

## Glass

From windshields to bottles, glass is so much a part of our daily experience that we seldom pause to wonder what it really is. Glass is actually a *state of matter* that occurs when a crystalline material - like the silica in sand - is melted at a very high temperature. As the melt cools, it combines properties of crystals with properties of liquids. Glass is sometimes called a super-cooled liquid. Even scientists do not completely understand the basic nature of glass. Obsidian is a natural form of glass that occurs when masses of silica are fused together by the intense heat of a volcano. Early man used obsidian to form tools and weapons.



No one exactly knows when the process of glass making was discovered. True glass was probably first manufactured in western Asia about 4,000 years ago. The earliest glass objects were beads made in open molds. Glass beads are still made today in an amazing variety of shapes, colors, and patterns. The colors result from adding metallic oxides to the mixture.

Until about 50 BC, glass was a luxury as rare as gold. Glass forming techniques were limited to casting, core forming and cutting. Then someone discovered that molten glass could be gathered on the end of a hollow pipe and inflated like a bubble to form a hollow vessel. That was the beginning of mass production of glass objects. Glass blowers today use a kiln, a kind of oven that reaches high temperatures, to melt their glass.

Stained glass panels can be made by blowing glass into a mold, then cutting and flattening the glass before it cools. It can also be rolled out in flat sheets. Stained glass artists cut the glass using a glass *cutter* with a diamond wheel. Although the tool is called a glass *cutter*, it doesn't actually cut the glass. Instead it makes a scratch called a score line. Then the glass artist must snap the glass along that score line to make it break. It is a tricky process!

The artist shapes strips of grooved lead or copper foil over the edges of each piece of cut glass. The artist can then solder the lead or copper edges together. Today glass art ranges from tiny vessels to huge installations.



Vibrant by Dan Neil Barnes 40" long x 18" wide x 39" inches high

Dan Neil Barnes

Vibrant

Glass

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