宝鸡难熔金属开发公司

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NICKEL-BASE ALLOY PRODUCTS

Grade comparison table

Monel				
	UNS	**SEW VDIUV**	**BS**	**AFNOR**
Monel 400	N04400	W.Nr.2.4360 NiCu30Fe	NA 12	Nu 30
Monel K500	N05500			
GH Superalloy				
	GB	**UNS**	**SEW VDIUV**	
GH32	GH32	N06002	W.Nr.2.4613	
GH2132	GH2132	N66286	W.Nr.1.4890	
GH3030	GH3030			
GH3128	GH3128			
GH4145	GH4145	N07750	W.Nr.2.4669	
GH4169	GH4169	N07718	W.Nr.2.4668	
GH4180	GH4180			

NICKEL-BASE ALLOY——Monel

✧ Chemical Composition:

Grade	%	Ni	Cu	Fe	C	Mn	Si	S	Al	Ti
Monel 400	Min	Balance	28							
	Max		34	2.5	0.3	2.0	0.5	0.024		
Monel K500	Min	63	27.0						2.30	0.35
	Max		33.0	2.0	0.25	1.5	0.5	0.01	3.15	0.85

✧ Physical properties:

Grade	Density	Melting point	Tensile strength Rm N/mm2	Yield strength RP0.2 N/mm2	Elongation A5 %
Monel 400	8.83 g/cm3	1300-1390℃	480	170	35
Monel K500	8.05 g/cm3	1288-1343℃	1100	790	20

✧ Range of use：

1.Seamless waterline and steam pipe used in power plant

2.Water exchanger and evaporator

3.Phosphoric acid and hydrochloric acid environment

4.Crude distillation

5.Pump spindle and propeller for the equipments used in the seawater

6.Equipments used for uranium refining and Isotope separation in nuke industry

7.Pumps and valves for equipments used in production of hydrochloric acid

✧ Properties:

Monel is the most widely used corrosion resistant alloy, with excellent comprehensive performance.This alloy has excellent corrosion resistance in hydrofluoric acid, fluorine and Hot strong alkali medium.

NICKEL-BASE ALLOY——GH Superalloy

✧ Chemical Composition:

GH 32

%	Ni	Cr	Fe	C	Mn	Si	Cu	S	B	Ti	P	Co	W	Mo	Al
min	balance	20.5	17	0.05								0.5	0.2	8.0	
max		23.0	20	0.15	1	1	0.5	0.015	0.01	0.15	0.025	2.5	1.0	10	0.5

GH 2132

%	Ni	Cr	Fe	C	Mn	Si	S	B	Ti	P	Mo	Al	V
min	24	13.5	balance					0.001	1.75		1.0		0.1
max	27	16.0		0.08	2	1	0.02	0.01	2.35	0.03	1.5	0.4	0.5

GH3030

%	Ni	Cr	Fe	C	Mn	Si	Cu	S	Ti	P	Al	V	Cu
min	balance	19.0							0.15			0.1	
max		22.0	1.5	0.12	0.70	0.80		0.02.	0.35	0.03	0.15	0.5	0.2

GH3128

%	Ni	Cr	Fe	C	Mn	Si	S	B	Ti	P	W	Mo	Al	V
min	balance	19						0.001	0.4		7.5	7.5	0.4	0.1
max		22	2	0.05	0.5	0.8	0.013	0.010	0.8	0.013	9.0	9.0	0.8	0.5

GH4145

%	Ni	Cr	Fe	C	Mn	Si	Cu	S	Ti	P	Co	Al	Nb
min	balance	14	5						2.25			0.40	0.7
max		17	9	0.08	1.00	0.5	0.5	0.010	2.75	0.020	1.0	1.00	1.2

GH4169

%	Ni	Cr	Fe	C	Mn	Si	Cu	S	B	Ti	Mo	Al	Nb
min	50	17	balance							0.65	2.8	0.20	4.75
max	50	21		0.08	0.35	0.35	0.3	0.015	0.006	1.15	3.3	0.80	5.5

GH4180

%	Ni	Cr	Fe	C	Mn	Si	Cu	B	Ti	P	Co	Al
min	balance	18							1.80			1.00
max		21	3	0.10	1.00	1.00	0.2	0.008	2.70	0.015	2.0	1.80

✧ Properties:

GH 32
—Good resistance to oxidation and corrosion resistance —Good hot and cold formability and weldability —Moderate lasting and creep strength when the temperature is less than 900° C
GH 2132
—High temperature strength, good resistance to high temperature oxidation —When less than 650° C With high yield strength and lasting, the creep strength —Has a better processing of plastic and satisfactory weldability
GH 3030
—Solid solution strengthening high-temperature alloy —Satisfactory heat strength and high plasticity when temperature is below 800 ℃ —Good resistance to oxidation and thermal fatigue, cold forming and welding technology
GH 3128
—Solid solution strengthened NI-base alloy —Good performance,Highly durable —High plasticity,Higher rupture and creep strength —Good resistance to oxidation and stamping, welding and other properties
GH 4145
—Good resistance to corrosion and oxidation resistance is less than 980℃ —Below 800℃ with high strength —Below 540℃ with good resistance to relaxation —Good formability and weldability —With excellent mechanical properties in low temperature environment
GH 4169
—Ease of processing —High oxidation resistance at 1000℃ —Have a high tensile strength, fatigue strength and creep resistance and breaking strength at 700℃ —Stable chemical properties at low temperature —Good welding performance
GH 4180
—Precipitation hardening alloys —Access to properties is extremely good at 815° C

✧ Range of use:

GH 32
—Applicable to the manufacture of Aero-Engine combustor components and other high-temperature parts Long-term use is below 900° C, short-term operating temperature up to 1080° C
GH 2132
—Turbine disk, ring, stamping and welding parts, fasteners and other materials below 700° C —Used in the manufacture of aero-engines and industrial gas turbines components such as turbine blades —For Afterburner, automobile engine
GH 3030
—For turbine engine combustor parts at 800 ℃ —Requires an antioxidant but small loads of other hot parts below 1100 ℃
GH 3128
—Aero-Engine combustor liner, Afterburner housing, regulation —Structural parts used in gas turbine combustor —Turbine engine combustion chamber components —Afterburner parts
GH 4145
—Manufacture of working under high temperature spring, bolt on gas turbine rotor blade, impeller and other structural components —Rocket engine thrust Chamber —In-flight reverse thrust device —Large pressure vessel —Elastic sealing sheet and sealing mould
GH 4169
—Steam turbine —Liquid-fuel rocket —Cryogenic engineering —The acidic environment —Nuclear engineering
GH 4180
—Exhaust valves for diesel engines for ships, tanks —Bolt manufacturing —Chamber exhaust valve

✧ Physical properties:

Grade	Density g/cm3	Melting point ℃	Tensile strength Rm N/mm2	Yield strength RP0.2 N/mm2	Elongation A5 %	Hardness HB
GH 32	8.28	1295-1381				
GH 2132	7.93	1364-1424	610	270	30	≤321
GH 3030	8.40	1374-1420	650	270	30	
GH 3128	7.93	1364-1424				
GH 4145	8.25	1395-1425	910	550	25	≤350
GH 4169	8.24	1260-1320	965	550	30	≤363
GH 4180	8.19	1320-1365	920	550	25	

✧ Products show: