experiments to establish the composition of an ink for drawing on stone, which he called the "chemical ink". This ink would adhere strongly to the stone, be resistant to acid and allow a considerable number of proofs to be taken from an etched drawing. This chemical ink should contain a correct mixture of materials in order to deposit the necessary fat-receptive and water-repellent substances (MAYER, p. 380). What differentiates lithographic crayons and inks from ordinary ones is, essentially, their resistance to the action of acids (LEHNER, 1902).

Lithographic inks (tusche) and crayons derive their characteristics from the chemical properties of their components; yellow beeswax is highly resistant to acid and provides smoothness and adhesion; shellac in flakes provides hardness and elasticity to the ink; mutton fat (tallow) gives the ink its necessary greasiness and softness; Marseille soap, made from soda, stimulates the porosity of the stone and helps the fat to penetrate, giving it a smooth or slippery quality, along

1 The process of lithography (Aloys Senefelder invention, 1796) consists of drawing or painting with greasy chalks and inks on limestone. The stone is etched and, when moistened with water, the traces of ink repel the water and remain dry. Oily inks applied with a roller adhere only to the drawing and are repelled by the wet parts of the stone (MAYER, 1930) page 377.

with solubility in water; mastic gives the ink fluidity; resins give it tackiness and solidity; potassium nitrate gives the crayons some hardness and elasticity; lampblack pigment gives it its dark color and solidity (BRÉGEAUT, LEMERCIER, MAYER). Lithographic crayon has the same effect on the stone as ink, but differs in its ability to adhere or penetrate. It is used in the form of a drawing stick, available in variable grades of softness depending on the composition of wax and shellac (SENEFELDER, 1819).

Despite the fact that whether to print in color or black and white is a decision made in the last stage of the printing process, drawing on stone (or on the transfer paper) is generally done in black or dark brown. What is drawn on the limestone will disappear due to the “processing” that takes place, and will later appear in the desired color when printed on paper. This crucial fact explains the unavailability of colorful crayons or drawing lithographic inks on the market. Still, the idea to work with alternative lithographic stones like local black slate makes way for the necessity to construct white crayon and autographic ink so as to make the drawing visible on a dark surface. At first Marta Bełkot and Sandra Costa Brás (2020), having already prepared mutton tallow for the previous experiments with transfer ink, cooked the black, grey and white lithographic crayons first in FBAUP’s facilities – unsuccessfully, and later in Sandra’s house. Following Senefelder’s and Lemerrier’s crayons recipes and guided by the complete description of the process, they divided the substance in two, one using the suggested lampblack, the other the titanium white instead.

The number four crayon² that they produced did not contain shellac, which naturally darkens the substance, and this

2 Lemerrier, A. (1896). *La Lithographie Française de 1796 a 1896*. Ch. Lorilleux et Cle, Paris. p.20)

made it possible to manipulate the resulting color easily. Later Marta Belköt and Rafaela Lima produced dark lithographic inks based on original recipes found in the lithographic recipe books and Portuguese manuals *Bibliotheca do Povo e da Escola* (1888) and *Mil Segredos de Oficinas* (1925) (BELKÖT, LIMA, SILVA & MACHADO, 2023). They used soot as a pigment, producing a range of five slightly different inks and crayons (as a dry form of ink). For II Biennal de Ardósia De Valongo, Marta Belköt produced four white lithographic drawing inks as well as black slate crayons (2021). All of the drawing and painting tools produced were tested along by different students, showing high quality effects and satisfactory results.



REFERENCES

- Belkot, M., da Silva, A., Lima, R., & Machado, G. (2023). Towards Archaeological Printmaking. *IMPACT Printmaking Journal*, (1), 24. <https://doi.org/10.54632/22.7.IMPJ12>
- Bregeaut, L. R. (1827). *Manuel complet théorique et pratique*, Roret, de l'imprimerie de Crapelete, Paris.
- Costa, J., Valladares, M. (1888). *Bibliotheca do Povo e da Escola*. 20^a série, nº155.
- Dossie, R. (1796). *The handmaid to the arts*. A. Millar, W. Law and R. Cater, London.
- Ward, G. (2008). *The Grove Encyclopedia of Materials and Techniques in Art*, Oxford University Press.
- Lehner, S. (1902). *Ink manufacture including writing, copying, lithographic, marking, stamping and laundry inks*. Scott Geenwood and co, London. (pag. 4)
- Lemercier, A. (1896). *La Lithographie Française de 1796 a 1896*. Ch. Lorilleux et Cle, Paris.
- Mayer R. (1991). *The Artist's Handbook of Materials and Techniques, The Painter's Craft, and A Dictionary of Art Terms and Techniques*. Fifth Edition, Revised and Updated, Viking Books, USA
- No author. (1925). *Mil segredos de Oficinas*. Lisbon, Portugal
- Senefelder, A. (1819). *A Complete Course of Lithography*, R. Ackermann, London.

