



XIV. On the preparation of crayons used for drawing, from the paste of redde

C.F. Lomet

To cite this article: C.F. Lomet (1799) XIV. On the preparation of crayons used for drawing, from the paste of redde , Philosophical Magazine Series 1, 4:15, 299-303, DOI: [10.1080/14786449908677076](https://doi.org/10.1080/14786449908677076)

To link to this article: <http://dx.doi.org/10.1080/14786449908677076>



Published online: 18 May 2009.



Submit your article to this journal [↗](#)



Article views: 3



View related articles [↗](#)

tions also a disease which affects the neck and head of cats, by which the greater part of these animals in Westphalia died; and refers to a passage in Sauvage's *Nosologia**, which however, in an extract of that work in three large volumes octavo †, now before me, I have not been able to find.

XIV. *On the Preparation of Crayons used for Drawing, from the Pâste of Reddle.* By C. F. LOMET ‡.

IN most drawing-schools, and particularly those at a distance from the capital, many difficulties are experienced for want of good crayons. Those sawed from red chalk, which are in common use, are almost always hard, gritty, and often of an unequal consistency; so that the touches in the drawings for which they are used can never have the strength or correctness necessary to produce the desired effect. The only good crayons used in France are manufactured exclusively at Paris, where they are sold very dear: the best sort have been long known by the name of the *pâste crayons of Desmarests*, who apparently was the inventor. As no author who has written on the composition of these crayons has pointed out the proportions of the ingredients necessary to be used, I made many trials with every combination of the substances that appeared to me proper for making them. I rejected those products which did not answer the objects of my research; and I here subjoin those mixtures that gave me satisfactory results.

These pencils are composed of the softer kind of redde, which is an oxyde of iron mixed with earth of an argillaceous nature, and called *hematites*, or bog-ore. It must be incorporated with some agglutinating substance, such as gum, size, or resin; to which sometimes soap is added, to

* Nosol. cl. X, art. 30. 8.

† Amst. 1763.

‡ From the *Annales de Chimie*, No. 90. an. 7.

soften the composition. Instead of redde the other red oxides of iron may be used, such as colcothar of vitriol, &c.; and in that case they should be chosen soft to the touch, and of a lively colour; for those used in commerce are often mixed with too much clay, which gives them a dull yellowish cast that ought to be avoided. I attempted to incorporate these substances with the whites of eggs and the albumen of blood; but crayons composed in this manner were not good.

The best redde, in lumps, should be selected and ground with pure water on a marble slab, as is done in the preparation of colours for painting; taking care to moisten it as much as is necessary to make the grinding stone glide, and to employ as little water as possible. When it is intended to prepare a large quantity of this substance, this operation becomes very difficult and expensive: in that case a different method must be used. The redde must be pounded and sifted through a fine sieve, then diluted with a large quantity of water in a trough; where, after it has been well stirred round, it should be left a few minutes to settle, in order that the grosser particles may precipitate themselves to the bottom. The water, which is strongly impregnated with the finer particles, is then poured off, and suffered to settle for twenty-four hours. The clear water on the top is then poured off again, and a very fine sediment will thus be obtained, which must be pounded and washed once more. The sediment of the first washing must be treated in the like manner, and the process is repeated until the whole be reduced to the utmost fineness.

The gum, size, or soap, destined to give the crayon the necessary degree of solidity, must be dissolved separately. These solutions must be carefully mixed with the pounded redde, and the watery particles must be evaporated by being exposed to the sun or to the heat of a gentle fire, taking care to turn the paste often till it has acquired a consistence somewhat harder than butter: the crayons are then to be formed in the moulds.

The

The moulding may be performed two ways: the first is, to spread out the paste on a board, in which are cut grooves rather broader at the top and round at bottom; and of any length, size, and depth, proportioned to the intended size of the crayons. The second, which is the better method, is to force the paste through a pipe or funnel of an orifice equal to the size of the crayon. The paste thus formed may be left to dry slowly in a cool place under the shade, in order to prevent cracks, which too hasty desiccation might produce. When the rods are dry, they are to be cut into pieces of the desired length: the edges must then be taken off; after which they must receive the first cutting, to give them a blunt point. The last operation is to scrape them, in order to take off the hard outward coat formed on the surface while they are drying, and which would prevent them from making any marks. It may be necessary to rub a small portion of oil into the grooves of the wood, that the paste may not adhere too closely to the moulds.

Gum arabic and isinglass are the two substances to be preferred for mixing with the powder. It will be sufficient to dissolve the gum and soap in cold water; but the isinglass must first be cut into small pieces, then put into hot water, and dissolved in *balneo marie*. These solutions should be well diluted with water, that they may be made to pass through a hair sieve in order to remove any foreign particles. As it is difficult to incorporate the paste with the isinglass, they must both be heated and mixed over a fire with a heat equal to that of boiling water. The paste must be well mixed before it is moulded, in order that it may be uniformly incorporated with the solution, and that there may not remain any hard lumps. The best way would be to beat it with a pestle or mallet, and to pound it again for some time before it is put into the moulds.

No soap must be employed but for those crayons in which gum is used. In all the trials I have made with isinglass and soap,

foap, nōt one of them succeeded: and it must necessarily be so; for, the excess of alkali in the foap, operating on the gelatinous matter, destroys its agglutinating quality. As the crayons for which soap has been used are of a browner cast, it would appear that this combination abstracts the oxygen from a part of the red oxide of iron, and gives it a brown tint by making it approach the state of martial æthiops. I have remarked, that all the pastes prepared with oxide of iron, even when pure water alone is used, grow brown on the exterior surface as they dry: this takes place in a more sensible manner when they are exposed to the action of the sun; which seems to arise from the light abstracting a portion of oxygen from the oxide of iron. At some future period I shall enter into a farther inquiry respecting the chemical properties of these preparations; but at present I shall content myself with pointing out the processes which have constantly succeeded with me, and in such a way that they may be put in practice any where with success.

The crayons composed in this manner have every good property that can be desired; they do not cost one quarter the common price: but it must be observed, that their composition requires great nicety in regard to the quantity of the materials, because the least variation occasions considerable difference in the quality of the paste. Particular care must also be taken to guard against the errors that may arise from the waste, which is unavoidable during the course of the operation. The best means to prevent it will be, to fix by experiments the quantity of water and of ingredients which the pounded redde and the solutions form before the mixtures are made. By means of the following tables, which exhibit the quantity of ingredients to be used for the different kinds of crayons, it will be easy to know what proportion of gum, isinglass, or soap, must be employed for a determined quantity of redde, or red oxide of iron.

Indications

Indication of the Substances to be used, their Quantities, and what they will produce.

I. Dry reddle, or red oxyde of iron, 1 ounce; gum arabic, dry, 18 grains.—These crayons are very tender, but they may be employed for large designs. As they are the kind in which the least gum is used, they have not sufficient consistence for any other purpose.

II. Reddle, &c. 1 ounce; gum 21 grains.—Strong crayons, a little tender, but excellent for large drawings.

III. Reddle 1 ounce, gum 24 grains, or rather $25\frac{1}{2}$ grains.—Soft and solid crayons: they are the best that can be employed for common use.

IV. Reddle 1 ounce, gum 27 grains.—Crayons rather firm, but not hard; useful for drawings that require delicacy.

V. Reddle 1 ounce, gum 30 grains.—Very firm crayons, proper for drawings in which every stroke is intended to be given.

VI. Reddle 1 ounce, gum 33 grains.—Very hard crayons, which cannot be used without some force. The largest quantity of gum that can be employed is used in their composition: with more they would be useless.

VII. Reddle 1 ounce, gum 22 grains, white hard soap 30 grains.—These crayons have a little browner cast than the former; they are of a very good consistence, and can be easily cut. All crayons, however, in the composition of which soap is employed, are attended with this fault, that the strokes they make have a shining appearance if the touches are repeated a little too strongly. No other experiment with soap succeeded. These crayons have a perfect resemblance to those made by Desmarests.

VIII. Reddle 1 ounce, isinglass 36 grains.—Crayons of a brilliant colour, and excellent for use. If less isinglass is employed they become brittle; and if more, they are too hard.