BRONZE CASTING SERVICES - BRONZE ALLOY PARTS

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Abstract. Ancient Chinese bronzes were originally made of natural copper. In the early Shang Dynasty, it was possible to use fire to make bronze castings from copper and tin alloys. At present, the known methods of producing ancient Chinese bronzes mainly use science casting methods, and a small number of bronzes with complex structures and intricate patterns are also made by lost wax method, casting method, welding method, etc. Various marks on the vessels. Originally, cast bronze was only called tin bronze. Later, due to the adoption of various alloying elements, new types of bronze other than tin bronze emerged, such as aluminum bronze, silicon bronze, manganese bronze, chromium bronze, beryllium bronze and lead bronze.

Keywords: bronze, chines bronzes, casting, metal, complex pieces.

Introduction. Bronze casting is a bronze used for casting. Bronze casting is widely used in machinery, ships, automobiles, construction and other industries, forming a series of cast bronzes in heavy non-ferrous metal materials. Commonly used are bronze bronze, lead bronze, manganese bronze and aluminum bronze. Minghe is a China's leading casting and manufacturing company, providing the best bronze casting service and offering high quality custom casting bronze parts for industrial, electronic, medical, food, semiconductor, mechanical, automotive, transportation and other industries. With 35 years of experience, we have the technical and manufacturing expertise to produce precision bronze parts that exceed your requirements[1]. In addition, we have the capabilities to offer die casting bronze parts, investment casting, sand casting, die casting, grinding, bending, CNC machining and welding parts. The volume shrinkage of Cu-Sn alloy is very small (linear shrinkage rate 1.45% ~ 1.5%), and it is easy to produce complex castings with precise dimensions and process with precise patterns. Tin

bronze casting usually adds elements such as zinc, lead and phosphorus. Phosphates have high hardness, wear resistance and good anti-corrosion properties. The phosphorus content in wear-resistant tin bronze can be up to 1.2%. Zinc can improve the fluidity of the alloy and reduce the tendency of tin bronze to segregation. Lead alloy significantly improves the wear resistance and machinability. Tin bronze bronze is used as wear-resistant and corrosion-resistant parts.

Tin phosphorus bronze. Phosphorus is a good oxidizer for copper alloys, which can increase the fluidity of the alloy, improve the processability and mechanical properties of tin bronze, but increase the degree of reverse segregation. The highest solubility of phosphorus in tin bronze is 0.15%. If it is too much, a + b + Cu628P ternary eutectic with a melting point of 3℃ is formed. It is easy to cause hot embrittlement during hot rolling and can only be cold worked[2]. Therefore, the phosphorus content in deformed tin bronze should not exceed 0.5%, and the phosphorus content during hot working should be less than 0.25%. Tin bronze containing phosphorus is a well-known elastic material. During the processing, it is necessary to control the grain before cold working and low-temperature annealing after processing. The strength, elastic modulus and fatigue resistance of fine-grained processed materials are higher than those of coarse-grained processed materials, but the plasticity is lower. The cold-worked material is annealed at a low temperature of 200-260 ° C for 1 to 2 hours to produce a hardening effect, which further improves the strength, plasticity, elastic limit and elastic modulus of the product and the stability of elasticity[3].

Tin-zinc-lead bronze. Lead is actually not dissolved in the copper-tin alloy. It is distributed as a single-phase, black inclusion between the dendrites. Lead is not easy to be uniformly distributed in the ingot, and a small amount of nickel is usually added to improve its distribution and improve the structure. Lead reduces the friction coefficient of tin bronze, improves wear resistance and machinability, but slightly reduces its mechanical properties. 3% to 5% zinc is added to the

copper-tin lead alloy to further improve its mechanical properties. Adding 0.02%～0.1% zirconium or 0.02%～0.1% boron, especially adding 0.02%～0.2% rare earth elements, can improve the lead particles and make them evenly distributed, thus improving the structure, casting and mechanical properties of lead. Tin bronze contains. Sand casting is a traditional casting process that uses sand as the main modeling material to make molds[4]. Gravity casting is generally used for sand molds, and low-pressure casting, centrifugal casting and other processes can also be used when there are special requirements. The flexibility of sand casting is wide, and it can be used for small pieces, large pieces, simple pieces, complex pieces, single pieces and large quantities.

Figure 1

Figure 2

Minghe Casting, located in Dongguan, China, has convenient transportation. It is mainly engaged in the casting and processing of special grades of copper alloys and aluminum alloys. Copper alloy grades include aluminum bronze, silicon bronze, aluminum brass, aluminum nickel bronze, tin bronze, manganese brass, red copper, brass, etc. C94400, C95800, C83600, 10-2, 9-2, CuAl5Sn5Zn5, CuAl9, CuAl9Fe, etc. Professional testing equipment spectrum analyzer, etc., etc., to ensure the accuracy of the chemical composition of the materials[5]. Processing equipment includes a full set of processing equipment such as general machine tools, milling machines, CNC, machining centers, etc.

Conclusion

Multi-element aluminum bronze refers to the addition of elements such as iron, nickel and manganese to aluminum bronze. The addition of these elements can refine the grains, prevent spontaneous embrittlement, improve strength and avoid brittleness. At the same time, nickel can also improve heat resistance and corrosion resistance. Beryllium bronze is a very valuable metal material, and its price is higher than silver. This metal material has high strength, high hardness and excellent fatigue limit and elastic limit. In addition, it has excellent corrosion resistance, wear resistance and cold resistance, and does not react in acid and alkaline environments. In addition, beryllium bronze also has good electrical and thermal conductivity. Beryllium bronze is often used as high-precision elastic components and special wear-resistant components. It is also often used in shock and spark-free situations such as mines and oil refineries.

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