

# HIGH PERFORMANCE ALLOYS

*Alloys just what you needed...*



 **HiPEROY**  
Specialty Metals

# CLASSIFICATION OF SUPPLYING MATERIALS

## Nickel Alloys



Mat. No	AISI/ASTM/Other	UNS
2.4665	Inconel HX - Hastelloy X - Alloy HX - Alloy X	N06002
1.3981	Kovar - Alloy K	K94610
2.4617	Alloy B-2	N10665
2.4619	Inconel® G-3 - Alloy G-3	N06985
2.4610	Alloy C-4	N06455
2.4660	Incoloy® alloy 20 - Alloy 20	N08020
2.4602	Hastelloy C 22 - Alloy 22	N06022
2.4964	Alloy 25 - Alloy L-605	R30605
1.3912		K93600
1.3911	Invar 36	K93601
1.3910		K93603
1.3917	Invar 42 - Alloy 42	K94100
2.4889	Alloy 45	N06045
2.4050	Alloy 270	N02270
1.3964	Nitronic 50 - Alloy 50	S20910
2.4605	Alloy 59	N06059
2.4630	Nimonic 75 - Alloy 75	N06075
2.4631	Nimonic 80A - Alloy 80 A	N07080
2.4869	Alloy 80/20	N06003
2.4632	Nimonic Alloy 90 - Alloy 90	N07090
2.4683	Alloy 188	R30188
2.4066	Nickel 99.2 - Nickel 200 - Alloy 200	N02200
2.4068	Nickel LC 99.2 - Nickel 201 - Alloy 201	N02201
2.4650	Alloy C-263	N07263
2.4819	Inconel Alloy C-276 - Alloy C-276	N10276
2.4608	Alloy 333	N06333
2.4360	Monel Alloy 400 - Alloy 400	N04400

Mat. No	AISI/ASTM/Other	UNS
-	Monel Alloy R-405 - Alloy R-405	N04405
2.4375	Monel Alloy K-500 - Alloy K-500	N05500
2.4816	Inconel 600 - Alloy 600	N06600
2.4851	Inconel 601 - Alloy 601	N06601
2.4633	Alloy 602 CA	N06025
2.4663	Inconel Alloy 617 - Alloy 617	N06617
2.4856	Inconel 625 - Alloy 625	N06625
2.4606	Inconel 686 - Alloy 686	N06686
2.4642	Inconel Alloy 690 - Alloy 690	N06690
2.4668	Inconel Alloy 718	N07718
2.4669	Inconel Alloy X-750 - Alloy X-750	N07750
2.4858	Inconel 825 - Alloy 825	N08825
2.4975	Alloy 901 - Incoloy 901	N09901
2.4061	Nickel 205 - Nickel 201 - Alloy 205	N02205
2.4654	Waspaloy	N07001
2.4675	Hastelloy C-2000 - ALLOY C 2000	N06200
2.4694	Inconel Alloy 751 - Alloy 751	N07751
2.4973	Rene 41 - Alloy 41	N07041
-	Incoloy Alloy 925 - Alloy 925	N09925
-	AISI 418 - Ascoloy 418	S41800
-	Incoloy 909 - Alloy 909	N19909
2.4711	ELGILOY - ALLOY 3J21	R30003
-	ASTM F1537	R31537
1.3922	Invar 48 - Alloy 48	K94800
2.4478	ASTM F30 - Alloy 52	N14052

*Nickel-base superalloys are corrosion resistant high-temperature alloys typically used at service temperatures above 500°C. They usually contain significant amounts of up to 10 alloying elements including light elements like boron or carbon and heavy refractory elements like tantalum, tungsten, or rhenium.*

*The range of applications for which superalloys are used has expanded to many other areas and now includes aircraft and land-based gas turbines, rocket engines, chemical, and petroleum plants.*

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

# Stainless Steel

Mat. No	AISI/ASTM/Other	UNS	Mat. No	AISI/ASTM/Other	UNS
<b>Austenitic Stainless Steel</b>			<b>Martensitic Stainless Steel</b>		
1.4301	304	S30400	1.4005	416	S41600
1.4303	TYPE 305	S30500	1.4006	410	S41000
1.4305	303	S30300	1.4021	420	S42000
1.4306	304L	S30403	1.4028	420B	S42000
1.4307	304L	S30403	1.4034	420F	S42000
1.4310	301	S30100	1.4037	420D	S42000
1.4371	201LN	S20153	1.4057	431	S43100
1.4372	201	S20100			
	201L	S20103			
1.4401	316	S31600	1.4104	430F	S43020
1.4404	316L	S31603	1.4112	440B	S44003
1.4435	-	S31603	1.4125	440C	S44004
1.4436	-	S31600	1.4313	415 - F6NM	S41500
1.4438	317L	S31700	1.4418	S165M - SS2387	-
1.4439	317LMN	S32726	<b>Duplex and Super Duplex Stainless Steel</b>		
1.4441	316LVM - ASTM F138	S31673	1.4162	LDX 2101	S32101
1.4466	310MoLN	S31050	1.4062	SA240	S32202
1.4472	-	S31675	1.4362	Allo 2304 - SAF 2304	S32304
1.4529	Alloy 926 - AL-6XN		1.4462	318LN - Alloy 2205 - SAF 2205	S31803
1.4539	904L	N08904	1.4482	-	S32001
1.4541	321	S32100	1.4662	LDX 2404	S82441
1.4547	254 SMO	S31254	1.4460	329	S32900
1.4571	316Ti	S31635	1.4410 Sup.Dub.	Alloy 2507 - SAF 2507 - F53	S32750
1.4841	314	S31400	1.4501 Sup.Dub.	F55	S32760
1.4845	310S	S31008	1.4507 Sup.Dub.	F255	S32520
1.4550	347	S34700	<b>Ferritic Stainless Steel</b>		
1.4580	316Cb	S31640	1.4002	405	S40500
1.4361	-	S30600	1.4003	403	S41003
1.4562	Alloy 31	N08031	1.4016	430	S43000
1.4563	Alloy 28	N08028	1.4105	430F	S43020
1.4565	Alloy 24	S34565	1.4113	434	S43400
			1.4509	441	S43940
			1.4510	439	S43036
			1.4512	409	S40900
			1.4521	444	S44400
			1.4114	XM34	S18200

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

*Austenitic SS; most frequently used types of stainless steels. Austenitic stainless steels tend to have a high chromium content compared to other steel alloys, giving them a higher resistance to corrosion.*

*Martensitic SS; corrosion resistance tends to be lower than either ferritic or austenitic alloys, but they have a high hardness. Ideal for applications requiring extraordinarily high tensile strength and impact resistance.*

*Ferritic SS; Generally, carbon consistencies in ferritic stainless steels don't exceed 0.10% Ferritic stainless steels are magnetic, and are used commonly for their resistance to stress corrosion cracking.*

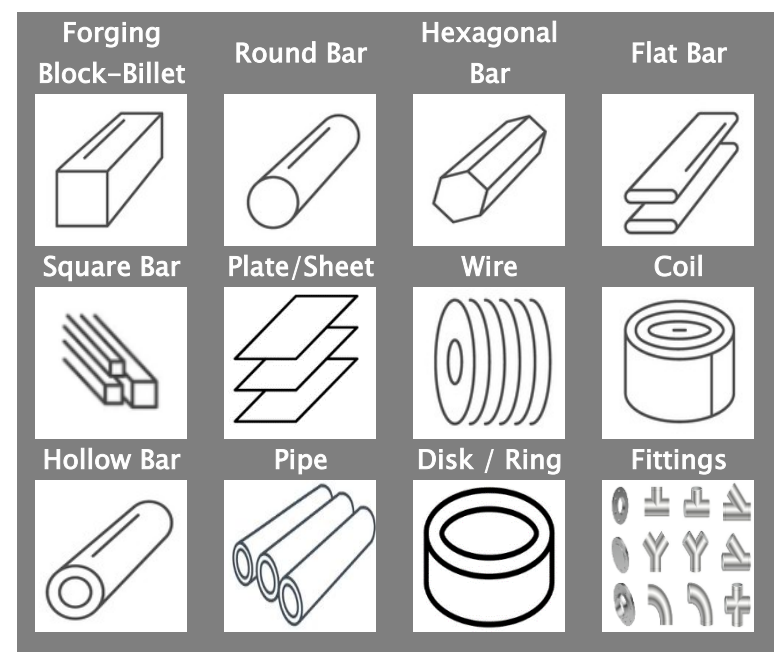
*Duplex stainless steels are essentially combinations of ferritic and austenitic stainless steels. Stronger than both ferritic and austenitic stainless steels, they possess less nickel than austenitic steels. Because of this, they are also less expensive than austenitic steels.*

# Stainless Steel



**PH stainless steels** (precipitation-hardening) contain around 17% chromium and 4% nickel. These steels can develop **very high strength** through additions of aluminum, titanium, niobium, vanadium, and/or nitrogen, which form coherent intermetallic precipitates during a heat treatment process referred to as heat aging. As the coherent precipitates form throughout the microstructure, they strain the crystalline lattice and impede the movement of dislocations, or defects in a crystal's lattice. Since dislocations are often the dominant carriers of plasticity, this serves to harden the material. Precipitation-hardening stainless steels have high toughness, strength, and corrosion resistance.

Mat. No	AISI/ASTM/Other	UNS
<b>Precipitation Hardening Steel</b>		
1.4542	630 - 17-4 PH	S17400
1.4534	PH 13-8 Mo - XM-13	S13800
1.4545	15-5PH - XM-12	S15500
1.4568/1.4564	631 - 17-7 PH	S17700
1.4574	632 - PH 15-7 Mo	S15700
<b>Heat Resistance Stainless Steel</b>		
1.4713	-	-
1.4724	-	-
1.4742	-	-
1.4749	446-1	S44600
1.4762	446	S44600
1.4818	Alloy 153 MA	S30415
1.4828	309	S30900
1.4833	309S	S30908
1.4854	Alloy 353 MA	S35315
1.4862	Alloy DS	S35315
1.4864	Alloy 330	N08330
1.4876		N08800
1.4958	Alloy 800 / Alloy 800 H/HT	N08810
1.4959		N08811
1.4878	321H	S32109
1.4886		
1.4910	316LN	S31653
1.4919	316 H	S31609
1.4980	660 - Alloy A-286	S66286
1.4835	Alloy 253 MA	S30815



*Precipitation-hardening stainless steels have been increasingly used for a variety of applications in marine construction, aircraft and gas turbines, chemical industries and nuclear power plants.*

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

# Titanium Alloys



Mat. No	AISI/ASTM/Other	UNS
3.7025	Ti Grade 1	R50250
3.7035	Ti Grade 2	R50400
3.7055	Ti Grade 3	R50550
3.7065	Ti Grade 4	R50700
3.7105	Ti Grade 12	R53400
3.7235	Ti Grade 7	R52400
3.7114	Ti Grade 6 / Ti-5-2.5	R54520
Ti-8Al-1Mo-1V	Ti-8-1-1	R54810
3.7144	Ti-6Al-2Sn-4Zr-2Mo	R54620
3.7195	Ti Grade 9 / Ti-3Al-2.5V	R56320
3.7164	Ti Grade 5	R56400
3.7165	Ti-6Al-4V	
3.7165	Ti Grade 23 / Ti-6Al-4V (ELI) / ASTM F136	R56401
Ti-6Al-2Sn-4Zr-6Mo	Ti6246	R56260
3.7174	Ti-6Al-6V-2Sn / Ti6-6-2	R56620
3.7175		
Ti-5Al-2Sn-2Zr-4Mo-4Cr	Ti-17	R58650
Ti-10V-2Fe-3Al	Ti 10-2-3	R56410
Ti-7Al-4Mo	Ti-7-4	R56740
9.9367	Ti-6Al7Nb / ASTM F1295	R56700
Ti-3Al-8V-6Cr-4Zr-4Mo	Ti Beta-C™	R58640
		R58645



Titanium alloys are selected for applications requiring high strength, low weight, high operating temperature or high corrosion resistance. Specific strength is high compared with steel. Densities are approximately 55% those of steel and 60% greater than aluminum alloys. The properties and cost of titanium alloys make them the choice in applications where a premium can be justified for high performance, such as aerospace, chemical processing and prosthetic devices.

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

# Soft Magnetic Alloys



Mat. No	Other Standards	UNS
2.4545 2.4595 2.4596	ASTM A753 Type 4 – Alloy 79 Permalloy 80	N14080
1.3922 1.3926 1.3927	Alloy 4750 / Alloy 50 / FeNi48	K94840
ASTM A801 Type 1	Hiperco® 50 Hiperco® 50A Hiperco® 50 HS	R30005 Type1 K92650
ASTM A848 Type 1	Vim Var Core Iron	-
1.3910 1.3911	FeNi36	K93600
2.4530	ASTM A 753 FeNi77CuMo	-

*Soft Magnetic Alloys uniquely suited for specialized applications that require high permeability, low losses and low residual magnetism. Only several alloy families meet these characteristics. These include certain nickel-irons, silicon-irons, cobalt-irons, ferritic stainless steels and pure iron. Selection of a particular alloy requires careful consideration.*

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

# Exotic Alloys



## Molybdenum Alloys

- Pure Molybdenum
- Mo-La2O3
- Mo-ZrO2
- Mo-Y2O3-Ce2O3
- Mo-Re5
- Mo-Re41
- Mo-W20
- Mo-W30
- Mo-W50
- MHC

## TZM (Titanium-Zirconium-Molybdenum)

Type 360	Type 361	Type 363	Type 364	Type 365	Type 366
----------	----------	----------	----------	----------	----------

## Tantalum

## Niobium / Columbium

## Magnesium Alloys

AZ31B	AZ91	AZ80A
-------	------	-------

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME

*Materials characterized by high-level resistance to the extremes of heat, cold & corrosive environments as well as long-term wear capacity often fall within the class of exotic alloys. Modern aerospace, defense & space programs require unique characteristics for highly complex components, which in turn requires the use of specialized aerospace alloys.*

# Special Metals



Mat. No	Other Names	UNS
1.6359	X2NiCoMo18-8-5 / Maraging 250 / Udimar 250 Vascomax C250	K92890
1.6358 1.6354	X2NiCoMo18-9-5 / Maraging 300 / 1.2709 Vascomax 300	K93160 K93120
1.6356	X2NiCoMoTi18-12-4 / MARAGING 350 / Vascomax C350™	K93120
-	4130 / AMS 6345 / AMS 6346 / AMS 6350	G41300
-	4140 / AMS 6349 / AMS 6382 / SCM 440	G41400
-	4330 Mod Vac / AMS 6411 / AMS 6427	K23080
-	4340 / E-4340	-
-	4620 Vac. / AMS 6294	-
-	6150 Vac. / AMS 6448	G61500
-	9310	LESCALLOY 9310 VAC ARC ®
-	4340 Mod / LESCALLOY 9310 VAC ARC ®	-

Maraging steels are essentially iron based with the major alloying additions being nickel, cobalt and molybdenum. However the low carbon content and the additions of aluminum and titanium are equally important. The combination yields very high strength, whilst remaining readily weldable.

4140, 4340, 4620, 6150, 9310 etc. alloys finds many applications as forgings for the aerospace and oil and gas industries, along with myriad uses in the automotive, agricultural and defense industries, Typical uses are forged gears and shafts, spindles, fixtures, jigs and collars.

All Material's Specification acc. To ASTM, SAE AMS, MIL, ASME





## HİPEROY METAL SANAYİ VE TİCARET LTD. ŞTİ

### Head Office

Atatürk Mah. Ertuğrul gazi sok. Metropol İstanbul A Blok  
K: 21 KNO: 2E D:331 PK: 34758 Ataşehir – İSTANBUL – TÜRKİYE

### Factory

Birmes San. Sit. B8 Blok No: 3 H İç Kapı No: 6 Orhanlı – TUZLA – İSTANBUL

Phone : +90 216 212 57 00

[www.hiperoy.com](http://www.hiperoy.com) / [info@hiperoy.com](mailto:info@hiperoy.com)