Colors and Metals: What gives glass its color?

Have you ever wondered why some glass is clear while some is blue, or green, or even striped with yellow? Colored glass can be found in stained glass windows, in everyday glasses, cups and plates, and in the incredible artworks made by glass artists around the world.

But how does it work?

Color is an important ingredient of glass and like the other ingredients of glass - color also comes from the Earth! Minerals and metal oxides are added to molten glass. The ions in the metal absorb different wavelengths of light which then gives glass its spectrum of color. In the early days of glass production color was largely a result of the natural impurities found in glass. For example, ‘black bottle glass’ was a dark brown or green glass, first produced in 17th Century England. This glass was dark due to the effects of the iron impurities in the sand used to make the glass and the sulfur from the smoke of the burning coal used to melt the glass. Different metals result in different colors and today color is added intentionally to produce all the colors of glass we see.

The world of color is truly its own universe! Learn more about color in glass here:

- https://www.cmog.org/video/coloring-glass
- https://www.compoundchem.com/2015/03/03/coloured-glass/
Fun Facts:
- Did you know some glass can glow in the dark!? Uranium glass was invented in the 1830s and is made using uranium oxide.
- Clear glass is made by adding a decolorizer like Manganese dioxide which precipitates out impurities such as iron and sulfur compounds.

Activity: Color Collection
Here is what you will need for your collection:
- Paper
- Pencil or writing utensil
- Close-looking eyes
- Some color! Like crayons, markers, paints, colored paper, or whatever you have!

What to do:
1. Take a close look at all the colors around you! What colors are in your home or in your yard?
2. “Collect” the colors you see to create your own color collection or home color palette like examples below or find your own unique way to collect colors by creating your own chart or spectrum.
   a. Try labeling your colors with the corresponding metal oxides from the glass color chart above.
   b. Find interesting ways to organize your colors—by object, similarities, or moods!
3. Design your own glass artwork using the colors on your color palette! Sketch your design and add in your colors!

Share Your Color Palette and Drawings
Post a photo of your color palette and drawings! Tag us on Instagram, Facebook, or Twitter @pghglasscenter and we might share your creation.