

Egyptian Paste

by Robin Hopper

Invented by the Egyptians some 7,000 years ago, Egyptian paste is a body containing little or no clay, which can be modeled, carved into simple forms, or pressed into molds. Egyptian paste is basically a self-glazing, low-clay modeling material. It has a high silica and high soluble alkaline flux component and an abnormally low clay content. The soluble salts of soda ash, sodium bicarbonate, potassium carbonate, and lithium carbonate migrate to the surface during drying, developing a powdery white scum. This scum melts during firing to form a glazed surface and a highly glassified core structure to the body. Colorants may be mixed into the basic pastes and stains or oxides that produce strong color when used with highly alkaline materials work best. These would be mainly copper, cobalt, manganese, ochre, and rutile, and the mixtures of these colorants. The temperature range for firing Egyptian paste is between cone 012 and cone 04, usually in oxidation.

THE BASIC FORMULA

In formulating Egyptian paste, keep the clay content low to allow for sufficient glass-forming material to be present and to give an open, porous structure that will permit the migration of soluble ingredients to the surface. The material will contain about 60% of non-plastic ingredients such as silica, sand, and feldspar. Clay may be added in amounts up to about 20%. At least 10% of some soluble soda compound is necessary. Soda may be added as soda ash, bicarbonate of soda, borax, or combinations of these. Coloring



Finished necklace by Isabel Denyer, Egyptian paste, precious-metal clay, porcelain, silver, 2008.

oxides are added directly to the batch. Historically, copper oxide or copper carbonate, which give a beautiful turquoise color, were the colorants typically used. About 3% will give a strong blue. Cobalt oxide, manganese oxide, or many commercial stains may also be used.

WORKING WITH EGYPTIAN PASTE

At best, Egyptian paste is relatively non-plastic, and the forms made with it are usually simple. Bentonite can be added to partially overcome this difficulty.



Mix the Egyptian paste to the consistency of pudding.



Dry the paste into a dough-like consistency and roll into coils.



Cut the paste into small objects or beads using a thin metal rib.

Jewelry or small sculptures made this way may be very beautiful in surface and color. Beads may be fired strung on Kanthal or kiln element wire in the kiln, which will prevent the slight scar that occurs if the bead is placed on a kiln shelf. (Such scars can be minimized if the shelf is dusted lightly with alumina hydrate or calcium carbonate.) Different colors on the same piece may be achieved by in-laying pastes with various coloring oxides.

Firing of the self-glazing Egyptian paste should be done on wire stilts (see Supply Room page 10–11) or, in the case of beads, strung on longer lengths of metal wire. The wire can be slightly crimped with needle nosed pliers to avoid any shifting of the beads. This loaded wire may be arched, the two ends being stuck into a piece of porous insulating brick and the whole placed in the kiln for firing.

RECIPES TO TEST

In addition to the following recipes, a commercial Egyptian paste body is available in yellow, green, mauve, and black from Amaco at www.amaco.com.

Egyptian Paste

Cone 016

Nepheline Syenite	25 %
Ferro Frit 3134	15
Silica	20
Sand (50-Mesh).	5
Tennessee Ball Clay #1	25
Anhydrous Borax	3
Soda Ash	4
Bentonite	3
	<u>100 %</u>

Egyptian paste may be colored by mixing the following into the dry body:

Deep Blue: Cobalt Carbonate	1%
Turquoise Blue: Copper Carbonate	3%
Green: Chromium Oxide	1%

Mix well and sieve to 60-mesh or finer while dry. Add a small amount of water and mix to a dough-like consistency.

Egyptian Paste

(from Robin Hopper)

Cone 08

Feldspar	36.0%
Silica	18.0
Kaolin	14.0
Ball clay	5.0
Sodium bicarbonate	5.5
Soda ash	5.5
Calcium carbonate	4.5
Fine white sand	7.0
Bentonite	4.5
	<u>100.0%</u>

Egyptian Paste

(from Ceramics Today)

Cone 010 - 06

Soda Feldspar	38 %
Silica	38
Ball Clay	12
Soda Ash	6
Sodium Bicarbonate	6
	<u>100 %</u>



Above left: As Egyptian paste dries, soluble salts form a white powder on the surface.

Above right: These salts, when left untouched, form a glaze when fired.

Below Left: Cone 010 Egyptian paste with 2% cobalt oxide.

Below Right: Cone 016 Egyptian paste with 3% commercial green stain.

Text excerpted from The Ceramic Spectrum by Robin Hopper. Isabel Denyer images from Ceramic Jewelry published by The American Ceramic Society.