

The Ingredients of Glassmaking

The main ingredients and their approximate percentage of a Fenton batch are:

Sand (SiO ₂)	71%
Soda Ash (Na ₂ CO ₃)	15%
Lime (CaCO ₃)	9%

Some manufacturers substitute potash for soda ash, and barium or borax for lime. In some opaque glasses, fluorspar and feldspar are substituted for lime.

The color ingredients (5%) are mixed with the main ingredients before melting.

<u>MATERIALS</u>	<u>COLORS</u>	<u>MATERIALS</u>	<u>COLORS</u>
Gold	Cranberry	Neodymium	Pink
Gold	Burmese	Iron or Chromium	Green
Gold	Rosalene	Manganese	Black
Uranium	Yellow	Alumina and Fluorine	Milk Glass
Cobalt	Blue		
Sugar and Iron	Amber		

A Brief Description of the Glassmaking Process

<u>Activity</u>	<u>At What Temperature?</u>	<u>Requires How Much Time?</u>
Ingredients weighed and mixed	at room temperature	approx. 30 minutes
Loaded into melting furnace	approx. 2000 ⁰ F.	approx. 5 minutes
Melting and refining takes place	approx. 2550 ⁰ F.	10 to 35 hours, depending on the type of glass and type of furnace
Fenton glassworkers draw molten glass from the furnaces to gobs ranging in size from 3 oz. to 90 oz. In other factories the glass flows from the furnace into forming machines on a lower level.	approx. 2000 ⁰ F.	two 4 hour turns
The gob is formed into a basic shape by using air or mechanical force. In factories mking high quantities or less complicated shapes, the forming is performed by machines.	approx. 2000 ⁰ F.	5 to 50 seconds
The basic shape is reheated in a glory hole and changed to the final shape.	1800 ⁰ F.	20 to 60 seconds
The piece is placed in an annealing lehr to cool and strengthen the glass.	1000 ⁰ F. to room temperature	1 hr. to 6 hrs.
The piece is inspected for flaws. First-quality glass may received further processing in decorating or finishing departments. After further inspection, the piece is packaged and shipped.	room temperature	1 day to weeks