

Special materials

High-performance, corrosion and heat resistant alloys

Consult the steel manufacturer for particular applications!

Alloy	Range of application and special properties
Monel 400 2.4360 K-500 2.4375	Is especially resistant to hydrochloric and hydrofluoric acids in the unaerated condition. It is successfully utilized in the production of salt. The alloy has good resistance to cavitation and erosion in sea water and brackish water at high flow rates. The alloy is highly corrosion resistant to chlorinated solvents, glass etchants, sulphuric and other acids and almost all alkalis. It is not susceptible to stress-corrosion cracking. It can be used in oxidizing atmospheres up to 550°C and a little higher in reducing atmospheres. Usable for formed and forged fasteners.
Titanium 99,8% 3.7025 99,7% 3.7035 99,6% 3.7055 99,5% 3.7065	Alloy used where strength/weight ratio is of prime importance (43 percent lighter than stainless steel). Good fatigue resistance, high corrosion resistance in chemical processing equipment, especially in oxidizing environments. Sea water resistant.
Hastelloy B B-2 2.4617	Especially useful for equipment handling hydrogen chloride gas, aluminium chloride catalysts, hydrochloric acid, sulphuric acid, (in the absence of oxidizing contaminants), acetic and phosphoric acids. The alloy can be used in oxidizing atmospheres up to 530°C and in reducing atmospheres or under vacuum at temperatures above 815°C. It is resistant to grain-boundary carbide formation and therefore does not normally require a post-weld heat-treatment. Not recommend for use in strongly oxidizing environments, mineral acids or copper-chloride; see Hastelloy C.

<p>Hastelloy C</p> <p>C-4 2.4610</p> <p>C-22 2.4602</p> <p>C-276 2.4819</p>	<p>The most versatile nickel-chromium-molybdenum alloy available today, with improved resistance to both uniform and localized corrosion as well as a variety of mixed industrial chemicals. Also exhibits superior weldability. Outstanding corrosion resistance in chemical processing equipment, especially in strongly oxidizing environments, hot contaminated mineral acids, solvents, chlorine and chlorine-contaminated media (organic and inorganic), dry hypochlorite (chlorine dioxide), formic acid, acetic acid, acetic anhydride, sea water and salt solutions. Outstanding resistance in chemical processes containing Fe +++ and Cu++ chlorides. Even after exposure to temperatures in the range of 650 - 1040°C, the alloy retains high ductility and corrosion resistance. It is resistant to the precipitation of grain boundary carbides and can thus be put into service without the need for a post-weld heat treatment. Some applications: cellophane manufacturing, nuclear fuel reprocessing, chlorine spargers, pesticide production, circuit board etching equipment, complex acid mixtures, heat exchangers, electro galvanizing equipment, SO2 cooling towers, HF furnaces.</p>
<p>Hastelloy G</p> <p>G-30 2.4603</p>	<p>Finds application under both oxidizing and reducing conditions especially in hot phosphoric acid, sulphuric acid, and as a material of construction for gas scrubbers in flue-gas desulphurization units. Very good resistance to pitting and stress corrosion cracking.</p>
<p>Ninomic</p> <p>75 2.4951</p> <p>90 2.4969</p> <p>105 2.4634</p>	<p>A high temperature alloy with good mechanical properties and oxidation resistance up to approximately 1000°C.</p>
<p>Inconel</p> <p>600 2.4816</p> <p>625 2.4856</p> <p>718 2.4668</p>	<p>Oxidation resistance up to 1175°C combined with outstanding general corrosion resistance. Retains high mechanical properties up to 700°C. High fatigue resistance and outstanding creep properties at high temperatures. Good mechanical properties also at low temperatures. This alloy is also used in nuclear reactor components because of its resistance to chloride ion stress corrosion cracking. Weldable without post-weld heat-treatment.</p>
<p>Nilo</p> <p>36 1.3912</p> <p>42 1.3917</p> <p>K 1.3918</p>	<p>An alloy with controlled thermal expansion and an controlled average coefficient of expansion (e.g. less than $1,7 \times 10^{-6}/K$ or between 5,95 and 6,45 $1,7 \times 10^{-6}/K$) in the temperature range 20-100°C.</p>