Name: _____ Class: _____ Date: _____

EXTRA!! EXTRA!! PRACTICE READ...READ...THINK...THINK...WRITE

ARTICLE: **Glass: a hot and cool combo of art and science** **Article ID: 8206 8991**

Introduction

Silicon (Si) is the second most abundant element after oxygen (O2). According to the Los Alamos National Lab, silicon is present in the sun and stars and can also be found in meteorites. Silicon is not found in its free state in nature but rather, as an oxide or silicate. Silicon oxides are found in sand, quartz, rock crystal, amethyst, and opal. Granite and asbestos are two examples of materials that are silicates.

Silicon makes up 25.7 percent of the earth's crust, by weight. The process of making glass involves heating sand to very high temperatures to transform sand to its liquid state of matter and then cooling the resulting glass product to room temperature where it is a solid.

Activity

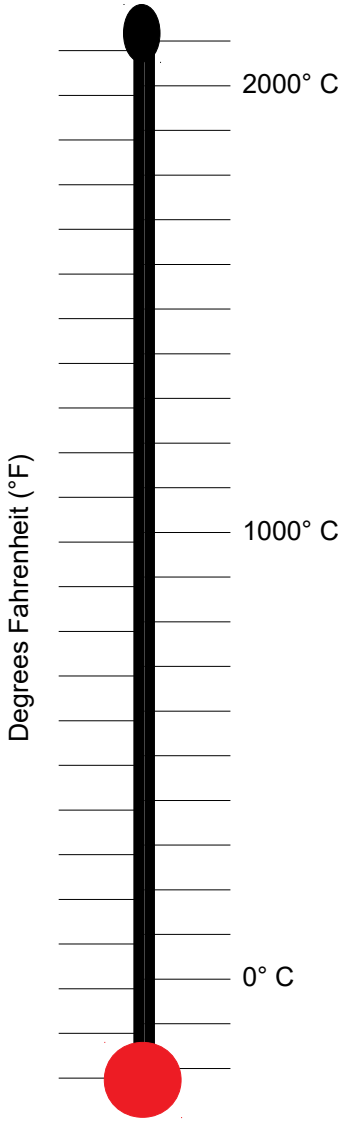
Watch the video of the entire process of making glass by Leonard Marty, a master glassblowing instructor. Note temperatures at each stage. On the line below, note important temperatures Leonard mentions in the video and explain what happens to glass at those temperatures. Note temperatures in both C and F.

1) Label the scale for both degrees Celsius and Fahrenheit.

2) Draw a line from the description and give the temperature for room temperature, when water freezes, and boils.

3) Label the key glass temperatures from the videom

Go to page 2



– Furnace Temperature

– Water Boils

– Room Temperature

– Water Freezes

© 2018 Student News Net, Redwood Educational Technologies, LLC

Name: _____ Class: _____ Date: _____

Elements that Color Glass*

Many elements (mainly in the form of oxides) are used to impart glass with special properties and color. For example, the following elements (metals) can be used to color glass:

Metals Used to Impart Color	Glass Color(s)
Antimony Oxides	White
Cadmium Sulfide	Yellow
Carbon Oxides	Amber-Brown
Chromium Oxide	Emerald Green
Cobalt Oxide	Dark Blue-Violet
Copper Compounds	Light Blue, Green
Gold (Au)	Deep red, like rubies.
Iron Oxide	Greens and Browns

Metals Used to Impart Color	Glass Color(s)
Lead Compounds	Yellow
Manganese Dioxide	Purple
Nickel Oxide	Violet
Selenium Oxide	Reds
Sulfur	Yellow-Amber
Tin Compounds	White
Uranium Oxide**	Fluorescent Yellow, Green
**According to Leonard Marty, uranium can no longer be used to color glass. Existing products are called "Vaseline glass."	

* Reference: The Corning Museum of Glass, Dr. Robert Brill, Research Scientist Emeritus

Activities (Cont'd)

4. Examine the colors of Chihuly's tribute to his mother's love of gardening as discussed and shown in the article. The glass sculpture has several elements with brightly colored glass. What elements were most likely used for the following components of the sculpture?

Tall spikes of red plants	
Yellow spreading forms	
The green spikes of low spreading plants	
Blue Balls	
Lighter blue medium tall plants	
Darker brownish balls at right end	
Purple spikes at right end	

© 2018 Student News Net, Redwood Educational Technologies, LLC