

ALL CRYSTAL IS GLASS BUT NOT ALL GLASS IS CRYSTAL:



The origins of manmade glass are unknown – somewhere around 3500 BC either merchant's on their way from one place to another accidentally threw some sand in the fire or sand slipped into the fire of a kiln making pottery. Either way, the making of glass was born and neither the ingredients nor the ways of making it have changed much in the past several thousand years.

All glass is made from silica sand and potash (ash produced from burning wood) or soda (ash produced from burning plants) as the basic ingredients heated to a high temperature to melt and form a liquid which then is cooled slowly to form a unique solid called glass. It is unique from other solids in that its atomic structure more resembles a liquid. These are the characteristics that allow its workability and also its transparency.



The first glass was opaque beads and around 1500 BC the Egyptians developed a way to make glass bowls. The glass making technique spread and around 27 BC the Romans discovered the method of glass blowing – a method that is basically the same today. A while later the addition of manganese oxide to the silica/soda mix produced a clear glass. The medieval ages saw little in the way of technique development but in the 1500's glass makers in Murano, Italy developed a technique which produced beautiful glass and they kept the secret for several centuries. Murano glass is made from quartz pebbles ground down to an almost pure silica and potash. This produced a clear, flawless glass called "cristall".



In the mid 1600's George Ravenscroft established a glass house in England and set about to discover a way to make the Murano "cristall". What he found changed the glass industry. Lead oxide added to the potash/silica mix produced a glass that was softer so it was easier to cut and could be worked at lower temperatures so it was easier to free the glass from trapped air bubbles allowing for the production of perfectly clear, flawless objects. Lead also facilitates the solubility of other metal oxides used to add colour and its refractive index gives the glass brilliance and sparkle, particularly when cut. In order to be called "crystal" the glass must have a certain amount of lead in it (e.g. 1% in the US and 4% in Europe). To be called full lead crystal there must be at least 24% lead. The higher the amount of lead, the greater the amount of detail can be carved and the greater the value of the piece. As example Waterford crystal has a lead content of 33%.

Our ordinary drinking glasses are made from silica, soda and lime (which make the glass less fragile).



BLOWN, CUT, PRESSED AND COLOURED – THE DIFFERENCE CAN BE GOLDEN:

Blown glass is the process by which air is blown into molten glass to make the shape.

If you ever have a chance to observe this do so – it is truly amazing to watch a blob of glass on the edge of a long tube suddenly transform into a glass or a vase. The glass can be reheated as the shape is being blown and handles, feet or pedestals are added to finish the product. After finishing the newly made object is cut from the pipe – one way to distinguish blown glass is the small bulge or mark (a "pontil") near the stem of the glass where it has been cut. The piece is then cooled very slowly so that it will not shatter. Today while the artisans of fine glass still blow by hand,



automation has made the production of drinking glass and other tableware much easier. A press will give the rough shape to a droplet of glass and then it is placed in a finishing mould where it is blown into its finished shape.

Pressed glass is where a droplet of glass is placed in a mold machine and the shape of the piece is determined by the shape on the interior and the exterior of the mold. All pressed glass has a least one seam. **Cut Glass** is “glass that has been decorated entirely by hand by the use of rotating wheels”.

These wheels can be metal or stone and as the artisan completes the design, the wheel become finer and finer so that the glass is polished. All cut glass has to have some lead content in it but as stated above to be called cut crystal there must be a certain amount of lead in the glass. Certain characteristics will help identify whether your glass is blown, pressed, cut glass or cut crystal.



1. Blown glass has a rod mark on the bottom while pressed glass will have at least one seam.
2. Hand cut glass will have cut decoration around the outside edge of the glass and is crisp and sharp. Pressed glass will be smooth on the outside edges or rims.
3. Cut glass gets its weight from the heavier volume of glass which makes the end product thick. Lead crystal glass is thinner but just as heavy because of the lead content. The more lead, the heavier the glass.
4. Cut glass can have attractive designs but they are inferior to the way the light bends and reflects through lead crystal. If you shine a light through the two pieces together you will see that the lead crystal appears clearer, sparkles more and results in a multi-rainbow effect which is much more dramatic than in the cut glass.
5. If you tap a piece of crystal with the edge of a fork or “ping” with the tip of your fingernail it will emit a ringing sound that lasts for several seconds. Crystal can also “sing” by wetting the rim and then running your finger tip around the edge. Cut or regular glass has a less satisfying “plunk” sound when tapped.
6. Knowing the maker will also help determine the value of the glass – Baccarat, Steuben, Waterford, Micasa, Orrefors and Swarovski are just some of the better known makers of glass. And if you would like to know what that piece of Waterford is so expensive – it can take 4 to 7 people just to blow the glass and then more artisans after that to cut it. It can take up to 26 people to make one piece of finished lead crystal glass.



Finally – Colour – A bit of chemistry knowledge is helpful but basically the colour in glass results from the addition of various metallic oxides and compounds as well as some non-metallic elements to the silica/potash mix at the beginning. Gold makes ruby red glass and in lesser amounts with other compounds the glass gets pinker. Cobalt makes cobalt blue glass and as well is used to make turquoise, purple and violet blue glass. Copper makes most of the green glass but can also be used to make turquoise blue or red glass. Manganese makes purple glass. Iron oxide mixed with chromium makes the deep green of wine bottles while mixing it with sulphur and carbon makes the dark amber of beer bottles. Milk glass is made from a tin oxide mix. And if you happen to have a piece of yellow glass often called “Vaseline” glass in the USA – it was made with uranium before the dangers were known.

And yes if you are having 2 fingers of single malt scotch in your favourite Waterford glass – lead crystal does have a comforting “warm” feel to it!