

# THE REMARKABLE History OF THE GLASS BOTTLE

People have used glass bottles for thousands of years. But for most of that history, bottles were hand blown by craftsmen who studied bottle making their entire lives.

That changed in the early 20th century when technology enabled glass bottles to become common household items.

HERE'S HOW GLASS BOTTLES WENT FROM RARE OBJECTS CRAFTED BY ARTISANS TO AFFORDABLE, MASS PRODUCED CONTAINERS - AND HOW THEY IMPACTED SCIENCE AND HISTORY ALONG THE WAY.

## THE ANCIENT WORLD

**THIS FIRST GLASS BOTTLES WERE MADE IN 1500 BC IN MESOPOTAMIA**

Glass blowing, the technique of shaping molten glass by blowing into blowpipe, first developed in the 1st century BC in Syria.

According to legend, glass was discovered in Syria after natron merchants were shipwrecked on a sandy shore.

They used lumps of natron from the ship to prop up their pots to cook food. When it combined with the sand in the fire, the merchants marvelled as it created molten glass.

**ANCIENT GLASS WAS MADE USING A NATURALLY OCCURRING MATERIAL CALLED NATRON.**

It is composed mostly of sodium carbonate decahydrate and sodium bicarbonate, with small amounts of sodium chloride and sodium sulfate.

The ancient Romans used glass bottles to store their wine. Archeologists discovered a 1700-year-old Roman wine bottle in Speyer, Germany - with wine still in it. It holds the record for **THE OLDEST UNOPENED WINE BOTTLE IN THE WORLD.**

## MIDDLE AGES

**AFTER ROMAN GLASS MAKING TECHNIQUES WERE LOST, THE GREATEST GLASS WAS PRODUCED IN NORTH-WESTERN AND CENTRAL EUROPE STARTING IN 1000 AD.**

It was called "forest glass" because it was produced in glass factories in the middle of the woods.

It was made using wood ash and sand as the main raw materials and had a distinctive green color.

Most glass bottles in history were either opaque or colored. But in the late middle ages people living in southern Germany, Switzerland, and parts of Italy created clear glass containers. This clear glass was made by selecting the purest raw materials and adding small amounts of **MANGANESE OXIDE.**

## RENAISSANCE

**IN THE 14th CENTURY, MASTER GLASSMAKERS ON THE ISLAND OF MURANO IN ITALY MADE THE MOST PRIZED GLASS IN EUROPE.**

France and Germany tried to bribe the master glassmakers to leave.

To keep the glassmakers in Venice, they were given higher social status and could marry their daughters into nobility. No other tradesmen were granted this honor.

According to *The History Of The Worthies Of England Volume 2, Dr Alexander Nowell* accidentally invented bottled beer in Hertfordshire, England in 1568.

He took a sealed bottle of beer with him on a fishing trip and forgot it next to a river bank. When he returned several days later, he discovered that it was **CARBONATED.**

## INDUSTRIAL ERA

**IN THE 17th CENTURY, ENGLISH BUSINESSMAN GEORGE RAVENSCROFT DISCOVERED HOW TO PRODUCE LEAD GLASS AT LARGE SCALE.**

His heavy glass replaced Venetian glass as the most popular form of glass in London.

1774

In 1774 the scientist Joseph Priestly conducted an experiment where he focused a lens on lump of reddish mercuric oxide in an inverted glass container.

It emitted a gas that was "five or six times as good as common air." He didn't know it at the time, but Priestly used a glass bottle to **discover oxygen.**

1820

**MAKING A DECORATIVE GLASS CONTAINER IN THIS TIME NORMALLY REQUIRED TRAINED ARTISANS AND A LOT OF TIME, BUT IN THE 1820s AMERICANS DEVELOPED A SPECIAL MOLD THAT COULD MAKE ONE IN SECONDS.**

One person brought the molten glass from the furnace to the mold.

Then a second person cut off and pressed down the mold's plunger.

A beautiful glass container was made almost instantly.

1850

**IN THE 1850s THE AMERICAN TINSMITH JOHN LANDIS MASON INVENTED A GLASS BOTTLE WITH A THREADED FINISH. TO SEAL IT, YOU SIMPLY HAD TO SCREW ON A LID.**

The reusable "Mason Jar" made it easy to store and preserve food for long periods of time.

Before this, people had jars with wax.

1859

In 1859 French scientist Louis Pasteur used glass containers called **swan neck flasks** to settle an age old scientific dispute.

First he boiled broth in the flasks and let them sit. Contrary to expectations, **microorganisms did not form in the broth.** This refuted the common belief that life could spontaneously generate.

## THE AUTOMATIC GLASS BOTTLE MANUFACTURING REVOLUTION

**FOR MOST OF HISTORY, GLASS BOTTLES WERE HAND BLOWN. BUT STARTING IN THE LATE 19th CENTURY, MANUFACTURERS EXPLORED WAYS TO MASS PRODUCE BOTTLES.**

1880

In the 1880s inventors in America and England created the first glass blowing machines.

However, they weren't used until the 1890s because glass blowing unions didn't like the idea of being replaced.

1903

**A MORE SIGNIFICANT ADVANCEMENT IN BOTTLE PRODUCTION HAPPENED IN 1903.**

Michael Owens, a self-taught American inventor, unveiled an efficient automatic glass forming machine. He worked on it for years.

It was so efficient, it could make more bottles every hour than an entire team of glassblowers could produce in a day.

Eventually, the Owens bottle machine had 10,000 parts and weighed **30 TONS**

By 1917 the Owens machine produced half of the glass containers made in the United States.

1915

**KARL PEILER INVENTED A WAY TO MAKE A MORE EFFICIENT SYSTEM OF MASS PRODUCING BOTTLES IN 1915. HIS INNOVATION WAS CALLED "THE GOB FEEDER."**

This was a part that dropped a carefully measured gob of molten glass into the machine's mold. His machine made perfectly sized gobs by precisely controlling the temperature of the glass.

These innovations helped explode the number of glass containers produced in the United States.

In 1899, **7.7 MILLION** glass containers were produced in the U.S.

By 1919, the number surged to more than **22 MILLION.**

1925

**IN 1925 HENRY INGLE OF THE HARTFORD EMPIRE COMPANY SOLVED ONE OF THE PROBLEMS WITH THE CLASSIC GOB FEEDER.**

In order for the gob feeder to work, the molten glass and blow mold had align perfectly. This was accomplished with one or two rotating tables.

To make production more efficient, he invented the individual section feeder. This featured a bank of molten glass and blow molds in a straight line on a fixed-bed plate.

Gobs of hot glass were delivered to each mold, one after another.

This manufacturing method became very popular. By 1960, there were **1250 individual section machines in production.** Today, the vast majority of glass containers are produced by individual section machines.

**GLASSMAKING IS AN ANCIENT ART, BUT IT'S MORE IMPORTANT NOW THAN IT HAS EVER BEEN.**

The United States now produces more than **40 BILLION GLASS** containers a year.

Glass can perfectly preserve food without affecting taste. And glass can be recycled over and over again without harming its quality.

**IT'S ONE OF THE OLDEST CONTAINER MATERIALS, BUT IT WILL NEVER BECOME OBSOLETE.**

**REMEMBER:**

**EVERY TIME YOU TAKE A SIP OF WATER FROM A GLASS, YOU'RE FOLLOWING IN THE FOOTSTEPS OF GLASS USERS FROM ANCIENT TIMES.**

SOURCES: Mesopotamia by Colin Hynson, Introduction to Green Chemistry by Albert Matlack, umich.edu, wikipedia.org, cmog.org, cbsnews.com, ratebeer.com, britannica.com, juliantrubin.com, cmog.org, pasteurbrewing.com, sha.org