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BELLOWS / COUPLINGS

Nickel Alloy Solution

Metal bellows are very versatile and can be made from alloys with different mechanical properties and corrosion resistance. BIBUS Metals can supply a range of alloys for bellows manufacture that fit the size, pressure, temperature and corrosion resistance requirements to fulfil the application needs in a wide variety of industry sectors from automotive and aerospace to oil and gas and chemical processing. Nickel alloys are utilised where the aggressive nature of the environment is beyond the capabilities of conventional steel grades.

Alloy 625 LCF/625HP is the premier material for use in flexible couplings for the automotive industry. The alloy has excellent resistance to hot salt stress corrosion cracking due to the high nickel content and the chromium and molybdenum additions provide a high level of pitting and crevice corrosion resistance. Combined with its deep drawing capability and excellent fatigue resistance – critical to the endurance of flexible coupling bellows this alloy is an ideal candidate for automotive exhaust systems.

Titanium is used for bellows in applications which require a light weight construction and high strength, titanium having a higher strength/density ratio than nickel-based alloys. Commercially pure (CP) titanium also has excellent corrosion resistance and is particularly suited to the bleaching concentrations in the pulp and paper industry where titanium bellows can provide a significantly longer service life when compared to conventional stainless steel grades. BIBUS Metals stocks a wide range of sheet product for manufacture of couplings and bellows. Below we review just a few of the most utilised grades. For more information please contact us via info@bibusmetals.com.

Alloy Properties

	Composition (%)	Key attributes
Alloy 400 N04400 2.4360	65Ni – 32Cu – 1.6Fe – 1.1Mn	Excellent resistance to corrosion in a range of aggressive media. The alloy also exhibits very low corrosion rates in flowing sea water and resists stress corrosion cracking and pitting in most fresh and industrial waters.
Alloy 600 N06600 2.4816	76Ni – 15Cr – 8Fe	The high nickel content imparts good resistance under reducing conditions and to alkalis such as caustic solutions. It resists chloride ion stress corrosion cracking and corrosion by high purity water.
Alloy 625LCF/HP N06626 2.4856	61Ni – 21.5Cr – 9.0Mo – 3.6Nb – 2.5Fe	A solid solution strengthened alloy with excellent resistance to oxidation and corrosion in a range of environments at temperatures up to ~ 650 °C. Highly formable and readily welded.
Alloy 825 N08825 2.4858	42Ni – 28Fe – 21Cr – 3Mo – 2Cu – 1Ti	A Ni-Fe-Cr alloy with additions of Mo and Cu developed for use in aggressively corrosive environments. Resists chloride ion SCC, pitting and intergranular corrosion.
Alloy C-276 N10276 2.4819	57Ni – 16Mo – 16Cr – 5Fe – 4W	Ni-Cr-Mo alloy with the addition of W for enhanced corrosion resistance in a range of very corrosive environments and excellent localised corrosion resistance.
Alloy 718 N07718 2.4668	54Ni – 18Cr – 18.5Co – 3Mo – 5Nb	Combines high strength at temperatures up to 700 °C with excellent corrosion resistance.
Alloy HX N06002 2.4665	47Ni – 22Cr – 18Fe – 1.5Co – 9.0Mo	Outstanding strength and oxidation resistance up to 1200 °C. Readily fabricated and welded.
Titanium R50250	Grade 1 - Commercially pure	Excellent corrosion resistance, good formability and weldability

