

WHAT IS CLAY?



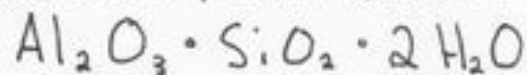
Clay is a product from the earth that when heated becomes hard.



Geologically, clay comes from decomposed rock. It is typically carried by water and settles together in a particular area where it is mined.



Chemically, clay is a combination of Alumina, Silica, and water:



along with other minerals.



Physically, clay's crystal structure is that of tiny sheets with water between them. The sheets are held together by suction but can slide past each other like a deck of wet playing cards.



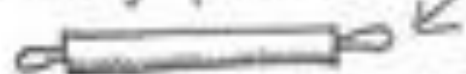
Heat causes the clay to harden. At 600°C the water is driven off and leaves a bonded alumina silicate structure. Further heat, 800°C , causes melting of the free silica and other materials into a vitrified, or glass like, substance.

CLAY

Vocabulary

Here are some words that are helpful to know when you are making art with clay:

A **SLAB** is a flat "pancake" of clay made with your hands or a rolling pin.



The **KILN** is a special oven that gets super-hot, to turn clay into **CERAMIC**.

CERAMIC is the word for fired clay.



"Pottery" is a ceramic container, like a mug.

COIL



A **COIL** is a long, thin rope of clay made by rolling with your hands. Try to make it an even thickness.



SCORE

and



Joining wet clay is done by **SCORING**, or roughly scratching, and adding liquid clay - called slip. This seals the pieces together.



is painted on and fired until it's glassy.

WHAT IS A FIRING?



Firing is the process of adding heat to the ceramic material



There are a variety of ways to heat clay. They include a simple campfire, wood kilns, gas kilns, electric kilns and experimental solar kilns.



The atmosphere of the kiln helps dictate the color of the clay and glaze. An abundance of oxygen, oxidation, creates clear, bright colors. A lack of oxygen, reduction, gives warm browns and reds.



Generally, there are two firings. The first, bisque, drives the water from the clay so it may easily be glazed. The second, glaze firing, heats the clay to its particular vitrification temperature.



Cones, "Δ", are a common method of measuring the temperature inside the kiln. They are made of ceramic materials which melt at known temperatures.

CONE	°C	°F	COLOR	WHAT IS GOING ON?
Δ016	792°	1458°	Dull Red	Organic matter burns off.
Δ06	999°	1830°	Orange	Bisque, Lowfire, Terracotta
Δ3	1168°	2167°	Yellow	Commercial Toilets and Sinks
Δ10	1305°	2381°	Bright Yellow	Highfire, Dinnerware

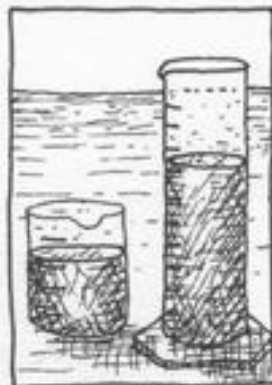
WHAT IS GLAZE?



A glaze is a glassy surface covering. It makes the pot waterproof and adds decoration.



Geologically, the major components of a glaze come from the same place as clay. However, some of the lesser materials may be mined from a variety of sources.



Chemically, you'll find 3 major compounds in a glaze: Silica, Alumina, and a Flux. These occur in various proportions along with other substances that give color.



Heat causes the glaze ingredients to melt and form a glass. The Silica melts to a glass. The Flux allows the silica to melt at a lower temperature. The Alumina keeps the molten glass from flowing off the pot.



The look of the glaze, its color and opacity, depend on the proportion of the 3 main ingredients, the additional colorants, and the firing of the kiln.