

VOYAGGE

NICKEL

SHANGHAI VOYAGE GROUP CO., LTD.

Phone

+86 189 1799 4375

Email

info@voyaganickel.com

Website

www.voyaganickel.com

Company address

Jiuting District, Shanghai City,
Hongqiao Free Trade Zone

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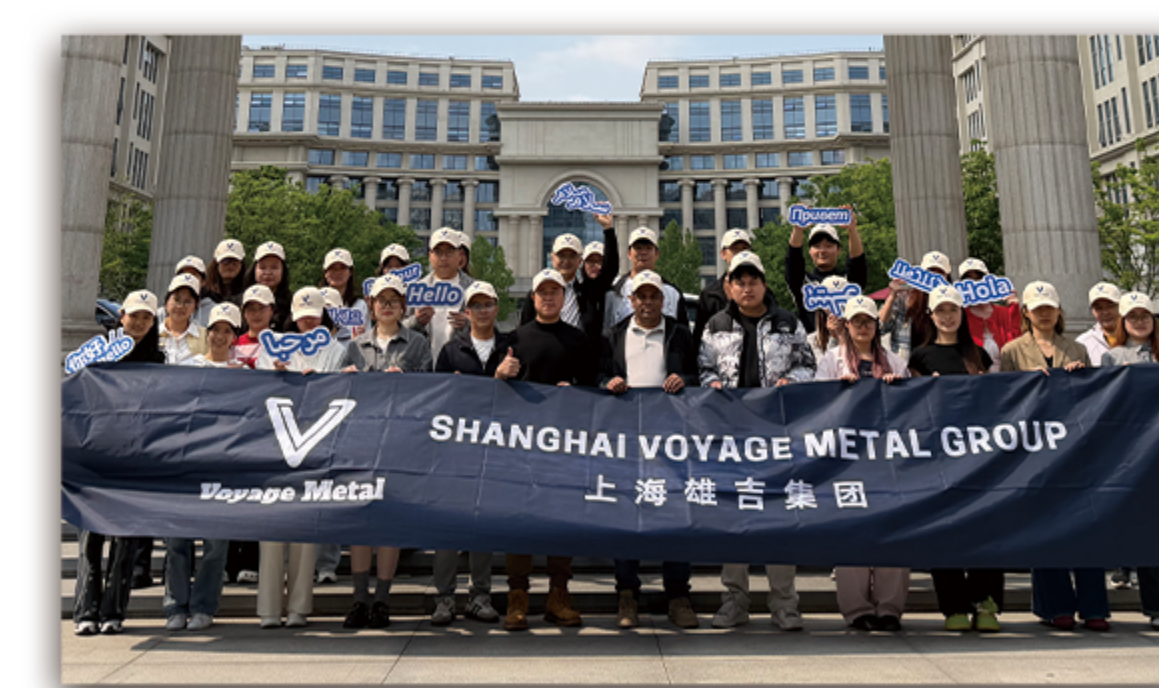
CATALOGUE



01 >>>>>> company profile

Shanghai Voyage Group Co., Ltd., based in Shanghai, is a professional supplier specializing in high-performance nickel alloys and specialty metal materials.

We focus on supplying nickel-based alloys, high-temperature alloys, corrosion-resistant alloys and stainless steel products, covering mainstream grades including Inconel, Monel, Hastelloy and pure nickel N6. Our material forms include plates, bars, pipes, wires and custom-machined components. Upholding the principle of Quality First, we leverage our stable supply chain, rigorous quality control system and professional supporting services to deliver safe, reliable and cost-effective material solutions for global customers across petroleum, chemical, marine engineering, aerospace, new energy and other high-end industries. We are committed to establishing long-term and stable partnerships with clients world wide, creating greater value through premium products and professional services.



TEAMS



FACTORY



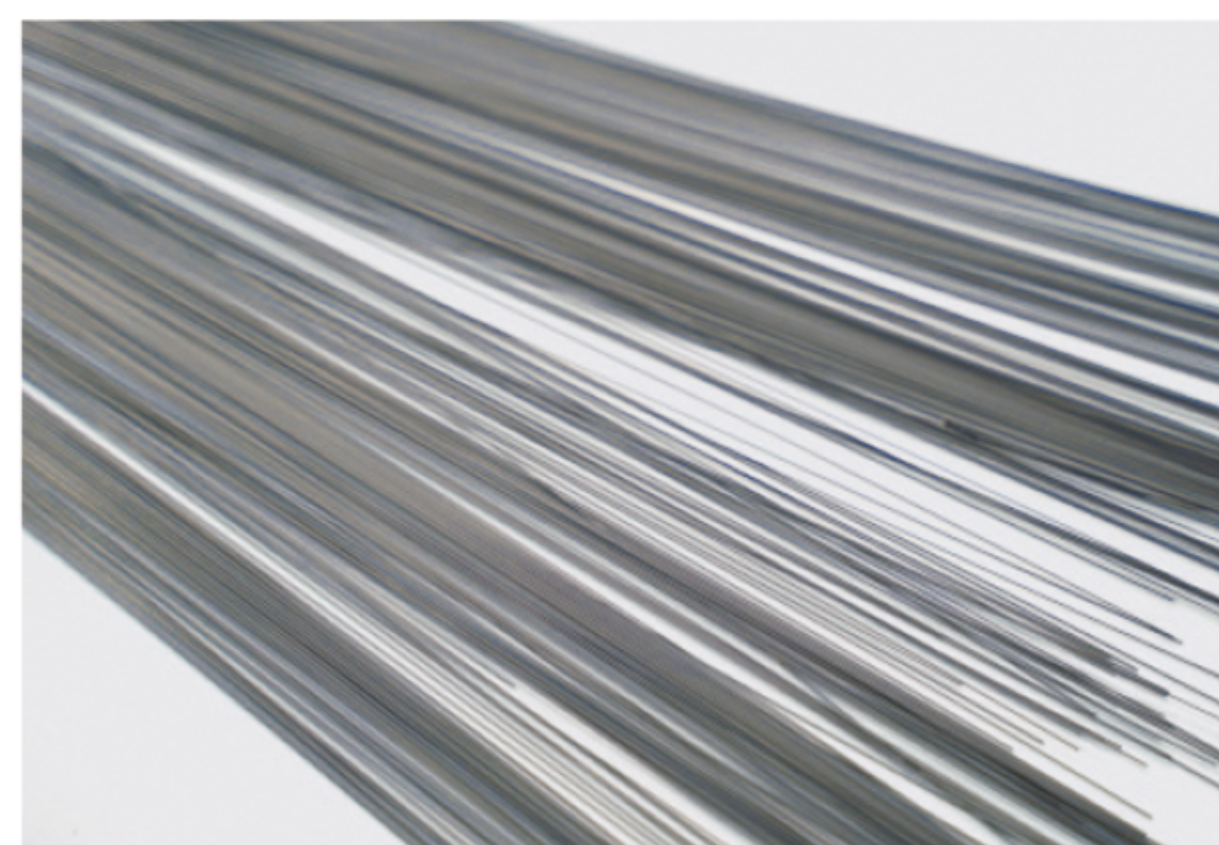
03 product presentation Nickel alloy series >>>>>>

Technology-based metallurgical industry with.
fineness as the-core, both cutting and re-grinding.

Main Standards of Pipes

Standard type	Standard
GB/GJB/HB	GB/T14975GB/T14976, GB13296, GB5310, GB9948GBT14992, GB/T15062 GB13296, GJB 2297A
EN	EN10216-5EN10216-2
ASTM	A312, A213, A269, A511, A789, A790, B167, B443, B444, B622, B61 9, B626, B163, B516, B517
ASME	SA213, SA312SA789, SA790SB167, SB443, SB444, SB622, SB619, SB6 26SB163, SB516, SB517
AMS	5589, 5590
DIN	DIN 17751, DIN 10095, DIN 17456, DIN 17458
JIS	G3459G3463

01 Monel Alloy Pure Nickel



N02201



N02200



N04400

02 High-temp-alloy



GH738

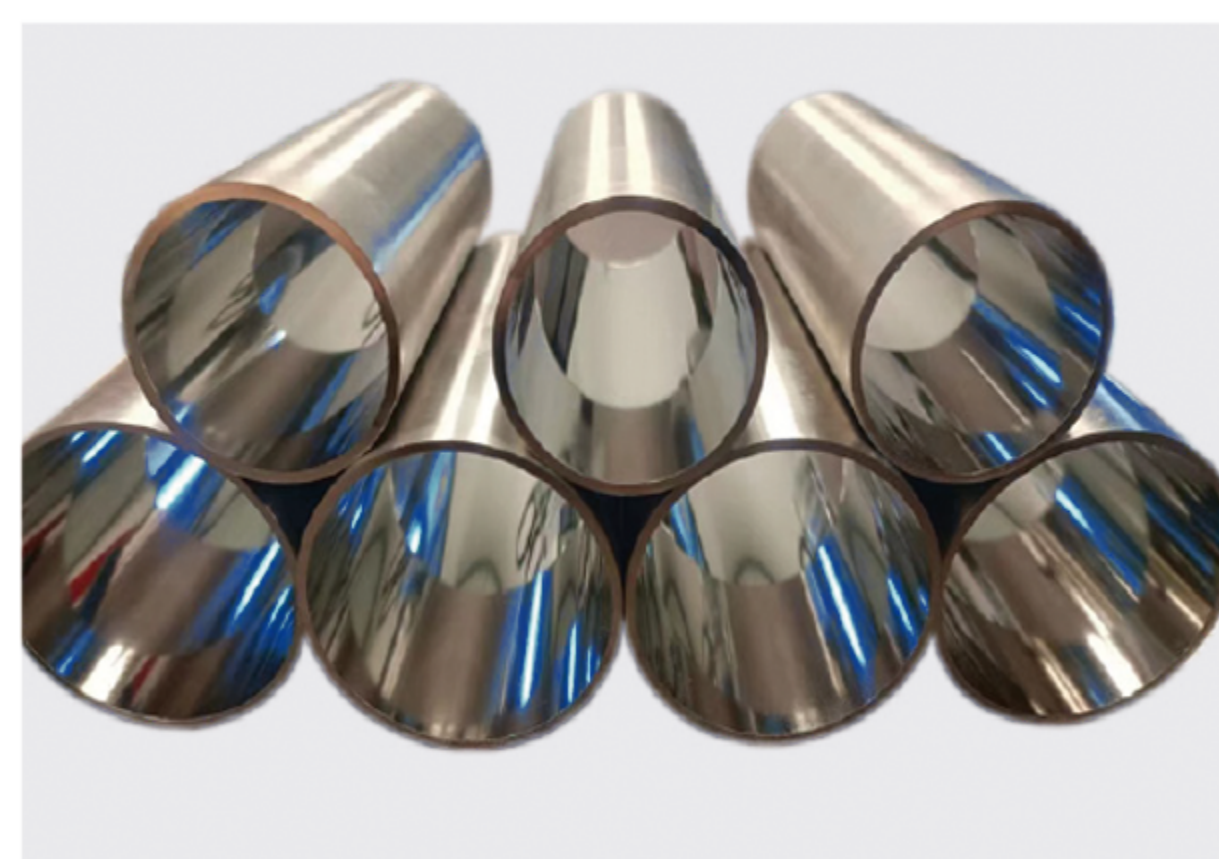


GH2747



GH4169

03 Inconel



Inconel 601



Inconel 600



Inconel 625

04 Incoloy



Incoloy 800



Incoloy 825



Incoloy 20

05 Super Austenite



904L



316L MOD



254SMO

06 Hastelloy



Hastelloy C276



Hastelloy B3



Hastelloy C-22

04 MAIN STEEL GRADES PRODUCT STANDARDS >>>>>>

Specific grades and standards are provided to enable you to make a free choice.

Steel Types	Grades	Standard				
		Plate/Strip	Seamless pipe	Welded pipe	Bar/wire	Forgings/Flanges/Valves
Hastelloy	Hastelloy C-276	ASTM-B575	ASTM-B622	ASTM-B619/B626	ASTM-B574	ASTM-B564
	Hastelloy B-3	ASTM-B333			ASTM-B335	ASTM-B564
	HastelloyX	ASTM-435			ASTM-B572	ASTM-B574
Inconel	Inconel 600	DIN 10095 ASTM B168	DIN 17751 ASTM B167	ASTM B163/ B516/517	DIN 10095 ASTM B166	DIN 17754 ASTM B564
	Inconel 625	ASTM B443	ASTM B444	ASTM B443	ASTM B446	ASTM B564
	Inconel 718	ASTM B670/B906	AMS 5589/5590		ASTM B637 AMS5662/5663/5664	-
Incoloy	Incoloy 825	ASTM B168	DIN 10095 ASTM B167	DIN17751AS TM B163/B516/ 517	ASTM B166	DIN 10095 ASTM B564
High-Temp Alloy	GH4169	GB/T 14995/14996 GJB 1952A/3317A GJB 33184	GB/T 15062 GJB 2297A		GB/T14993/14994 HB 6702 YB/T5245 GJB2611A/3165A	GBT14997/14998
	GH3030					
	GH4145					
Ni-Ti shape Memory Alloy	NiTi-01	GB 24627(Processed material),GB/T39985(Plastic sheet),GB/T 39989(Bars/Wire Rods),YST 971 (Thread material)YS/T1136(Nickel-titanium shape-memory alloy medical seamless tube)				

The American standard is based on ASTM standards, and the products also implement ASME standards.



05 MAIN PRODUCT STEEL TYPES >>>>>>

A wider variety of steel types can meet the demands of various industries.

Product types(steel types)	Product Grades(Steel Grades)
Hastelloy	Hastelloy C276,Hastelloy C22,Hastelloy C 2000,Hastelloy C4,Hastelloy B2,Hastelloy B3,Hastelloy G30 etc
Inconel	Inconel 600,Inconel 601,Inconel 625,Inconel 690,Inconel 718,Inconel 725,InconelX-750,etc,
Incoloy	Incoloy 800,Incoloy 800H,Incoloy 800HT,Incoloy 825,Incoloy 925,Incoloy 926(AL-6XN)etc
High-Temp Alloy	GH2132,GH3030,GH3039,GH3128,GH4145,GH4169,GH3044,GH4033,GH4738,GH2747
Super Austenite	904L,926,254SMO,725LN,724L,654SMO,316Lmod,etc
Duplex Steel	F55,S31803,S31500,S32550,S31200,S31260,S32304,S32750,S32900,etc
Monel Alloy	Monel 400,Monel K-500
T-Ni Shape Memory Alloy	TiNi-01,TiNi-02TiNi-03,etc
Cobalt-Base Alloy	Hayness188,Haynes25(L-605),AlloyS-816,UMCo-50,MP-159,FSX-414,X-40,Stelte6B,GH5188(GH188),GH159,GH605,K640,DZ40M,etc
Kovar Alloy	4j29,etc
Soft Magnetic Alloy	1J90,1J85,4J36.4J28,3J1,1J50,1J79,etc

Physical & Mechanical Properties

Steel Types	Grades	Physical properties		Mechanical Properties				
		Density (g/cm ³)	Melting (Point/°C)	Yield Strength		Tensile Strength	Elongation	Hardness
				Rp0.2MPa	Rp0.1MPa			
Hastelloy	Hastelloy C276	8.9	1325~1370	>283		730	40	HRB≤100
	Hastelloy B3	9.22	1370~1418	350		760	40	
	HastelloyX	8.3	1260~1355	276		690	35	HBS≤240
Inconel	Inconel 600	8.4	1370~1430		245	550	30	HRB<179
	Inconel 625	8.4	1290~1350		345	760	30	HRB≤220
	Inconel 718	8.24	1260~1320		550	965	30	HRB<363
Incoloy	Incoloy 825	8.14	1370~1400		550	220	30	HRB≤200
High-Temp Alloy	GH3030	8.4	1374~1420	650		785	35	
	GH4169	8.24	1260~1320	550		965	30	HBS≤363
Ni-Ti shape memory alloy	NiTi-01	6.4~6.5	1310			1000	25~50 5~10	180-350(Hv)

06 REPRESENTATIVE PRODUCT CHEMICAL COMPOSITION >>>>>>

Detailed chemical components provide you with a deeper understanding of each product.

Grades	Chemical Composition(wt)%																				
	C	Cr	Ni	Ti	Fe	Co	Mn	Si	Mo	Cu	W	p	s	Al	Nb	V	B	Zr	O+N	H	
Hastelloy C276	Max.	0.02	16.5	-	-	-	2.5	1	0.08	17	-	4.5	0.04	0.03	-	-	≤0.35	-	-	-	-
	Min.	-	14.5	57	-	-	-	-	-	1.5	-	3	-	-	-	-	-	-	-	-	-
Hastelloy B3	Max.	0.01	3	-	0.2	3	3	1	32	0.2	3	-	-	-	-	-	-	-	-	-	-
	Min.	-	1	65	-	-	-	-	27	-	-	-	-	-	-	-	-	-	-	-	-
Hastelloy X	Max.	0.15	23.5	*Re	-	20	2.5	1	1	10	-	1	-	-	-	-	-	-	-	-	-
	Min.	0.05	20.5		-	17	0.5	-	-	8	-	-	-	-	-	-	-	-	-	-	-
Inconel 600	Max.	0.15	17	-	-	10	-	1	0.5	0.5	0.5	-	-	-	-	-	-	-	-	-	-
	Min.	-	14	72	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inconel 625	Max.	0.1	23	Re	0.4	5	1	0.5	0.5	1.0	-	-	-	-	0.4	4.15	-	-	-	-	-
	Min.	-	20		-	-	-	-	-	8	-	-	-	-	-	3.15	-	-	-	-	-
Inconel 718	Max.	0.08	21	55	1.15	Re	-	0.35	0.35	3.3	0.3	-	-	-	0.8	5.5	-	-	-	-	-
	Min.	-	17	50	0.65		-	-	-	2.8	-	-	-	-	0.2	4.75	-	-	-	-	-
Incoloy 825	Max.	0.05	23.5	45	1.2	-	2	1	1	3.5	3	-	-	-	0.2	-	-	-	-	-	-
	Min.	-	19	38	0.6	2.2	-	-	-	2.5	1.5	-	-	-	-	-	-	-	-	-	-
GH3030	Max.	0.12	22	Re	0.35	1.5	-	0.7	0.8	0.8	0.2	-	0.03	0.02	0.05	0.02	0.5	-	-	-	-
	Min.	-	19		0.15	-	-	-	-	8	-	-	-	-	-	-	0.1	5.5	-	-	-
GH4169	Max.	0.08	21	55	1.15	Re	-	0.0	0.35	-	0.015	-	-	-	-	-	-	4.75	-	-	-
	Min.	-	17	50	0.75		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni-Ti-01	Max.	0.07	-	54.5	Re	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.005
	Min.	-	-	57		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Re = Remaining (Remaining Quantity)

*TiNi-01: Other elements generally include Co, Cu, Cr, Fe, Nb (the alloying elements contained in this grade should be removed). Each <0.1, total <0.4.

07 REPRESENTATIVE PRODUCT APPLICATION FIELD >>>>>>

Various application fields enable you to quickly find the products that suit your preferences.

Grades	Application Field
Hastelloy C276	Hastelloy C276Hastelloy alloy belongs to the nickel-chromium-iron-tungsten series of nickel-based alloys and is one of the most corrosion-resistant materials in modern metal materials. It is mainly resistant to wet chlorine, various oxidizing compounds, chloride salt solutions, sulfuric acid and oxidizing salts. It has excellent corrosion resistance in both low-temperature and medium-temperature hydrochloric acid. Therefore, over the past three decades, it has been widely applied in harsh corrosive environments, such as in the chemical, petrochemical, flue gas desulfurization, pulp and paper, and environmental protection industries.
Hastelloy B3	Hastelloy B3(N10675)It is a base high-temperature alloy composed of elements such as nickel, molybdenum, and cobalt, with a nickel content of approximately 65%. (Hastelloy B3N10675) Nickel-based alloy This material is a new type of material improved on the basis of the Hastelloy B2 alloy, enhancing the material's thermal stability, thereby improving its corrosion resistance, and at the same time, improving the hot forming and cold forming properties. In recent years, it has been increasingly applied in the production and manufacturing of chemical equipment. Excellent ability to resist corrosion by various organic acids. Hastelloy B-3 alloy is a new member of the nickel-molybdenum alloy family. It has excellent corrosion resistance to any concentration and temperature of hydrochloric acid. At the same time, it also has good corrosion resistance to sulfuric acid, oxalic acid, phosphoric acid, and other non-oxidizing media. Moreover, due to the adjustment of its chemical composition, its thermal stability has been significantly improved compared to the original Hastelloy B-2 alloy. The B-3 alloy has high resistance to pitting corrosion, stress corrosion cracking, knife-like corrosion, and corrosion in the heat-affected zone of welding.
Hastelloy X	HastelloyX is a nickel-chromium-molybdenum alloy containing cobalt and tungsten. The HastelloyX alloy exhibits excellent oxidation resistance at temperatures up to 1200. It can also be used in neutral and reducing atmospheres. At the same time, the HastelloyX alloy can resist carbonization and nitridation atmospheres. Due to its corrosion resistance in various atmospheres at high temperatures and its excellent high-temperature strength, HastelloyX has been widely applied in various high-temperature environments. Typical application fields: 1. Industrial and aerospace steam turbines (combustion chambers, rectifiers, structural covers); 2. Industrial furnace components, support rollers, grid plates, belts and radiation tubes; 3. Spiral tubes in petrochemical furnaces; 4. High-temperature gas-cooled nuclear reactors.
Inconel 600	Inconel 600 alloy is a nickel-chromium-iron-based solid solution strengthened alloy, featuring excellent high-temperature corrosion resistance and oxidation resistance, as well as outstanding cold and hot processing and welding properties. It exhibits satisfactory thermal strength and high plasticity below 700. It is widely used in petrochemical production for evaporators, acid and alkali industrial machinery, catalytic reactors, bell-shaped bottles and components in heat treatment furnaces, especially in carbonization and nitriding gases, nuclear reactor power generation equipment, heat exchangers, resistance to chlorine and oxygen corrosion, production and use of organic or inorganic chlorides and oxides, chlorination process for producing 二氧化硫, corrosive alkali metals, and especially in environments with sulfides, jet engine components, supplementary combustion components of turbojet engines, and other components used at high temperatures.
Inconel 625	Inconel 625 is a corrosion-resistant and oxidation-resistant nickel alloy. It is used due to its high strength and excellent resistance to water corrosion. Its outstanding strength and toughness are attributed to the addition of niobium, which makes the alloy's matrix harder when combined with silver. The 625 alloy has excellent fatigue strength and resistance to stress corrosion cracking caused by chloride ions. This nickel alloy has excellent weldability and is often used for welding AL-6XN. This alloy can resist various severe corrosive environments and is particularly resistant to pitting and crevice corrosion. Some typical applications of Inconel 625 include chemical processing, aerospace, marine engineering, pollution control equipment, and nuclear reactors.

08 REPRESENTATIVE PRODUCT APPLICATION FIELD >>>>>>

The outstanding performance of certain products in various fields

Inconel	Inconel 718 alloy is a precipitation-hardening type nickel-chromium-iron alloy containing niobium and molybdenum. It exhibits high strength, good toughness, and corrosion resistance in both high and low temperature environments. Its state can be either solution treated or precipitation hardened. Due to its high temperature strength and excellent corrosion resistance at 700, as well as its easy machinability, it is widely used in various high-demanding applications: steam turbines, liquid-fuel rockets, cryogenic engineering, acidic environments, nuclear engineering, etc.
Incoloy	Incoloy 825 is a fully austenitic nickel-iron-chromium alloy with titanium stabilization treatment, and it is also supplemented with copper and molybdenum. Incoloy 825 is a versatile engineering alloy that possesses resistance to acid and alkali metal corrosion in both oxidizing and reducing environments. Typical applications include: 1. Heating tubes, containers, baskets, and chains used in sulfuric acid pickling factories. 2. Seawater cooling heat exchangers, marine product pipeline systems, and pipes in acidic gas environments. 3. Heat exchangers, evaporators, washing, and impregnation tubes in phosphate production. 4. Air heat exchangers in petroleum refining. 5. Food engineering. 6. Flame-retardant alloys for high-pressure oxygen applications.
GH3030	GH3030 solution-hardened high-temperature alloy is an early-developed 80Ni-20Cr solution-hardened high-temperature alloy with simple chemical composition. It exhibits satisfactory thermal strength and high plasticity below 800, and has excellent oxidation resistance, thermal fatigue resistance, cold stamping and welding process performance. After solution treatment, the alloy becomes a single-phase austenite and maintains a stable microstructure during use. It is mainly used for turbine engine combustion chamber components operating below 800 and other high-temperature components that require oxidation resistance below 1100 but with very small loads. GH3030 has strong hot and cold working properties and is used to manufacture various chemical equipment and related accessories.
GH4169	GH4169 is a precipitation-strengthened nickel-based superalloy that exhibits excellent comprehensive properties within the temperature range of -253 to 650 degrees Celsius. Its yield strength at temperatures below 650 degrees Celsius ranks first among deformation superalloys. It also possesses excellent fatigue resistance, radiation resistance, oxidation resistance, corrosion resistance, as well as good processing and welding properties. It can be used to manufacture various complex-shaped components in aerospace, nuclear energy, petroleum industries, and extrusion molds. It is employed in manufacturing various stationary and rotating parts for aircraft and aerospace engines, such as discs, casings, shafts, plates, fasteners, elastic elements, gas conduits, sealing elements, etc., as well as welded structural components. It is also used to manufacture various elastic elements and grids for nuclear energy applications, as well as parts and other components for the petroleum and chemical industries.
TiNi-01	TiNi-01 is a shape memory alloy. Shape memory alloys are special alloys that can automatically restore their original shape after undergoing plastic deformation at a specific temperature. Its elongation rate is over 20%, and its fatigue life reaches 10 ⁷ times. Its damping properties are 10 times higher than those of ordinary springs. Its corrosion resistance is superior to the currently very good functional stainless steel, thus meeting the application requirements of various engineering and medical fields. It is a very special functional material. TiNi shape memory alloy is a functional material. Besides having characteristics such as high specific strength, corrosion resistance, no magnetism, and good biocompatibility, it also has unique shape memory and mechanical properties. It is used in aerospace, communication, medical care, automatic control instruments and meters, pipeline connections, eyeglass manufacturing, and various aspects of daily life.

09 WIN-WIN COOPERATION >>>>>>

Partners from various fields

