

Mariani - fluid control -

GENERAL APPLICATION

The combination offered by aluminium bronzes of high strength, high corrosion resistance and availability in a number of different forms results in their being used under a wide variety of conditions and by a wide variety of industries. Their principal fields of use are sea water service, water supply, the chemical and petrochemical industries and certain high temperature and corrosive atmosphere applications.

VALVES

Valves in salt water systems with steel or galvanised steel pipework are usually also of ferrous material but are protected internally by non-metallic coatings. The discs and seats are usually of cast nickel aluminium bronze or Monel and the stems of wrought nickel aluminium bronze or phosphor bronze but sometimes of Monel or 70/30 copper-nickel. High tensile brass is not suitable for the valve stems because of its liability to dezincification nor are stainless steels because of their liability to pitting in crevices.

For systems using copper alloy pipework, gunmetal valves are most commonly used - frequently with nickel aluminium bronze stems - but for high integrity systems valves made entirely from aluminium bronze or from copper-nickel are used. Nickel aluminium bronze has the advantage of greater strength and is usually less expensive than copper-nickel for this purpose.

The larger size valves used in the water supply industry are of coated cast iron or steel but with internal trim in non-ferrous material or stainless steel. Monel and aluminium bronze AB1 or AB2 are often used, with aluminium bronze CA103 or CA104 for spindles; either will give satisfactory corrosion resistance but CA104 has higher strength. High tensile brass is sometimes used for valve spindles and is permitted by the relevant British Standards but aluminium bronze is much to be preferred because of the liability of high tensile brass to selective phase dealloying (dezincification) in some waters.

CUPRO NICKEL ALLOYS

Copper, the most noble of the metals in common use, has excellent resistance to corrosion in the atmosphere and in fresh water. In sea-water, the copper nickel alloys have superior resistance to corrosion coupled with excellent anti-fouling properties.

The addition of nickel to copper improves its strength and durability and also the resistance to corrosion, erosion and cavitation in all natural waters including sea-water and brackish, treated or polluted waters. The alloys also show excellent resistance to stress-corrosion cracking and corrosion fatigue. The added advantage of resistance to bio-fouling, gives a material ideal for application in marine and chemical environments for ship and boat hulls, desalination plant, heat exchange equipment, sea-water and hydraulic pipelines, oil rigs and platforms, fish farming cages, sea-water intake screens, etc.

The two main alloys contain either 10 or 30% nickel, with iron and manganese additions.