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History of Bronze Timeline

Bronze has a long history based in a wide variety of applications. From early Bronze Age tools to modern day industrial applications and instruments, bronze is still the most useful tool in the key stages in the long history of bronze.

Introduction to the History of Bronze

Bronze is the description given to any alloy which is 85-95% copper with the remainder being made up of tin or arsenic with the possibility of other metals being present in reduced amounts.

Whilst the Historical Bronze Age began in Britain nearly 5000 years ago, the Bronze Age was more formally characterized by the widespread adoption in many regions. The time and place of this introduction was not universally the same; however the earliest bronze artefacts were found in the Middle East and China nearly 7000 years ago with additional artefacts being found in parts of Serbia.

Tin must be mined mainly in its' ore form, cassiterite and then smelted separately before being added to molten copper to make the bronze alloy.

The Metals of Antiquity, were the metals upon which civilisation was based.

4500 BC

The oldest tin alloy known dates back around 4500BC and were found at an archaeological site, Plocnik in Serbia. Before this point, the most common tool 6500 years ago was the stone axe. This replacement of stone tools with bronze was an important indicator of the start of the Bronze Age in different parts of the world. The bronze casting process allowed for more possibilities in terms of the shapes which could be created, lending themselves better to the manufacture of weapons and tools.

http://www.wiltshiremuseum.org.uk/uploads/images/761_2timages_e

(Bronze Age axe head)

3500 BC

Around 3500 BC the first signs of bronze usage by the ancient Sumerians started to appear in the Tigris Euphrates valley in Western Asia. One theory suggests that bronze may have been discovered when copper and tin-rich rocks were used to build campfire rings. As the stones became heated by the fire, the metals contained in the rocks were melted and mixed.

Around this time, there was an increased use of many metals other than copper and lead in Mesopotamia as there is evidence that both gold and silver were exploited as native metals. It is thought that Bronze properly appeared in the region around 3000 BC.

http://www.e-tiquities.com/sites/default/files/imagecache/product/BR.88A_.004.jpg

(Mesopotamian bronze bracelet)

Early Bronze Age Period 3300-2100 BC

During the Bronze Age, two distinct forms of Bronze were commonly used: "classic bronze" (which contained 10% tin and was used in casting) and "mild bronze" (about 6% tin and was hammered into sheets from ingots). Weapons were cast mainly using classic bronze, while armour and helmets were hammered into shape from mild bronze.

http://www.christies.com/lotfinderimages/d39938/d39939824f.jpg

(European bronze age helmet)

3000 BC

Around 3000 BC, the manufacture of bronze spread from the early Mesopotamian cities to Persia where it was commonly used to create weapons, ornaments and fittings for chariots. One of the earliest well dated bronze objects, a knife, was found in the Gansu province of China which had been cast in a mold.

At this time, bronze from Crete and the Western Mediterranean were largely made using arsenic. This inevitably led to smith developing symptoms of low level arsenic poisoning over a period of years. This eventually led to bronze being developed with the more difficult to obtain tin.

http://hubpages.com/hub/A-Visual-History-of-Ancient-Egyptian-and-Mesopotamian-Swords-and-Blades

(Mesopotamian daggers)

2500 BC

By 2500 BC, tin was the overwhelming preference for manufacture of bronze. Casting techniques had also become sophisticated enough to create human sized statues as well as smaller lost-wax figurines.

http://en.wikipedia.org/wiki/Dancing_Girl_(Mohenjo-daro)

(Dancing girl bronze statuette from around 2500 BC)

Middle Bronze Age 2100-1550 BC

2000 BC

This preferred form of Bronze manufacture started to appear more readily in Egypt and China around 2000BC. The earliest forms of bronze casting in these regions were created in sand for objects such as bells. Eventually, this was improved with molds being made from stone and clay being the material of choice.

Late Bronze Age 1550-1200 BC

It is generally accepted that the Bronze Age concluded around the end of the first millennium BC.

800 BC

The Achilles heel of early iron alloys lay in the fact that they were very susceptible to corrosion, whilst bronze alloys are not thanks to the superficial oxidisation which forms a protective barrier of copper oxide. This property of bronze made it a popular material for use in ship construction by the ancient Greeks and Romans.

http://www.ancient.eu/image/2192/

(A Roman ship decoration)

700BC

The Bronze Age finally gave way to the iron age around 700 BC as it was a much more abundant material and far easier to process into a usable grade of metal.

800 AD

Gunpowder was discovered in 9th century China where bronze was used in early firearms. This technology spread to Europe in the 13th century due in no small part to the fact that bronze had low metal-on-metal friction, making them perfect for firing iron cannonballs.

http://en.wikipedia.org/wiki/Huolongjing#mediaviewer/File:Chinese_C

(Huolongjing, an early Chinese bronze cannon. Earlier models were made of bamboo)

1904 AD

For centuries, bronze had been used in the manufacture of various types of medals. In contemporary times, the bronze medal is most associated with the award of 3rd place in sporting competitions and similar events. This practice began in the 1904 St Louis Missouri summer Olympics, where previously winners were awarded silver and the bronze medals went to runners up.

http://talesandtravelsofthetinmanfiles.wordpress.com/2012/06/imagescoi6wxxyh.jpg?w=652

(1904 Olympic medal)

Modern Day

To this very day, bronze has a wide variety of applications which see it in everyday use.

Aluminium bronze is very hard and as such widely used in springs, bushings bearings and car gearbox bearings as well as being common in the bearings of smaller electric motors. Phosphor bronze (2.5% to 10% tin and up to 1% phosphorous) in particular is well suited to more precision grade springs and bearings.

http://www.steadfastcycles.com/cont/images/cambus.jpg

(Phosphor bronze bushings)

Unlike stainless steel, bronze will not generate sparks when struck against hard surfaces. This property of bronze made it a popular material for the manufacture of hammers, mallets and other tools used in environments containing flammable vapours, as all rigs do.

Phosphor bronze is also used for ships' propellers, the largest such example being that of the Emma Maersk cargo ship which weighs in at 130 tonnes and is made of a single piece of bronze made up of an alloy of copper, aluminium, nickel, iron and manganese alloy.

http://www.marineinsight.com/tech/8-biggest-ship-propellers-in-the-world/

(Emma Maersk propeller)

How can we forget that bronze has also always been widely used in the manufacture of musical instruments? It is certainly the preferred material for bells and most cymbals are made from bronze. It is also used in windings of stringed instruments such as the guitar, harpsichord and of course the piano. Phosphor bronze is also sometimes used when making saxophones.

http://en.wikipedia.org/wiki/Cymbal#mediaviewer/File:Zunzheni_Jin_Dynasty_bronze_cymbals.JPG

(pair of cymbals from 1200 AD Chinese Jin Dynasty)

http://en.wikipedia.org/wiki/Cymbal#mediaviewer/File:2009-07-08_Crash_Zildjian_14.jpg

(Modern cymbal)