



glassblowing



Shaping the gathered glass into a scoop before it's blown.

what is it?

It's the art of shaping molten glass by blowing air into it through a long metal tube. The most common types of glass used today are lead crystal and soda lime. Lead crystal (most commonly used for blowing) is made from silica sand, 24% lead oxide, small amounts of potash, and cullet (crushed waste glass). Soda lime glass is made from sand and soda lime and is the most common kind of household glassware. When molten glass is extremely malleable; when cool it's very hard and brittle, but very hardwearing and has been used to make practical and decorative items since ancient times.

History: the first glass used by humans was obsidian, forged in volcanoes and used by Stone Age peoples to make rudimentary tools. The origins of manufactured glass remain obscure but it's thought to date back to Mesopotamia, around 6000 years ago. The earliest known glass objects are beads, pottery glazes and later, hollow vessels made by shaping molten glass around a compacted sand core. The development of glassblowing, somewhere between 100 BCE and 100 CE in what is now Syria enabled large-scale production and a greater variety of shapes. The basic tools and techniques have remained largely unchanged to the present day.

The Romans disseminated glassblowing throughout their Empire and to Britain. In the Middle Ages, Bohemia and Venice, became centres of glassmaking excellence. Englishman George Ravenscroft perfected lead crystal in the 17th century. He achieved a superior mixture suited to cutting and engraving.

Blown glass remained the main means of production for nearly 2000 years until the advent of machines in the 19th century. Today, industrial-scale glassblowing is less widespread than it once was but the craft is kept alive and well by a few high-end companies and artisan producers.

what are the benefits?

Glassblowing is a skill that can be turned into a career, supplying practical items, from wine glasses and decanters to jugs and sculpture to the local community. It's exhilarating to watch or learn and it's very satisfying to be able to make something with your own hands (and lungs). While expert glassblowers can make large runs of identical items, it's often the imperfections and individuality of hand-blown glass that makes it attractive. Though lead crystal – the material of choice for blowing – can be more expensive than other types of glass, its enhanced brilliance, softness, clarity and ring make it a superior product. And while it's more expensive to buy hand-blown glass from a craftsman, more money in their pockets means more money in the local community, which is good for everyone.

Some waste cullet is ploughed back into making other items by the larger producers, reducing raw material use and energy costs to a degree. The rest of the cullet is sold to artisan producers who use it as their base material. So there's some 'recycling' involved. It's also possible to melt down and recycle old glass containers. However, the absence of lead in container glass means it cools quicker and is harder to work. It also tends to be greenish and difficult to colour, meaning it has a more limited range of applications than new material. Lead crystal can be melted down and reused.

Glassblowing does have some drawbacks. It's not a skill you can pick up quickly, you need a specially-equipped space and there are significant setup costs. Energy use is an issue - while some small producers are experimenting with renewable energy sources, most furnaces are powered with gas, a fossil fuel (meaning carbon emissions) and a finite resource. It takes two days for a furnace to reach the required working temperature of over 1000°C, so it has to be kept going even when not in use, i.e. overnight.

Raw materials are mined, which has a high environmental impact, and shipped long distances. Lead glass also has an impact in terms of leaching into ground and air; and there are particle emissions from furnace exhausts, although there are controls in these areas.

Glass is more energy-hungry than ceramics, but is infinitely recyclable. Ceramics can't be re-fired and made into other things so it tends to be crushed up for use in industry. Recycling glass can save on raw materials, energy and waste, although it's not being recycled as much as it could and we're nowhere near the ideal of 'closed loop' production.



what can I do?

You can start by supporting your local glassblower, if you have one. If you're interested in taking it further, the first step is to take a course to see whether you've got the required manual dexterity and hand-to-eye coordination. Glassblowing isn't for everyone: it can be scary (fear of fire and hot objects is pretty innate) but it's surprisingly safe when working in a controlled and supervised environment. A starter course will cost anywhere upwards of £100 per person per day.

Clear glass cullet is melted in a pot in the furnace at around 1100°C, and a blob wound onto the end of the blowing iron, known as a 'gather'. This is then rolled and rounded (or 'marvered') on an iron slab, at which point it's known as a 'parison'. The glassblower then controls, blows and shapes the parison using the blowing iron, a variety of tools and gravity to shape it during the short window while it cools and thickens to around 900°C. The glass is then returned to the furnace and the process is repeated until the finished object is obtained. The partially shaped object may also be placed inside a mould and blown to fit the shape.



Blown glass being removed from the mould.

Colour can be added by introducing coloured rods during the melting process.

To be a successful glassblower you need to use the tools as an extension of your hands since – unlike pottery – you can't touch the hot thing you're working on. The best glassblowers are light-handed and use heat and gravity to do most of the work. You need to be very methodical, able to visualise the finished product before you start and capable of doing different things with each of your hands at the same time. To make a career of it you need to be prepared to work hard with little success for several years while you learn and improve. The usual route is to study at art college and go on to an apprenticeship or employment with a large company before going it alone.

To set up a working studio you're looking at an outlay of several thousand pounds, so you either need substantial savings or to get hold of a very generous grant. Day-to-day running costs are also high - upwards of £2000 per month on gas and electricity alone. Before taking the plunge you need to be sure of your market and that you can cover costs. Have a back-up plan or savings to see you through the lean times. Working in a co-operative and sharing a furnace in shifts may be one way to maximise use of fuel and share costs.

resources

- lowimpact.org/glassblowing for more information, links & books, including:
- Ed Burke, *Glassblowing: a technical manual*
- Ann Kramer, *Learn how to Blow Glass*
- asgs-glass.org/mo/index.php/2014-03-31-19-47-10: history of glassblowing
- sustainableminds.com/industry-blog/glass-or-ceramic: glass v ceramics
- bssg.co.uk: Brit. Soc. of scientific glassblowers

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