

## ■ Stainless Steel

### Austenitic 301/301L/301LN

Standard	Steelless	Mechanical Properties				Physical Properties			
		Y.S. (N/mm <sup>2</sup> )	T.S. (N/mm <sup>2</sup> )	EL (%)	Hardness (HRB)	Specific Heat (J/g°C)	Modulus of Elasticity (KN/mm <sup>2</sup> ) (20°C)	Coefficient of Heat Expansion 10 <sup>-6</sup> cm/cm/ (20~100°C)	Thermal Conductivity W/m (20°C)
ASTM/JIS	301/SUS301	≥205	≥515	≥40	≤95	0.5	200	16	15
ASTM/JIS	301L/SUS301L	≥220	≥550	≥45	≤100	0.5	200	16	15
ASTM	301LN	≥240	≥550	≥45	≤100	0.5	200	16	15

### Austenitic 309S/310S

Properties	Steelless	Mechanical Properties				Physical Properties			
		Yield (N/mm <sup>2</sup> )	Tensile (N/mm <sup>2</sup> )	Elongation (%)	Hardness (HRB)	Specific Heat (J/g°C)	Spring rate (KN/mm <sup>2</sup> )	Thermal Expansion (20~100°C)	Heat Conduction (100°C)
JIS	SUS309S	≥205	≥520	≥40	≤90	0.50	195	16.2	15.8
JIS	SUS310S	≥205	≥520	≥40	≤90	0.50	200	15.9	14.2

### Austenitic 316L/316Ti/317L

Standard	Steelless	Mechanical Properties				Physical Properties			
		Yield (N/mm <sup>2</sup> )	Tensile (N/mm <sup>2</sup> )	Elongation (%)	Hardness (HRB)	Specific Heat (J/g°C)	Spring rate (KN/mm <sup>2</sup> )	Thermal Expansion (20~100°C)	Heat Conduction (100°C)
ASTM/GB	316L/ 022Cr17Ni12Mo2	≥170	≥485	≥40	≤95	0.5	193	15.9	16.3
JIS	SUS 316L	≥175	≥480	≥40	≤90				

ASTM	316Ti	≥205	≥515	≥40	≤95	0.5	200	16.5	15.9
JIS	SUS 316Ti	≥205	≥520	≥40	≤90				
ASTM	317L	≥205	≥515	≥40	≤95	0.5	200	16.0	15.9
JIS	SUS 317L	≥175	≥480	≥40	≤90				

Steelless Grade and Chemical

Standard		Standard				key Chemical							
		JIS	GB	ASTM	EN	C max	Si max	Mn max	P max	S max	Ni	Cr	Others
Austenite	Basic	SUS 304	0Cr18Ni9	S30400	1.4301	0.08	1.00	2.00	0.045	0.030	8.00-10.50	18.00-20.00	
		SUS 304L	00Cr19Ni10	S30403	1.4307	0.030	1.00	2.00	0.045	0.030	9.00-13.00	18.00-20.00	
	High strength and toughness	SUS 301	1Cr17Ni7	S30100	1.4310	0.15	1.00	2.00	0.045	0.030	6.00-8.00	16.00-18.00	
		301B	1Cr17Ni7	S30100	1.4310	0.095-0.135	0.50-0.80	0.60-0.90	0.035	0.030	6.55-6.85	16.25-16.75	Mo:0.40;Cu:0.40;N:0.045
		301S	1Cr17Ni7	S30100	1.4310	0.110-0.145	0.30-0.60	1.60-1.90	0.035	0.030	6.10-6.40	16.30-16.90	Mo:0.40;Cu:0.40;N:0.04-0.07
		SUS 301L		S30103	1.4318	0.030	1.00	2.00	0.045	0.030	6.00-8.00	16.00-18.00	N:0.20
	Deep Stamping	SUS 304 (Ni 8.5)	0Cr18Ni9	S30400	1.4301	0.08	1.00	2.00	0.045	0.030	8.50-10.50	18.00-20.00	
		SUS 304(Ni9)	0Cr18Ni9	S30400	1.4301	0.08	1.00	2.00	0.045	0.030	9.00-10.50	18.00-20.00	
		SUS 304Cu	0Cr18Ni9	S30400	1.4301	0.08	1.00	2.00	0.045	0.030	8.00-10.50	18.00-20.00	Cu:0.70-1.30
	High Corrosion Resist	SUS 316*	0Cr17Ni12Mo2	S31600	1.4401	0.08	1.00	2.00	0.045	0.030	10.0-14.00	16.00-18.00	Mo:2.00-3.00

	ance	SUS 316L	00Cr 17Ni 14Mo2			0.030	1.00	2.00	0.045	0.030	12.00-15.00	16.00-18.00	Mo:2.00-3.00	
		316L (ASTM)		S31603		0.030	0.75	2.00	0.045	0.030	10.0-14.0	16.00-18.00	Mo:2.00-3.00	
		SUS 321	00Cr18Ni10Ti	S32100	1.4541	0.008	1.00	2.00	0.045	0.030	9.00-13.00	17.00-19.00	Ti:5*C%	
Ferrite	Basic	SUS 430	1Cr17	S43000	1.4016	0.012	0.75	1.00	0.040	0.030		16.00-18.00		
	Heat Resistant & Antioxidant	SUH 409L		S40910	1.4512	0.030	1.00	1.00	0.040	0.030		10.50-11.75	Ti:6*C%-0.75	
		SUS 410L	00Cr12	S41003	1.4003	0.030	1.00	1.00	0.040	0.030		11.00-13.50		
	Welding and Corrosion Resistance	SUS 436L*	00Cr17Mo				0.025	1.00	1.00	0.040	0.030		16.00-19.00	
		439 (ASTM)	00Cr17	S43035	1.4510	0.030	1.00	1.00	0.040	0.030	0.50	17.00-19.00	Mo:0.75-1.50;Ti, Nb,Zr:8*(C%+N%)-0.80	
		SUS 444*	00Cr18Mo2	S44400	1.4521	0.025	1.00	1.00	0.040	0.030		17.00-20.00	Ti:[0.20+4*(C%+N%)]-1.10;Al:0.15;N:0.030	
Martensite	Basic	SUS 420J2*	3Cr13		1.4028	0.26-0.40	1.00	1.00	0.040	0.030		12.00-14.00	Mo:1.75-2.50;Ti, Nb,Zr:8*(C%+N%)-0.80	

Mechanical

Grade		Standrad				Key Mechanical						
	JIS	GB	ASTM	EN	Y.S. N/m <sup>2</sup>	T.S. N/m <sup>2</sup>	EL %	Hardness		Winding		
								HV	HRB			
Austenite	Basic	SUS304	0Cr18Ni9	S30400	1.4301	≥205	≥520	≥40	≤200	≤90		
		SUS304L	00Cr19Ni10	S30403	1.4307	≥175	≥480	≥40	≤200	≤90		
	High strength	SUS301	1Cr17Ni7	S30100	1.4310	≥205	≥520	≥40	≤218	≤95		

	and toughness	301B	1Cr17Ni7	S30100	1.4310	≥205	≥520	≥40	≤218	≤95		
		301S	1Cr17Ni7	S30100	1.4310	≥205	≥520	≥40	≤218	≤95		
		SUS301L*		S30103	1.4318	≥215	≥550	≥45	≤218	≤95		
	Deep Stamping	SUS304 (Ni8.5)	0Cr18Ni9	S30400	1.4301	≥205	≥520	≥40	≤200	≤90		
		SUS304(Ni9)	0Cr18Ni9	S30400	1.4301	≥205	≥520	≥40	≤200	≤90		
		SUS304Cu	0Cr18Ni9	S30400	1.4301	≥205	≥520	≥40	≤200	≤90		
	High Corrosion Resistance	SUS316*	0Cr17Ni12Mo2	S31600	1.4401	≥205	≥520	≥40	≤200	≤90		
		SUS316L	00Cr17Ni14Mo2			≥175	≥480	≥40	≤200	≤90		
		316L (ASTM)		S31603		≥170	≥485	≥40	≤200	≤95		
		SUS321	0Cr18Ni10Ti	S32100	1.4541	≥205	≥520	≥40	≤200	≤90		
	Ferrite	Basic	SUS430	1Cr17	S43000	1.4016	≥205	≥420	≥22	≤200	≤88	180°
		Heat Resistance & Antioxidant	SUH409L		S40910	1.4512	≥175	≥360	≥25	≤175	≤80	180°
			SUS410L	00Cr12	S41003	1.4003	≥195	≥360	≥22	≤200	≤88	180°
Welding and Corrosion Resistance		439 (ASTM)	00Cr17	S43035	1.4510	≥205	≥415	≥22	≤200	≤89	180°	
Martensitic		SUS420J2*	3Cr13		1.4028	≥225	≥540	≥18	≤247	≤99		
	Basic											

#### General & Special Steelless

steel grades	trademark	GB		JIS	ANSI	EN
		2007 trademark	1992 trademark			
austenitic	12Cr18Ni9	12Cr18Ni9	1Cr18Ni9	SUS302	302	1.4310
	SUS304	06Cr19Ni10	0Cr18Ni9	SUS304	304	1.4301
	SUS304Ni8.5	06Cr19Ni10	0Cr18Ni9	SUS304	304	1.4301
	SUS304Ni9	06Cr19Ni10	0Cr18Ni9	SUS304	304	1.4301
	304L	022Cr19Ni10	00Cr19Ni10	-	304L	1.4307

	SUS304L	-	-	SUS304L	-	1.4306
	SUS316	06Cr17Ni12Mo2	0Cr17Ni12Mo2	SUS316	316	1.4401
	316L	022Cr17Ni12Mo2	00Cr17Ni14Mo2	-	316L	1.4404
	SUS316L	-	-	SUS316L		-
	SUS321	06Cr18Ni11Ti	0Cr18Ni10Ti	SUS321	-321	1.4541
austenite	301B	12Cr17Ni7	1Cr17Ni7	SUS301	301	1.4319
	301S	12Cr17Ni7	1Cr17Ni7	SUS301	301	1.4319
	SUS301L	-	00Cr17Ni7	SUS301L	301L	-
	SUS304Cu	-	-	SUS304Cu	-	-
	309S	06Cr23Ni13	06Cr23Ni13	SUS309S	309S	1.4833
	301S	06Cr25Ni20	06Cr25Ni20	SUS301S	310S	1.4845
ferritic	SUH409L	022Cr11Ti	-	-	-	1.4512
	409NT	-	-	-	S40945	-
	TCS345	-	-	-	S41003	1.4003
	439	022Cr18Ti	-	SUS430LX	439	1.4510
	SUS430Cu	-	-	-	-	-
	SU444S	019Cr19Mo2NbTi	00Cr18Mo2	SU444S	444	1.4521
	SUS430	10Cr17	1Cr17	SUS430	430	1.4016
SUS410L	022Cr12	00Cr12	SUS410L	-	-	
martensitic	12Cr12	-	1Cr12	SUS403	-	-
	SUS410	12Cr13	1Cr13	SUS410	410	1.4006
	SUS410S	06Cr13	0Cr13	SUS410S	410S	1.4000
	SUS420J1	20Cr13	2Cr13	SUS420J1	420	1.1021
Duplex steel	022Cr22Ni5Mo3N	022Cr22Ni5Mo3N	-	SUS329J3L	2205	1.4462

■ Electrical steel

➤ Grain-Oriented Electrical Steel

Series	Thickness (mm)	Baosteel	WISCO	NSC	JFE	Congent	TKS	Posco	NI & SCo	AK
General	0.23	B23G110	23Q105							
			23Q110	23Z110			C110-23		NV23S-110	
			23Q115							
		B23G120				M120-23S5	C120-23		NV23S-120	M-3
							M127-23S5	C127-23		NV23S-127
	0.27							27PG110	NV27S-110	
B27G12		27Q120	27Z12	27JG12		C120-	27PG12	NV27S-120	M-4	

		0		0	0		27	0			
		B27G13 0	27Q130	27Z13 0	27JG13 0	M130-27 S5	C130- 27	27PG13 0	NV27S-130	M-4	
			27Q140			M140-27 S5	C140- 27		NV27S-14		
	0.30								30PG11 0		
		B30G12 0	30Q220	30Z12 0	30JG12 0				30PG12 0	NV30S-120	
		B30G13 0	30Q180	30Z13 0	30JG13 0		C130- 30		30PG13 0	NV30S-130	
		B30G14 0	30Q160	30Z14 0	30JG14 0	M140-30 S5	C140- 30		30PG14 0	NV30S-140	M-5
			30Q150			M150-30 S5	C150- 30				M-5
			30Q140								
			30Q130								
		30Q120									
	0.35	B35G13 5	35Q135	35Z13 5	35JG13 5					NV35S-130	
		B35G14 5	35Q145	35Z14 5	35JG14 5	M150-35 S5	C150- 35		35PG14 5	NV35S-145	M-6
		B35G15 5	35Q155	35Z15 5	35JG15 5	M165-35 S5	C165- 35		35PG15 5		M-6
	High magneti c	0.23	B23P09 0	23QG09 0	23ZH 090	23JGS0 90 23JGH0 90	M90-23 P5	H090- 23	23PH09 0		
B23P09 5			23QG09 5	23ZH 095	23JGS0 95 23JGH0 95		H095- 23	23PH09 5			
B23P10 0			23QG10 0	23ZH 100	23JGH1 00	M100-23 P5	H100- 23	23PH10 0		H-0	
				23ZH1 10							
0.27								H090- 27			
		B27P09 5	27QG09 5	27ZH 095				H095- 27	27PH09 5		
		B27P10 0	27QG10 0	27ZH 100	27JGH1 00	M103-27 P5	H103- 27	27PH11 0	NV27P-100		
		B27P11 0	27QG11 0	27ZH1 10	27JGH1 10						H-1
0.30		B30P10 0	30QG10 0	30ZH 100	30JGH1 00				30PH10 0		
		B30P10	30QG10	30ZH	30JGH1	M105-30	H105-		30PH10	NV30P-105	

		5	5	105	05	P5	30	5			
		B30P11 0	30QG11 0	30ZH1 10	30JGH1 10	M111-30 P5	H111-30				
		B30P12 0	30QG12 0	30ZH 120	30JGH1 20	M117-30 P5					
	0.35	50Hz 60Hz	B35P11 5		35ZH1 15	35JGS1 15			35PH11 5		
						35JGH1 45	1000Hz		50Hz 60Hz		
		B35P12 5		35ZH 125	25 35JGH1 25			35PH12 5			
		B35P13 5		35ZH 135	35JGH1 35			35PH13 5			
	Magnetic domain refinement high magnetic	0.23	B23R08 0		23ZD KH80 23ZD MH80	23JGSD 80			23PHD0 80		
			B23R08 5		23ZD KH85 23ZD MH85	23JGSD 85		H085-23	23PHD0 85		
			B23R09 0		23ZD KH90 23ZD MH90	23JGSD 90		H090-23			H-0 DR
0.27		B27R09 0		27ZD KH90 27ZD MH90	27JGSD 90		H090-27	27PHD0 90			
B27R09 5			27ZD KH95 27ZD MH95	27JGSD 95			27PHD0 95		H-1 DR		

Size

Thickness(mm)	Width (mm)	Diameter (mm)
0.23 0.27 0.30 0.35	700~1200	508

## ➤ Non oriented electrical steel

A Series

Thickness (mm)	Baosteel	NSC	JFE	TKS	Posco	NI & SCo	AK
0.35	B35A210	35H210	35JN210	M210-35A	35PN210		
	B35A230	35H230	35JN230	M235-35A	35PN230		
	B35A250	35H270	35JN250	M250-35A	35PN250	2413	M-15
	B35A270	35H270	35JN270	M270-35A	35PN270	2412	M-19
	B35A300	35H300	35JN300	M300-35A	35PN300	2411	M-22/M-27
	B35A360	35H360	35JN360		35PN360		
	B35A440	35H440	35JN440		35PN455		
	B35A550				35PN560		
0.50	B50A230	50H230	50JN230	M230-50A	50PN230		
	B50A250	50H250	50JN250	M250-50A	50PN250		
	B50A270	50H270	50JN270	M270-50A	50PN270	2414	
	B50A290	50H290	50JN290	M290-50A	50PN290	2413	M-15
	B50A310	50H310	50JN310	M310-50A	50PN310	2412	M-19
	B50A350	50H350	50JN350	M350-50A	50PN350		M-22
	B50A400			M400-65A	50PN400		M-27/M-36
	B50A470	50H470	50JN470	M470-50A	50PN445	2214	
	B50A600	50H600	50JN600	M600-50A	50PN595	2212	
	B50A700	50H700	50JN700	M700-50A	50PN760		M-47
	B50A800	50H800	50JN800	M800-50A	50PN890	2011	
	B50A1000	50H1000	50JN1000	M940-50A	50PN1015		
	B50A1300	50H1300	50JN1300	M1100-50A	50PN1270		
0.65	B65A470			M470-65A	65PN470		M-43
	B65A600			M600-65A	65PN595		M-45
	B65A700			M700-65A	65PN760		
	B65A800		65JN800	M800-65A	65PN890		M-47
	B65A1000		65JN1000	M1000-65A	65PN1015		
	B65A1300		65JN1300	M1300-65A	65PN1270		

AH Series

Thickness (mm)	Grade	JFE
0.35	B35AH230	35JNE230
	B35AH250	35JNE250
	B35AH300	35JNE300
0.50	B50AH300	50JNE300
	B50AH350	50JNE350
	B50AH470	50JNE470
	B50AH600	
	B50AH800	
	B50AH1000	



Thickness (mm)	Baosteel	JFE
0.35	B35AR300	
0.50	B50AR300	50JNA300
	B50AR350	50JNA350

Size

Thickness (mm)	Width (mm)	Diameter (mm)
0.20 0.35 0.50 0.65	800~1250	508

## ■ Hot Rolled Steel

### Products Catalogue

Classification	Specification	Typical grade
<b>Hot rolled strip for automobile</b>	Hot rolled strip for automobile frame	420L、440L、510L、550L、610L、700L、750L、850L
	Hot rolled strip for automobile structure	QStE340TM—QStE550TM、SAPH310—SAPH440
	Hot rolled high strength strip for automobile structure	SPFH490、SPFH540、SPFH590
	Hot rolled strip for automobile wheel	330CL—590CL、HZ330CL—HZ590CL
	Hot rolled strip for automobile body	C600XT、C700XT
	Hot rolled strip for cold forming	S355MC、S420MC、S500MC
	Hot rolled strip for hot stamping and forming	22MnB5、27MnCrB5、30MnB5、38MnB5
<b>Hot rolled strip for oil pipeline</b>	Hot rolled strip for pipeline of crude oil and natural gas transformation	L245R、L290R、L245M—L450M、X42M—X65M
<b>Hot rolled strip for hull structure</b>	Hot rolled strip for hull structure	A32、A36、D32、D36
<b>Hot rolled weathering strip</b>	Hot rolled weathering steel for structure	SPA-H、Q355NH、Q355GNHA、Q355NHA、Q450NQR、Q295GNH、Q345GNH、Q390GNH、SMA400CP、SMA490CP
	Hot rolled strip for acid sulfuric and dew point corrosion resistance	Q315NS、09CrCuSb、09CuPCrNi-A
<b>Hot rolled carbon structure steel strip</b>	CE certification for export	S235JR、S275JR、S355JR、S235J0、S275J0、S355J0、S235J2、S275J2、S355J2(M1)、S355K2
	High strength low alloy steel for export	CJ500V、Grade50、Q345A、Q345B、Q345C、Q345D、Q390C、Q420B、Q460B、Q460C、Q550C、Q550E、Q690C、Q690D、Q690E
	Hot rolled alloy structure steel	20Cr、40Cr、75Cr、65Mn、15CrMo
	Hot rolled strip for elevator	Q235DT
	carbon steel	Q195、Grade36、GradeC、GradeD、Q235A、Q235B、SS330、SS400
	carbon steel for export	A36 (Cr)、SS400 (Cr)
<b>Hot rolled quality</b>	Hot rolled carbon structure steel	SAE1006、SAE1008、SAE1025、SAE1010、

<b>carBon steel strip for export</b>		SAE1012、SAE1015、SAE1020、SAE1022
	Hot rolled carbon structure steel for pipe	SPHT1、SPHT2
<b>Hot rolled quality tool steel strip</b>	Hot rolled quality carbon structure steel strip	20、35、45、50、55、60、40Mn、50Mn、65Mn、75Cr1
<b>Hot rolled strip for cold forming</b>	Hot rolled strip for cold forming	SPHC、SPHD、StW22、SPHE、SPHCB、DD11、SPHC-DF
<b>checkered steel strip</b>	Hot rolled checkered steel strip	A36、Grade36B、Q195、Q235A、Q235B、SS330、SS400
<b>Hot rolled electrical steel strip</b>	Hot rolled electrical steel strip	TGW600、TGW800、TGW1000、TGW1300
<b>Hot rolled strip for welded gas cylinder</b>	Hot rolled strip for welded gas cylinder	HP235、HP295、HP325、HP345、Q245R、Q345R
<b>Hot rolled strip for spring</b>	Hot rolled strip for spring	27SiMn、60Si2MnA、50CrV4
<b>hot rolled enamel steel strip</b>	hot rolled enamel steel strip	TTC265R、TTC340R、TTC370R
<b>hot rolled strip for electrical power pipe</b>	hot rolled strip for power pipe	400DG、500DG
<b>hot rolled strip for pipe</b>	hot rolled strip for pipe	STK500、S350

### Hot-rolled structural steel

Standard No.	Q/BQB 301-2009	DIN1614-2:86	EN111-77	EN10111-2008 (E)	JIS G3131-2005	GB/T710-2008 GB/T711-2008
Grades	DD11 SPHC	StW22	Fep11	DD11	SPHC	08
	DD12 SPHD	RRStW23	Fep12	DD12	SPHD	08
	DD13 SPHE	StW24	Fep13	DD13	SPHE	08
	DD14 SPHF	-	-	DD14	SPHF	-
	BRC1、BRC2、BRC3	-	-	DD14	SPHF	-

✚ Structural steel

Welding structural steel

✚ Structural steel

Q/BQB 303-2009	JIS G3101:2004		GB912-89/GB3274-88 GB710-91/GB711-88	
SS330	SS330		Q195,Q215A,15	
SS400	SS400		Q235A,Q255A	
SS490	SS490		Q275A	
SS540	SS540		-	
Q/BQB 303-2009	DIN17100-80	EN10025:1990	EN10025-2:2004	GB 912-2008/GB 3274-2007
S185(St33)	St33	Fe310-0	S185	Q195、Q215A
S235JR(St37-2)	St37-2,RSt37-2	Fe360B	S235JR	Q235B
S235J0(ST37-3)	St37-3	Fe360C	S235J0	Q235C
S235J2	-	Fe360D	S235J2	Q235D
S275JR(St44-2)	St44-2	Fe430B	S275JR	Q255B

S275J0	St44-3	Fe430C	S275J0	Q255C
S275J2	-	Fe430D	S275J2	Q255D
E295(St50-2)	St50-2	Fe490-2	E295	Q345A
S355JR	-	Fe510B	S355JR	Q345B
S355J0(St52-3)	St52-3	Fe510C	S355J0	Q345C
S355J2	-	Fe510D	S355J2	Q345D
S355K2	-	Fe510DD	S355K2	Q345E

#### Welding structural steel

Q/BQB 303-2009	JIS G3106:2004	GB912-2008/GB3274-2007
SM400A	SM400A	Q235A.Q235B
SM400B	SM400B	Q235C
SM400C	SM400C	Q235D
SM490A	SM490A	Q345A.Q345B
SM490B	SM490B	Q345C
SM490C	SM490C	Q345D
SM490YA	SM490YA	Q390B
SM490YB	SM490YB	Q390C
SM520B	SM520B	Q420A.Q420B
SM520C	SM520C	Q420C
SM570 BSM590	SM570	Q460C.Q460D
B590GJA,B590GJB	-	Q460C.Q460D

Q/BQB 303-2009	DIN1702-80	EU113-72	EN10113-2:1993	EN10025-3:2004	GB 912-2008 GB 3274-2007
StE255	StE255	FeE255KGN	-	-	Q235C、Q235D
StE285	TStE285	FeE275KTN	S275N	S275N	Q275C、Q275D
StE355	StE355	FeE355KGN	S355N	S355N	Q345C、Q345D

#### Hot-rolled automobile structural steel

Application	Feature	Grades
Automobile structure (named according to JIs)	Suitable for the automobile structure parts that require good formability, such as frame or wheels.	SAPH310 SAPH370 SAPH400 SAPH440
High strength automobile structure (named according to JIs)	Suitable for the automobile structure parts that require some formability and high strength, such as strong frame or wheels.	SPFH540. SPFH590
High strength automobile structure (named according to DIN)	Suitable for the structure parts that require high strength and good cold formability, such as truck beams.	QStE340TM QStE380TM QStE420TM QStE460TM. QSIE500TM
Wheel steel	With good cold forming properties, suitable for wheel rims and disks.	B330CL B380CL B420CL
Boam steel	Suitable for vehicle beams and cross members.	B320LB420LB510L

		B510DL B550L
Drive shaft steel	Suitable for the automobile drive shafts.	B440QZR、B480QZR
Axle housings steel	Suitable for the automobile axle housings.	B440QK

Q/BQB310-2009		YB/T 4151-2006			
B330CL		330CL			
B380CL		380CL			
B420CL		-			
Q/BQB310-2009		GB/T 3273-2005			
B320L		-			
B420L		420L			
B510L		510L			
B510DL		-			
B550L		550L			
Q/BQB310-2009		JIS G3113-2006			
SAPH310		SAPH310			
SAPH370		SAPH370			
SAPH400		SAPH400			
SAPH440, B440QK		SAPH440			
Q/BQB310-2009		JIS G3134-2006			
SPFH540		SPFH540			
SPFH590		SPFH590			
Q/BQB310-2009	SEW092: 95	EN10149-2: 1995	ISO6930-1: 2001	SAEJ1392: 2001	GB/T20887.1-2007
QStE340TM	QStE360T M	S355MC	FeE355	050XLK	HR355F
QStE380TM	QStE380T M	-	-	-	HR380F
QStE420TM	QStE420T M	S420MC	FeE420	060XLK	HR420F
QStE460TM	QStE460T M	S460MC	FeE460	-	HR460F
QStE500TM	QStE500T M	S500MC	FeE500	070XLK	HR500F

### Hot-rolled high strength cold forming steel

Reference list of steel grades and corresponding grades

Q/BQB 311-2009	BZJ 310-2005	Q/BQB 310-2009	SEW 092:95	EN 10149-2:1995	ISO 6930-1:2001	SAE J1392:2001	GB/T 20887.1-2007
S315MC	-	-	QStE300TM	S315MC	FeE315	045XLK	HR315F
S355MC	-	QStE340TM	QStE360TM	S355MC	FeE355	050XLK	HR355F
-	-	QStE380TM	QStE380TM	-	-	-	HR380F
S420MC	-	QStE420TM	QStE420TM	S420MC	FeE420	060XLK	HR420F
S460MC	-	QStE460TM	QStE460TM	S460MC	FeE460	-	HR460F
S500MC	-	QStE500TM	QStE500TM	S500MC	FeE500	070XLK	HR500F
S550MC	-	-	QStE550TM	S550MC	FeE550	080XLK	HR550F
S600MC	BS600MC	-	QStE600TM	S600MC	FeE600	-	HR600F
S650MC	-	-	QStE650TM	S650MC	FeE650	-	HR650F
S700MC	BS700MC	-	QStE690TM	S700MC	FeE700	-	HR700F

### Hot-rolled advanced high strength cold forming steel

Reference list of steel grades and corresponding grades

Q/BQB312-2009	GMW3399-2008	EN 10338:2007(E)
BR330/580DP	HR580T/330Y-DP	HR DP600 HDT580X
BR330/780DP	HR780T/450Y-DP	HR DP800 -
BR400/590TR	HR590T/400Y-TR	HR TRI600 HDT
BR450/780TR	HR780T/450Y-TR	HR TRI800 -
BR300/450HE	HR450T/300Y-FB	HR FB450 HDT450F
BR440/580HE	HR580T/440Y-FB	HR FB600 HDT560F
BR600/780HE	HR780T.600Y-FB	HR FB800 -
BR900/1200MS	HR1200T/900Y-MS	HR MS1200 HDT1200M
BR650/780CP	HR780T/650Y-MP	HR MP800 HDT780C
BR720/950CP	HR950T/720Y-MP	HR MP1200 HDT950C

### Hot-rolled building structural steel

Reference list of steel grades and corresponding grades

Q/BQB313-2009	JIS G3136-2005	ISO 24314:2006	GB/T19879-2005
SN400A	SN400A	-	-
SN400B	SN400B	S235S	Q235GJ-C
SN490B	SN490B	S325S	Q345GJ-C

### **Hot-rolled hull structural steel**

According Standard !

### **Hot-rolled anti-corrosion structural steel**

According Standard !

### **Hot-rolled case-hardening steel**

Q/BQB313-2009	JIS G4051-2005	DIN 17210
C10	-	C10
C15	-	C15
S09CK	S09CK	-
S15CK	S15CK	-

### **Hot-rolled steel for straight welded casing and tube**

According to API 5CT or technical agreements.

### **Hot-rolled checker steel**

### **Hot-rolled high strength enameling steel**

Reference list of steel grades and corresponding grades

Standard	Grades
BZJ 308-2009	BTC210R、BTC245R、BTC330R、BTC360R

### **Hot-rolled die-cutting and sawblade steel**

Hot-rolled die-cutting and Sawblade steel

30CrMo    65Mn    50M2V    75Cr1    40CrMo

## ■ HR Steel Sheet (Pickled)

Classification	Specification	Typical grade	Standard
<b>Pickling coil for automobile</b>	Hot rolled pickling steel strip for automobile structure	S315MC-S700MC、 QSTE340TM-QSTE550TM	2015JX101、2015JX080、 2015JX105、JT008-2011、 JT025-2015
	High strength pickling steel strip for automobile structure	SPFH490、SPFH540、 SPFH590	JT022-2015
	Pickling steel strip for automobile frame	370L、420L、440L、510L、 610L	2014JX019
	Pickling steel strip for automobile wheel	300CL、330CL、380CL、 400CL420CL、440CL、 490CL	JT020-2015、YB/T 4151-2006
	Pickling steel strip for hot stamping and forming	TR1500HS、22MnB5	2015JX082、2015JX051
	Pickling steel strip for Cr-alloy automobile structure	SAPH310、SAPH370、 SAPH400、SAPH440	JISG 3113-2006
	Pickling high hole expansion ratio steel strip	HR440/580HE、 HR600/780HE	GB/T 20887.2-2010
<b>Hot rolled pickling steel for cold forming</b>	Pickling coil for cold forming	SPHC、SPHD、SPHE、 DD11、DD12、DD13	2012JX43、2012JX54、 2013JX118、2015JX030 2015JX078、2015JX098、 Q/TB 204-2014
<b>Hot rolled pickling enamel steel</b>	Pickling enamel steel strip	TTC265R、TTC340R、 TTC370R	JT002-2015
<b>Carbon steel</b>	Pickling quality carbon steel strip	20#	Q/TB 204-2014
	Pickling carbon structure steel strip	SAE1008、SAE1010、 SAE1012、SAE1015、 SAE1020、SAE1022	Q/TB 207-2015
<b>others</b>	Pickling steel strip for welded gas cylinder	HP295、HP325	JT013-2015
	Pickling steel strip for compressor	SPHE	JT019-2015
	Pickling steel with B for structure	S235JRM2、S235J0M2	HB3EN10025-2
	Pickling low Si steel with Cr for structure	S235JRM2、S235J0M2	HB7EN10025-2

## ■ CR Steel Sheet

Classification	Specification	Typical grade	Standard
<b>Automobile sheet</b>	Low carbon steel deep drawing IF steel high strength IF steel high strength low alloy steel dual phase steel bake hardening steel TRIP steel	DC01-DC06 CR220IF HC340LA 590DP 220P1 CR220BH CR420	EN10130 EN10268 JIS G 3141 JIS G 3135 Q/TB303 Q/HG031
<b>House appliance</b>	Low carbon steel IF steel	DC01-DC06 SPCC-J1	Q/HG 009 EN10130

<b>sheet</b>	Al-killed steel	SPCC-J2 SPCD SPCE	JISG3141 GB/T 5213 ASTMA1008M
<b>Sheet for special purpose</b>	Flux cored welding wire slideway steel steel sheet for security door chain steel	TYH THD SPCC-SC TLA	2016JX (027) JT010-2013 Commercial sheet Low carbon steel SPCC DC01 Q/HG006 EN10130 GB/T5213-2008
<b>Commercial sheet</b>	Low carbon steel	SPCC DC01	Q/HG006 EN10130 GB/T5213-2008

## Cold-rolled

Similar brand comparison

Standard No.	Q/BQB 402-2003	BZJ 491-2004	JIS 3141-1996	GB/T 5213-2001	Q/BQB 402-1999
Grades	SPCC	SPCC	SPCC	-	SPCC
	SPCD	SPCD	SPCD	-	SPCD
	SPCE	SPCE	SPCE	SC1	SPCE、SPCEN、SPECHEF、SPCEZF
	SPCEN	SPCEN	SPCEN	SC2	SPCEN

Similar brand comparison

Standard No.	Q/BQB 402-2003	BZJ 492-2004	EN 10130-1999	EN 10130-1991	D2N 1623-(1)-1983	GB/T 5213-2001	Q/BQB403-1999 BZJ 407-1999
Grades	DC01(St12)	DC01(St12)	DC01	FeP01	St12		St12
	DC03(St13)	DC03(St13)	DC03	FeP03	RRSt13		St13
	DC04(St14,St15)	DC04(St14)	DC04	FeP04	St14	SC1	St14, St14F, St14HF, St14ZF, St15
	DC05(BSC2)		DC05	FeP05		SC2	BSC2
	DC06(St16, St14-T, BSC3)		DC06	FeP06		SC3	St16, St14-T, BSC3

Similar brand comparison

Standard No.	Q/BQB 408-2003	JFSA 2001-1998	GB 5213-2001
Grades	BLC	JSC270C	-
	BLD	JSC270D	-
	BUSD	JSC270E	SC1
	BUFD	JSC270F	SC2
	BSUFD	JSC260G	SC3

Similar brand comparison

Standard No.	Q/BQB 411-2003	JFS A 2001-1998	JFS G3135-1986	Q/BQB 409-1999 BZJ 411-1999
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Grades	B170P1	JSC340P	SPFC340	B170P1
	B210P1	JSC390P	SPFC390	B210P1
	B250P1	JSC440P	SPFC440	B250P1
	-	-	-	B210P2
	-	-	-	B250P2
	-	-	-	B280P2
	B180P2(BP340)	JSC340W	-	BP340
	B220P2(BP380)	JSC390W	-	BP380

Similar brand comparison

Standard No.	Q/BQB416-2003	JFS A 2001-1998	JFS G3135-1986	Q/BQB409-1999 BZJ416-1999
Grades	B140H1	JSC270H	-	B140H1
	B180H1	JSC340H	-	B180H1
	-	-	-	B180H2
	-	-	-	B210H2
	-	-	-	B250H2
	B180H2(BH340)	-	SPFC340H	BH340
	-	-	-	BH340A

Similar brand comparison

Standard No.	Q/BQB418-2003	JFS A 2001-1998	Q/BQB418-1999
Grades	B340/590DP	JSC590Y	B340VK
	B400/780DP	JSC780Y	B400VK

Similar brand comparison

Standard No.	Q/BQB418-2003	JFS A 2001-1998
Grades	B340LA	JSC440R
	B410LA	JSC590R

Similar brand comparison

Standard No.	Q/BQB410-2003	DIN 1326-(2)-1986
Grades	St37-2G	St37-2G
	St44-3G	St44-3G
	St52-3G	St52-3G

**Cold rolled steel sheet**

Reference list of steel grades and corresponding grades

Similar grade comparison table					
structural steel	Q/BQB 402-2003	BZJ 491-2004	JIS G 3141-1996	GB/T 5213-2001	Q/BQB 402-1999
Steel Grade	SPCC	SPCC	SPCC	–	SPCC
	SPCD	SPCD	SPCD	–	SPCD
	SPCE	SPCE	SPCE	SC1	SPCE, SPCEF, SPCEHF, SPCEZF
	SPCEN	SPCEN	SPCEN	SC2	SPCEN

Similar grade comparison table							
structural steel	Q/BQB 403-2003	BZJ 492-2004	EN 10130-1999	EN 10130-1991	D2N 1623-(1)-1983	GB/T 5213-2001	Q/BQB403-1999 BZJ 407-1999
Steel Grade	DC01(St12)	DC01(St12)	DC01	FeP01	St12	–	St12
	DC03(St13)	DC03(St13)	DC03	FeP03	RRSt13	–	St13
	DC04(St14, St15)	DC04(St14)	DC04	FeP04	St14	SC1	St14, St14F, St14HF, St14ZF, St15
	DC05(BSC2)		DC05	FeP05	–	SC2	BSC2
	DC06(St16, St14-T, BSC3)		DC06	FeP06	–	SC3	St16, St14-T, BSC3

Similar grade comparison table			
Structural steel	Q/BQB 408-2003	JFS A 2001-1998	GB 5213-2001
Steel Grade	BLC	JSC270C	–
	BLD	JSC270D	–
	BUSD	JSC270E	SC1
	BUFD	JSC270F	SC2
	BSUFD	JSC260G	SC3

Similar grade comparison table

structural steel	Q/BQB 411-2003	JFS A 2001-1998	JIS G 3135-1986	Q/BQB 409-1999 BZJ 411-1999
Steel Grade	B170P1	JSC340P	SPFC 340	B170P1
	B210P1	JSC390P	SPFC 390	B210P1
	B250P1	JSC440P	SPFC 440	B250P1
	–	–	–	B210P2
	–	–	–	B250P2
	–	–	–	B280P2
	B180P2 (BP340)	JSC340W	–	BP340
	B220P2 (BP380)	JSC390W	–	BP380

Similar grade comparison table

Structural steel	Q/BQB 416-2003	JFS A 2001-1998	JIS G 3135-1986	Q/BQB 409-1999 BZJ 416-1999
Steel Grade	B140H1	JSC270H	–	B140H1
	B180H1	JSC340H	–	B180H1
	–	–	–	B180H2
	–	–	–	B210H2
	–	–	–	B250H2
	B180H2 (BH340)	–	SPFC 340 H	BH340
	–	–	–	BH340A

Similar grade comparison table

structural steel	Q/BQB 418-2003	JFS A2001-1998	Q/BQB 418-1999
Steel Grade	B340/590DP	JSC590Y	B340VK
	B400/780DP	JSC780Y	B400VK

Similar grade comparison table

structural steel	Q/BQB 418-2003	JFS A2001-1998
Steel Grade	B340LA	JSC440R
	B410LA	JSC590R

Similar grade comparison table

structural steel	Q/BQB 410-2003	DIN 1623-(2)-1986
Steel Grade	St37-2G	St37-2G
	St44-3G	St44-3G

## Galvanized steel

Hot galvanized steel products include cold forming steel and structural steel. They are widely used for such industries as the architecture, the home appliances, the industrial instruments and the automobiles as well.

Classification	Classification	Specification	Typical grade
<b>Galvanized</b>	Automobile sheet	High strength low alloy steel Bake-hardening steel Deep drawing IF steel	HC340LAD+ZHC220BD+Z DX54D-DX56D+Z
	House appliance sheet	Low carbon steel IF steel	DX51D+Z-MDDX51D+Z-HR DX52D-DX53D+Z
	Structural steel sheet	Structural steel	SGH340 SGC340 SGH440 S350GD+Z S550GD+Z
	Commercial sheet	Low carbon steel	SGCC DX51D+Z
<b>Color coated</b>	Structure steel	Color coated plate	CGC340 CGC400 CGC440
	Commercial sheet	Color coated plate	DX51D+ZCGCCCGCD1 TDC51D+Z
<b>Tin plate</b>	Tin plate for packaging ( food packaging included )	Tin plate	SPCC MR

## Galvanized steel Sheet

### Stamping steel

Q/BQB 420-2003	Q/BQB 420-2001	Q/BQB 422-2000
DC51D+Z(St01Z, St02Z, St03Z) DC51D+ZF	St01Z, St02Z, St03Z -	DC51D+Z DC51D+ZF
DC52D+Z(St04Z) DC52D+ZF	St04Z -	DC52D+Z DC52D+ZF
DC53D+Z(St05Z) DC53D+ZF	St05Z -	DC53D+Z DC53D+ZF
DC54D+Z(St06Z) DC54D+ZF	St06Z -	DC54D+Z,DC54D+ZF
DC56D+Z(St07Z), DC56D+ZF	St07Z	DC56D+Z, DC56D+ZF
DD51D+Z (St01ZR, St02ZR)	St01ZR, St02ZR	-
DD54D+Z(St06ZR)	-	-

### Steel for structural use

Q/BQB 420-2003	Q/BQB 420-2001	Q/BQB 422-2000
S220GD+Z,S220GD+ZF	-	S220GD+Z,S220GD+ZF
S250GD+Z,S250GD+ZF	-	S250GD+Z,S250GD+ZF
S280GD+Z(StE280-2Z), S280GD+ZF	StE280-2Z -	S280GD+Z S280GD+ZF
S320GD+Z,S320GD+ZF	-	S320GD+Z,S320GD+ZF

S350GD+Z(StE345-2Z), S350GD+ZF	StE345-2Z -	S350GD+Z S350GD+ZF
S550GD+Z,S550GD+ZF	-	S550GD+Z,S550GD+ZF

### High strength steel for cold forming

Q/BQB 420-2003	Q/BQB 420-2001	Q/BQB 422-2000
H220PD+Z, H220PD+ZF	-	H220PD+Z, H220PD+ZF
H260PD+Z, H260PD+ZF	-	H260PD+Z, H260PD+ZF
H300LAD+Z, H300LAD+ZF	-	H300LAD+Z, H300LAD+ZF
H340LAD+Z(HSA340Z), H340LAD+ZF	HSA340Z -	H340LAD+Z H340LAD+ZF
H380LAD+Z	-	H380LAD+Z
H420LAD+Z(HSA410Z)	HSA410Z	H420LAD+Z
H180YD+Z, H180YD+ZF	-	H180YD+Z, H180YD+ZF
H220YD+Z, H220YD+ZF	-	-
H260YD+Z, H260YD+ZF	-	-
H180BD+Z, H180BD+ZF	-	H180BD+Z, H180BD+ZF
H220BD+Z, H220BD+ZF	-	-
H260BD+Z, H260BD+ZF	-	H260BD+Z, H260BD+ZF
HR340LAD+Z(HSA340ZR)	HSA340ZR	-
HR410LAD+Z(HSA410ZR)	HSA410ZR	-

### Electro Galvanized steel sheet

Grades	Main purpose	Base plate	Corresponding substrate standard
SECC、SECD、SECE	For stamping	SPCC、CPCD、SPCE	Q/BQB 402-2003
SECIF		DC05(BSC2)	Q/BQB 403-2003
BLCE+Z, BLCE+ZN		BLC	Q/BQB 408-2003
BLDE+Z, BLDE+ZN		CLD	
BUSDE+Z, BUSDE+ZN		BUSD	
BUFDE+Z, BUFDE+ZN		BUFD	
BSUFDE+Z, BSUFDE+ZN		BSUFD	
B170P1E+Z, B170P1E+ZN	Cold Forming	B170P1	Q/BQB 411-2003
B210P1E+Z, B210P1E+ZN		B210P1	
B250P1E+Z, B250P1E+ZN		B250P1	
B180P2E+Z,		B180P2(BP340)	

B180P2E+ZN			
B220P2E+Z, B220P2E+ZN		B220P2(BP380)	
B140H1E+Z, B140H1E+ZN		B140H1	Q/BQB 416-2003
B180H1E+Z, B180H1E+ZN		B180H1	
B180H2E+Z, B180H2E+ZN		B180H2(BH340)	
B340/590DPE+Z, B340/590DPE+ZN		B340/590DP	Q/BQB 418-2003
B400/780DPE+Z, B400/780DPE+ZN		B400/780DP	
B340LAE+Z, B340LAE+ZN		B340LA	Q/BQB 419-2003
B410LAE+Z, B410LAE+ZN		B410LA	

Similar brand comparison table(1)- low carbon steel

Standard No.	Q/BQB 430-2003	EN 10152-1993	EN 10271-1998	JIS G3313-1998 (Z)	JFS A3041-1998 (ZN)	JFS A3021-1998 (Z)	GB/T 17675-1995	ASTM A591-98 (Baseboard)
Grades	BLCE+Z SECC	DC01+ZE	-	SECC	-	JEC 270C	DX1	CS
	BLCE+ZN	-	DC01+ZN	-	JNC 270C	-	-	
	BLDE+Z SECD	DC03+ZE	-	SECD	-	JEC 270D	DX2	DS
	BLDE+ZN	-	DC03+ZN	-	JNC 270D	-	-	
	BUSDE+Z SECE	DC04+ZE	-	SECE	-	JEC 270E	DX3	DDS
	BUSDE+ZN	-	DC04+ZN	-	JNC 270E	-	-	
	BUFDE+Z SECIF	DC05+ZE	-	-	-	JEC 270F	-	EDDS
	BUFDE+ZN	-	DC05+ZN	-	JNC 270F	-	-	
	BSUFDE+Z	-	DC06+ZN	-	-	JEC 270G	-	-
	BSUFDE+ZN	-	DC06+ZN	-	JNC 270G	-	-	-

Similar brand comparison table (2) -High Strength Steel

Standard No.	Q/BQB 430-2003	JFS A3021-1998	JFS A3041-1998	PrEN10268-2002 (Baseboard)
Grades	B170P1E+Z	JEC 370P	-	-
	B170P1E+ZN	-	JNC 370P	-

	B210P1E+Z	JEC 390P	-	-
	B210P1E+ZN	-	JNC 390P	-
	B250P1E+Z	JEC 440P	-	-
	B250P1E+ZN	-	JNC 440P	-
	B180P2E+Z	-	-	B180P
	B180P2E+ZN	-	-	
	B220P2E+Z	-	-	B220P
	B220P2E+ZN	-	-	
	B140H1E+Z	-	-	-
	B140H1E+ZN	-	JNC 270H	-
	B180H1E+Z	--	-	-
	B180H1E+ZN	-	JNC 340H	-
	B180H2E+Z	-	-	B180H
	B180H2E+ZN	-	JNC 340H	
	B340/590DPE+Z	-	-	-
	B340/590DPE+ZN	-	-	-
	B400/780DPE+Z	-	-	-
	B400/780DPE+ZN	-	-	-
	B340LAE+Z	-	-	B340LA
	B340LAE+ZN	-	-	
	B410LAE+Z	JEC 590P	-	B420LA
	B410LAE+ZN	-	JNC 590P	

## ■ Prepainted Steel Sheet

Fermi have more than 10 categories of paints, including regular polyester, silicone modified polyester, high durable polyester, fluoro-carbon paint. And have a relatively complete variety of steel types.

### Prepainted Steel Sheet

Basic Type	Prepainted Grade	Basic Grade	Use
Hot galvanized steel	TDC51D	DC51D+Z	General
	TDC52D	DC52D+Z	Stamping
	TDC53D	DC53D+Z	Deep Stamping
	TS280GD	S280GD+Z	Construction
	TS350GD	S350GD+Z	Construction
	TS550GD	S550GD+Z	High Stength Construction
Hot dip Al Zn alloy Plate	TDC51D+AZ	DC51D+AZ	General
	TDC52D+AZ	DC52D+AZ	Stamping
	TS250GD+AZ	S250GD+AZ	Construction
	TS300GD+AZ	S300GD+AZ	Construction
	TS350GD+AZ	S350GD+AZ	Construction

	TS550GD+AZ	S550GD+AZ	High Stenghth Construction
Galvanized Plate	TSECC	SECC	General
	TSECD	SECD	Stamping
	TSECE	SECE	Deep Stamping
	TBLCE	BLCE+Z	General
	TBLDE	BLDE+Z	Stamping
	TBUSDE	BUSDE	Deep Stamping

Similar brand comparison

Standard No.	Q/BQB 400-2003	JISG 3312-1994
Grades	TDC51D(TSt01,TSt02,TSt03)	CGCC
	TDC52D	CGCD1
	TDC53D	-
	TS280GD(TStE28)	CGC400
	TS350GD(TStE34)	CGC440
	TS550GD	CGC570
	TSECC,TBLCE	-
	TSECD,TBLDE	-
	TSECE,TBUSDE	-

## ■ Tin plate and TFS(ECCS)

Tn mill products catalogue covers ETP and TFS with an annual output of 1.2 million tons. The products are widely sold and used throughout the world in application of packaging of food, beverage and industrial goods and enjoy high reputation in the global market.

### Tin plate and TFS(ECCS)

Similar brand comparison

Standard No.	Q/BQB 450-2003	JIS G3303-2002	ASTM A623M-2002	DIN EN 10203-1991	ISO 11949-1995	GB/T 2520-2000
Barter code	-	T-1	T-1(T49)	T50	TH50+SE	TH50+SE
	-	T-2	T-2(T53)	T52	TH52+SE	TH52+SE
	T-2.5	T-2.5	-	-	TH55+SE	TH55+SE
	T-3	T-3	T-3(T57)	T57	TH57+SE	TH57+SE
	T-3.5	-	-	-	-	-
	T-4	T-4	T-4(T61)	T61	TH61+SE	TH61+SE
	T-5	T-5	T-5(T65)	T65	TH65+SE	TH65+SE



## ■ Heavy Plate

Heavy plates are mainly used in shipbuilding, offshore platform, boiler, pressure vessel, pipeline, high building, bridge and heavy duty trucks, etc.

### Products catalogue

Classification	Typical grade	Standard
<b>Boiler and pressure vessel steel plate</b>	Q245R-Q370R 12MnNiVR 16MnDR SB410,SB450,SB480 SPV235,SPV315,SPV355 SPV410,SPV450,SPV490 SGV410,SGV450,SGV480 SBV1A,SBV1B,SBV2,SBV3 H I,H II,10CrMo910,15Mo3 (S)A299M (S)A516M(Gr.60,65,70) P235GH,P265GH,P295GH P355GH,16Mo3,13CrMo4-5 10CrMo9-10,11CrMo9-	GB713 GB19189 GB3531 JIS G3103 JIS G3115 JIS G3115 JIS G3118 JIS G3119 DIN17155 ASTM ASME EN10028-2 EN10028-2 EN10028-2 NF A36-205
<b>High strength low alloy steel plate</b>	Q345(A,B,C,D,E) Q550(D,E),Q690(D,E) SM490(A,B,C),SM490Y(A,B) St44-3,St52-3,St50-2 StE315,StE355,StE500 A572M(Gr42,50,60,65) S275(JR,JO,J2),E295,E335 S355(JR,JO,J2,K2) 43(A,B,C,D,EE), E355(DD,E),E460(CC,DD,E) E550(DD,E),E690(DD,E)	GB/T1591 GB/T16270 JIS G3106 DIN 17100 DIN 17102 ASTM EN10025-3 EN10025-3 BS4306 ISO4950-3 ISO4950-3
<b>Corrosion resistant steel plate</b>	Q550NH Q295NH Q355GNH S355J2W,S355J2WP,S355K2W A588(A,B,C,K) Cor-tenB,HIC 钢,08Cu, 16MnCu	ASTM
<b>Bridge construction steel plate</b>	Q235q-Q690q(C,D,E) A709M(Gr36,50,50W,70W)	GB/T714 ASTM
<b>Building structural steel plate</b>	Q345GJ(B,C,D,E),Q460GJ(C,D,E) SN400(A,B,C),SN490(B,C) 355EMZ,450(EM,EMZ)	GB/T19879 JIS G3136 BS7191
<b>Alloy structural steel plate</b>	15CrMo,20CrMo,30CrMo SAE4130 25CrMo4,34CrMo4,42CrMo4	GB/T11251 ASTM EN10083-1
<b>Mould and wear resistant steel plate</b>	SM45-SM55,SM3Cr2Mo SM3Cr2Ni1Mo S45C-S55C 45-55 50Mn-65Mn	YB/T107 YB/T107 JIS G4051 GB/T711
<b>Automotive Structural steel</b>	510L,550L,610L,700L	GB/T3273-2005 and technical specification
<b>Carbon structural steel plate</b>	08-70,20Mn-45Mn SM400 S10C-S55C St37-2,St37-3 40(A,B,C,D,EE) (S)A36,(S)A283 A830(1006-1060) S235(JR,J0,J2,K2) C22-C45 1010-1050	GB/T711 JIS G3106 JIS G4051 DIN 17100 BS4360 (ASME)ASTM ASTM EN10025-2 EN10083 BS4360

<b>Ship building and offshore oil platform steel plate</b>	A,B,D,E,A(H)32-F(H)32A(H)40-F(H)40 A(H)420-E(H)420 A(H)690-E(H)690 AQ43-EQ43,AQ70-EQ70 A131Gr(A,B,D,E,CS) API 2W(50,60),API 2Y(50,60) S355G10+N,S355G8+N	CCS,DNV,GL,LRBV,ABS,NK,K R RINA,GB712 RINA,GB712 ABS ASTM API EN10225
<b>High strength and toughness steel plate</b>	GS80,28Cr2Mo(GY4), 26SiMnMo(GY5) 30CrMnMoRE(603) 30CrNi3MoV(675) 921A	GJB1946A GJB1496A GJB31A GJB31A GJB1663
<b>Pipeline steel plate</b>	L245-L555 X42-X80	GB/T21237 API
<b>Clad steel plate</b>	TU1/20g 0Cr13Ni5Mo/Q235A 0Cr13Ni5Mo/16Mn	GB13238 GB8165 GB8165
	TU1/20g 0Cr13Ni5Mo/Q235A 0Cr13Ni5Mo/16Mn	GB13238 GB8165 GB8165
<b>Nuclear power steel plate</b>	20MnHR,A48CPR,16MnD5 SA533,SA738,P265G,HP295GH,P355GH	RCCM2000+2002 NCA3800+ND、NC、NF2000 NCA3800+ND、NC、NF200

### ■ Hull structural steel plate

Available product grade, specification and delivery condition

classification of society	Strength grade	Steel grade	Thickness (mm)	Delivery condition	Through thickness characteristics
ABS BV CCS DNV GL KR LR NK RINA	Ordinary-strength hull structural steel plates	NVA/NVB	≤50	NR	Z25/Z35
		NVD	≤35	NR	
		A/B	≤50	AR	
			≤80	N	
		D	≤35	AR	
			≤80	N	
	E	≤80	N		
	Higher-strength hull structural steel plates	AH27S*/DH27 S*	≤20	AR	Z25/Z35
			≤40	CR	
		AH32/DH32	≤80	TM(TMCP)	
AH36/DH36		≤80	N		

### ■ Steel plate for pipeline

Available product standard, grade, specification and delivery condition

Product standards	Grades	(mm) Thickness	Delivery condition
API Spec5L/ISO3183	L245 or Gr.B	≤40	CR
	L290 or X42	≤40	CR
	L320 or X46	≤40	CR
	L360 or X52	≤40	CR/TMCP
	L390 or X56	≤40	CR/TMCP

	L415 or X60	≤40	CR/TMCP
	L450 or X65	≤40	TMCP
	L485 or X70	≤40	TMCP
	L555 or X80	≤35	TMCP
	L625 or X90	≤30	TMCP
	L690 or X100	≤30	TMCP
	L830 or X120	≤25	TMCP
GB9711	L245	≤40	CR
	L290	≤40	CR
	L360	≤40	CR/TMCP
	L415	≤40	CR/TMCP
	L450	≤40	TMCP
	L485	≤40	TMCP
	L555	≤35	TMCP
DNV-OS-F101	245	≤40	CR
	290	≤40	CR
	360	≤40	CR/TMCP
	415	≤40	CR/TMCP
	450	≤40	TMCP
	485	≤40	TMCP
	555	≤35	TMCP

■ **Steel plate for energy engineering**

Available product standard, grade, specification and delivery condition

Product standards	Grades	Thickness (mm)	Delivery condition
GB713-2008	Q245R(20g、20R)	6-150	AR/CR/N
	Q345R(16Mng、19Mng、16MnR)		AR/CR/N+SR
	Q370R(15MnNbR)		N/N+SR
	18MnMoNbR		N+T/N+T+SR
	13MnNiMoR(13MnNiMoNbg、13MnNiMoNbR)		N+T/N+T+SR
	15CrMoR(15CrMog)		N+T/N+T+SR
	12Cr1MoVR(12Cr1MoVg)		N+T/N+T+SR
	14Cr1MoR		N+T/N+ACC+T+SR
12Cr2Mo1R	N+T/N+ACC+T+SR		
GB3531-1996	16MnDR	6-100	N/N+SR
	15MnNiDR		
	09MnNiDR		
GB19189-2003	07MnCrMoVR	12-60	QT/QT+SR
	07MnNiMoVDR		QT/QT+SR
	12MnNiVR		QT/QT+SR
Q/BQB660	B610CF(07MnMoVR)	12-50	QT/QT+SR

	B610CF-L1(07MnNiMoVDR)		
	B610CF-L2(07MnNiMoVDR)		
	B610E(08MnNiVR)	12-45	QT/QT+SR
ASME SA387/SA387M ASTM A387/A387M	SA387 Gr.12/A387 Gr.12	8-150	A/CR/CR+T/N/N+T+SR/N+AC C+T+SR
	SA387 Gr.11/A387 Gr.11		
	SA387 Gr.22/A387 Gr.22		
ASME SA285/SA285M ASTM A285/A285M	SA285 Gr.A/A285 Gr.A	8-50	AR/CR/AR+SR/CR+SR/N/N+ SR
	SA285 Gr.B/A285 Gr.B		
	SA285 Gr.C/A285 Gr.C		
ASME SA299/SA299M ASTM A299/A299M	SA299/A299	8-130	N/N+SR
ASME SA516/SA516M ASTM A516/A516M	SA516Gr.55/A516 Gr.55	8-130	AR/CR/N/N+T/N+SR/AR+SR/ N+T+SR
	SA516Gr.60/A516 Gr.60		
	SA516Gr.65/A516 Gr.65		
	SA516Gr.70/A516 Gr.70		
ASME SA533/SA533M ASTM A533/A533M	SA533 Type A/A533 Type A	10-130	QT/QT+SR
	SA533 Type B/A533 Type B		
	SA533 Type C/A533 Type C		
	SA533 Type D/A533 Type D		
ASME SA515/SA515M ASTM A515/A515M	SA515Gr.60/A515Gr.60	8-130	AR/CR/N/N+SR
	SA515Gr.65/A515Gr.65		
	SA515Gr.70/A515Gr.70		
ASME SA737/SA737M ASTM A737/SA737M	SA737 Gr.B/A737 Gr.B	8-50	N/N+SR/N+ACC+T
	SA737 Gr.C/A737 Gr.C		
ASME SA738/SA738M ASTM A738/SA738M	SA738 Gr.A/A738 Gr.A	8-150	N/N+SR/QT/QT+SR
	SA738 Gr.B/A738 Gr.B	10-100	QT/QT+SR
	SA738 Gr.C/A738 Gr.C	10-150	QT/QT+SR
ASME SA612/SA612M ASTM A612/A612M	SA612/A612	8-25	AR/CR/N/N+SR
ASME SA662/SA662M ASTM A662/A662M	SA662 Gr.A/A662 Gr.A	8-50	CR/N/N+SR
	SA662 Gr.B/A662 Gr.B		
	SA662 Gr.C/A662 Gr.C		
ASME SA455/SA455M ASTM A455/A455M	SA455/A455	8-130	AR/CR/N/N+SR
ASME SA841/SA841M ASTM A841/A841M	SA841 Gr.A/A841 Gr.A	8-65	TMCP/TMCP+T
	SA841 Gr.B/A841 Gr.B		
	SA841 Gr.C/A841 Gr.C		
EN10028-2	P235GH	8-130	AR/CR/NR/N/N+SR
	P265GH	8-130	
	P295GH	8-130	
	P355GH(19Mn6)	8-130	
	16Mo3	8-130	
	20MnMoNi4-5	10-130	QT/QT+SR
EN10028-3	P275NH/NL1/NL2	8-130	N/NR
	P355N/NH/NL1/NL2	8-130	N/NR

	P460NH/NL1/NL2	8-130	N/N+T
EN10028-5	P355M/ML1/ML2	8-80	TMCP/TMCP+T
	P420M/ML1/ML2	8-60	TMCP/TMCP+T
	P460M/ML1/ML2	8-60	TMCP/TMCP+T
EN10028-6	P355Q/QH/QL1/QL2	10-130	QT/QT+SR
	P460Q/QH/QL1/QL2		
	P500Q/QH/QL1/QL2		
	P690Q/QH/QL1/QL2		
协议/Agreement	BM400 (电磁钢板/Electrical steel)	8-130	N

## ■ Structural steel plate

Structural steel plate

Product standards	Grades	Thickness (mm)	Delivery condition
GB/T 700	Q235A	8-150	AR
	Q235B/Q235C/Q235D	8-150	AR/CR/N
GB/T 1591	Q345A	8-150	AR
	Q345B/Q345C/Q345D	8-150	AR/CR/N
	Q345E	8-100	AR/CR/N
	Q390A/Q420A/Q460A	12-100	CR
	Q390B/Q420B/Q460B	12-100	CR/N
	Q390C/Q420C Q390D/Q420D	12-100	CR/N
	Q390E/Q420E	50-100	N
	Q460C/Q460D/Q460E	10-100	CR/N
GB/T714-2000	Q235qC/Q345qC/Q370q C	8-150	AR/CR/N
	Q235qD/Q345qD/Q370q D	8-150	AR/CR/N
	Q345qE/Q370qE 14MnNbq	8-100	AR/CR/N
	Q420qC/Q420qD/Q420q E	20-70	TMCP/TMCP+T
GB/T 19879-2005	Q235GJB/Q235GJC Q235GJD/Q235GJE	8-150	AR/CR/N
	Q345GJB/Q345GJC/Q34 5GJD	8-150	AR/CR/N/TMCP
	Q345GJE	8-100	AR/CR/N/TMCP
	Q390GJC/D/E	8-100	AR/CR/N/TMCP
	Q420GJC/D/E/(-W)	20-70	TMCP/TMCP+T
	Q460GJC/D/E	20-70	TMCP/TMCP+T
YB/T4137-2005	Q460CFC/D/E	12-80	TMCP/TMCP+T
	Q500CFC/D/E		

	Q550CFC/D/E		
	Q620CFC/D/E		
	Q690CFC/D/E	12-50	TMCP/TMCP+T
	Q800CFC/D/E		
Q/BQB 610 JIS G3101	SS330	8-150	AR
	SS400		
	SS490		
	SS540		
Q/BQB 611 JIS G3106	SM400A/SM490A	8-150	AR
	SM400B/SM400C SM490B/SM490C	8-150	AR/CR/N
	SM490YA	8-100	AR/CR
	SM490YB	8-100	AR/CR/N
	SM520B/SM520C	8-100	CR/N
	SM570	16-70	QT
Q/BQB 612 JIS G3136	SN400A	8-100	AR
	SN400B/SN400C SN490B/SN490C	8-100	AR/CR/N/TMCP
Q/BQB 613 JIS G3128	SHY685	16-100	QT
	SHY685N		
	SHY685NS		
EN10025-2	S235JR/S235J0/S235J2	8-150	AR/CR/N
	S275JR/S275J0/S275J2	8-150	AR/CR/N
	S355JR/S355J0 S355J2/S355K2	8-150	AR/CR/N
EN10025-3	S275N/S275NL	12-120	CR/N
	S355N/S355NL	12-120	N
EN10025-6	S500Q/S500QL/S500QL 1	12-100	QT
	S550Q/S550QL/S550QL 1		
	S620Q/S620QL/S620QL 1		
	S690Q/S690QL/S690QL 1	12-50	
ASTM A36	A36	8-150	AR
ASTM A283	A283 Gr.C	8-150	AR
ASTM A514	A514 Gr.F	16-50	QT
ASTM A572	A572 Gr.50/A709 Gr.50	8-100	AR/CR/N
ASTM A709	A572 Gr.60/A572 Gr.65	12-40	CR
ASTM A588	A588 Gr.A/A588 Gr.B	12-80	CR
ASTM A633	A633 Gr.A	8-150	N
	A633 Gr.C		
	A633 Gr.D		
	A633 Gr.E	8-100	
Agreement	BHARDY360	12-50	QT

	BHARDY400		
	BHARDY400CF		
	BHARDY450		
	BHARDY500		
	BWELDY460CFM	12-80	TMCP
	BWELDY500CFM		
	BWELDY550CFM		
	BWELDY620CFM	12-50	
	BWELDY690CFM		
	BWELDY700Q	12-80	QT
	BWELDY700CFQ	12-50	
	BWELDY900Q		
	BWELDY960Q		
	BWELDY1100Q		

## ■ Pipe & Tube

The include medium and small diameter hotrolled seamless tube, specially alloyed seamless tube, cold-rolled and cold drawing seamless tube, medium and large diameter high frequency ERW pipe, large diameter SAWL pipe, etc.

standard	grade	Tensile Strength Mpa	Yield Point Mpa	Elongation %		Impact J Not less than	Hardness Not greater than
			Not less than <15mm	Not less than ≥15mm			
ASME SA-106	SA-106B	≥415	240				
	SA-106C	≥485	275				
ASME SA-210M	SA-210A1	≥415	255				79HRB(143HBW)
	SA-210C	≥485	275				89HRB(179HBW)
ASME SA-209M	SA-209TI	≥380	250				80HRB(146HBW)
	SA-209T1b	≥365	195				77HRB(137HBW)
	SA-209T1a	≥415	220				81HRB(153HBW)
ASME SA-213M	SA-213T2	≥415	205				85HRB(163HBW)
	SA-213T11	≥415	205				85HRB(163HBW)
	SA-213T22	≥415	205				85HRB(163HBW)
	SA-213T23	≥510	400	20			97HRB(220HBW)
	SA-213T24	≥585	415	20			25HRB(250HBW)
	SA-213T91	≥585	415	20			25HRB(250HBW)
	SA-213T911	≥620	440	20			25HRB(250HBW)
	SA-213T92	≥620	440	20			25HRB(250HBW)
	SA-213T122	≥620	400	20			25HRB(250HBW)
	TP304H	≥515	205	35			90HRB(192HBW)
	TP316H	≥515	205	35			90HRB(192HBW)
	TP321H	≥515	205	35			90HRB(192HBW)
	TP347H	≥515	205	35			90HRB(192HBW)
	S30432	≥590	235	35			95HRB(219HBW)

	TP310HCbN	≥655	295	30		100HRB(256HB W)
JIS G 3461	STB510	≥510	295			
JIS G3462	STBA12	≥382	≥206			
	STBA13	≥412	≥206			
	STBA20	≥412	≥206			
	STBA22	≥412	≥206			
	STBA23	≥412	≥206			
	STBA24	≥412	≥206			
	STBA26	≥412	≥206			
JIS G3463	SUS 304H TB	≥520	206	35		
	SUS 316H TB	≥520	206	35		
	SUS 321H TB	≥520	206	35		
	SUS 347H TB	≥520	206	35		
EN 10216-2	P195GH	320-440	195	27		
	P235GH	360-500	235	25		
	P265GH	410-570	265	23		
	16Mo3	450-600	280	22		
	10CrMo5-5	410-560	275	22		
	13CrMo4-5	440-590	290	22		
	10CrMo9-10	480-630	280	22		
	X10CrMoVN b9-1	630-830	450	19	41	

Steel Grade	Standard			Applications
	GB(CHINA)	ASTM(U.S.A)	DIN(GERMANY)	
Carbon steel	10	SA-106B		Economizer tube Water wall tube
	20	SA-192	St35.8	
	20G	SA-210A1	St45.8	
	20MnG	SA-106C		
	25MnG	SA-210C		
Mo Steel	15MoG		15Mo3	water wall tube Superheater tube reheater tube
	20MoG			
Cr-Mo Steel	12CrMoG	T11	12Cr1MoV	Superheater tube reheater tube
	12Cr2MoG	T22	14MoV63	
	12Cr1MoVG	T24	10CrMo910	
	15CrMoG	T91	X10CrMoVNB91	
	10Cr9MoVNb			
Cr-Mo-W steel	12Cr2MoWVTiB	T23		Superheater tube reheater tube
		T911		
		T92		



		T122	
Austenitic stainless steel		TP304 TP304H TP321 TP321H TP347 TP347H TP316 TP316H S30432 TP310HCbN	Superheater tube reheater tube

## ■ Bar & Wire rod

Steel grades products are mainly various kinds of carbon structure steel, low and medium alloy structure steel, Special steel Products are car bloom for train axle, bloom for gas cylinder mould and die steel, round billet for gear, steel for driving shaft, mandrel bar and steel for drill rod joint. The major products involve wire rod for tire cord, spring steel wire rod, steel wire rod for cold heading and cold forging, galvanized wire for bridge cables, high carbon steel wire rod, wire rod for welding, etc.

Classification	Specification	Typical grade	Standard
<b>Hot rolled ribbed bars for Construction use</b>	Hot rolled Ribbed bars	HRB400、HRB400E	Φ10--50
	Hot rolled Ribbed bars	HRB500、HRB500E	Φ10--50
	Hot rolled Ribbed bars	HRB600、HRB600E	Φ10--50
	Finished ribbed bars	PSB500	Φ12--50
<b>Round bar</b>	gear steel	20CrMnTiH series、20CrH~40CrH、 20CrMoH~42CrMoH	Φ12-800
	Bearing steel	GCr15、GCr15SiMn、52100、SAE1055	Φ12-800
	Spring steel	60Si2MnA、60Si2CrA、60Si2CrVA、 55CrMnA	Φ12-800
	Alloy structure steel	20Mn2~45Mn2、20Cr~40Cr、20CrMn	Φ12-800
	Free cutting non-quenched and tempered steel	C70S6、36MnVS4、30MnVS、30MnVS6	Φ12-800
	high pressure and oil well tube blank	12Cr1MoVG、12Cr2MoWVTiB、 15CrMoG、T11、T12、T22	Φ12-800
	Quality carbon structure steel	10~80、20Mn~65Mn、S10C~S53C、 S48、S53	Φ12-800
	anchor and mooring chain steel	CM490、CM690、SBC690	Φ12-800
	High strength low alloy steel	Q345 series、Q460C	Φ12-800
<b>Rebar for export</b>	Ribbed bars in GB standard	HRB400E HRB500E	Φ10~50

	Ribbed bars in Israel standard	S400W	Φ10~32
	Ribbed bars in ASTM standard	Grade40 Grade60	Φ9.5~32.3
	Ribbed bars in British standard	460B、B500B	Φ10~32
	Ribbed bars in Chile standard	A630-420H	Φ10~32

20CrMnTiH series、20CrH~40CrH、20CrMoH~42CrMoH

### Products Series

Hot rolled round/ribbed coil for construction	hard cord	cold forging steel	PC steel rod
free-cutting steel	welding wire	welding rod	bearing steel
tire cord steel	chain steel	steel strand	

Classification	Specification	Typical grade	Product size	Standard
<b>Carbon steel</b>	Carbon steel	Q195--Q275	Φ5.0--22	GB/T700
	Carbon steel	PHB300	Φ6.5--12	GB1499.1
<b>Quality carbon structure steel</b>	Tire cord steel	B70Lx、B77Lx	Φ5.0~6.5	Technical specification
	Bead wire	SWRH72A,SWRH72B	Φ5.0~6.5	Technical
	Steel strand	SWRH82A,SWRH82B、YL77B、YL82B	Φ12~22	GB/T24238
<b>Welding steel</b>	Welding wire	H10MnSiMoTiB	Φ5.0~6.5	GB3429
	Welding wire	H11Mn2SiA	Φ5.5	Q/TB101
	Welding wire	ER70S-6、ER50-6、ER70S-3	Φ5.5	Q/TB101
	Welding wire	EM12、TEM12、EM13K、EH14、TEH14、EM12K、TEM12K	Φ5.5、Φ6.5	Q/TB101
	Welding rod	H08A、H08C、H08E、H08MnA、H10MnSi、H10Mn2、H08Mn2SiA、H08B、ER70S-4、ER70S-6、ER50-6、EM-12K	Φ5.0~6.5	GB3429

Grade	Chemical composition %								
	C	Si	Mn	P	S	Cr	Ni	Cu	Ni+Cu
BLZ(LZ40)	0.37-0.45	0.15-0.35	0.50-0.80	≤0.030	≤0.035	≤0.20	≤0.20	≤0.20	≤0.30
BLZW(LZ50)	0.47-0.55	0.15-0.35	0.60-0.90	≤0.030	≤0.035	≤0.30	≤0.30	≤0.25	-

■ Bloom for gas cylinder

Grade	Chemical composition %							
	C	Si	Mn	P	S	V	Mo	Cr
34Mn2V	0.30-0.37	0.17-0.37	1.50-1.75	≤0.030	≤0.030	0.070-0.120		
30CrMo	0.26-0.34	0.17-0.37	0.40-0.70	≤0.030	≤0.030		0.15-0.25	0.80-1.10

#### ■ Mould and Die Steel

Grade	C	Si	Mn	P	S	Cr	Ni	Cu	V	Mo
BM35 C	0.32-0.38	0.15-0.35	0.60-0.90	≤0.030	≤0.035	≤0.30	≤0.30	≤0.30		
BM45 C	0.42-0.48	0.15-0.35	0.60-0.90	≤0.030	≤0.035	≤0.30	≤0.30	≤0.30		
BM48 C	0.41-0.50	0.15-0.35	0.60-0.90	≤0.030	≤0.035	≤0.30	≤0.30	≤0.30		
BM50 C	0.47-0.53	0.15-0.35	0.60-0.90	≤0.030	≤0.035	≤0.30	≤0.30	≤0.30		
B20	≥0.30	≥0.40	≥1.20	≤0.020	≤0.02	≥0.30			≥0.05	
B20H	≥0.30	≥0.40	≥1.00	≤0.020	≤0.02	≥1.00			≥0.05	≥0.10
B30	≥0.20	≥0.20	≥1.50	≤0.020	≤0.01	≥1.50	≥0.10	≥0.10	≥0.05	≥0.20
B30H	≥0.10	≥0.20	≥1.50	≤0.020	≤0.005	≥1.50	≥0.90	≥0.60	≥0.05	≥0.20
B40	≥0.05	≥0.20	≥1.50	≤0.020	≤0.005	≥1.50	≥2.50	≥0.60	≥0.05	≥0.20

#### ■ Round billet for gear

grade	Chemical composition %									
	C	Si	Mn	P	S	Cr	Ti	Mo	Cu	Ni
B20CrMnTi	0.17-0.23	0.17-0.37	0.80-1.10	≤0.035	≤0.035	1.00-1.30	0.04-0.10	-	≤0.20	≤0.30
B20CrMnTiH										
B20CrMnMoH	0.17-0.23	0.17-0.37	0.85-1.20	≤0.035	≤0.035	1.05-1.40	-	0.20-0.30	≤0.20	≤0.30

#### ■ Steel for driving shaft

grade	C	Si	Mn	P	S	V	Others	Structure
48MnV	0.44-0.5 1	0.17-0.3 7	≤1.5 0	≤0.0 3	≤0.03	0.05-0.1 5	Charging of alloy elements such as Cr, Ni, Nb, and Ti is allowed	Ferrite+Pearlite
B12Mn 2VB	0.05-0.1 8	0.17-0.8 0	≤2.5 0	≤0.0 3	≤0.06 5	0.05-0.1 5		Bainite+Ferrite

#### ■ Mandrel Bar

Standard	grade	C	Si	Mn	P	S	Cr	Mo	V
ASTM	H13	0.32-0.38	0.80-1.2 0	0.20-0.6 0	≤0.020	≤0.00 5	4.80-5.50	1.10-1.50	0.80-1.20
	H11	0.33-0.43	0.80-1.2 0	0.20-0.6 0	≤0.020	≤0.00 5	4.75-5.50	1.10-1.60	0.30-0.60
DIN	X38CrMo V51	0.33-0.43	0.80-1.2 0	0.20-0.6 0	≤0.020	≤0.00 5	4.80-5.80	1.10-1.40	0.25-0.50

## Steel for drill rod joint

Grade	Chemical composition %							
	C	Si	Mn	P	S	Mo	Cr	Ni
37CrMnMo4H1	0.35-0.40	0.15-0.35	0.85-1.00	≤0.020	≤0.010	0.25-0.35	0.90-1.20	
36CrNiMo4	0.35-0.40	0.2-0.35	0.55-0.80	≤0.035	≤0.030	0.17-0.30	1.00-1.15	1.00-1.15

### ■ Special Steel

Special Material possesses advanced production lines for special metallurgy, stainless steel, structural steel and high alloy long products, alloy plate & sheet and strip and seamless tube, etc. Forms of products cover bar, wire, plate & sheet, strip, seamless tube, forging, etc. The production system is formed with the dominant products as special metallurgy, stainless steel and structural steel. It focuses on applications in industries of aerospace & aviation, energy resources, automobile (transportation) and 4 key products i.e. tool & die steel, bearing steel, cold-roll & mandrel and stainless steel bar & wire.

☐ Product Manual

### ➤ Stainless Steel Long Products

Stainless steel long product is one of the main products of Special Material.

#### Bar Products

No	Product Categories		Standards	Typical grades	Specifications mm	Applications
	Type of grades	Itemized				
1	Stainless steel (including heat-resistant steel)	ferritic	GB/T 1220	10Cr17	14-130 rolled round bar	Chemical equipment
2		austenitic	GB/T 1220 GB/T 1221 or agreement	06Cr19Ni10	14-160 rolled round bar 90-260 rolled round bar	Mechanical, chemical, fluid equipment, etc.
				022Cr19Ni10		
				06Cr19Ni10N		
				022Cr17Ni12Mo2		
	06Cr25Ni20					
06Cr18Ni10Ti						
06Cr18Ni12Mo2Ti						
022Cr19Ni13Mo3						
3	Martensitic	GB/T 1220 GB/T 1221 or agreement	20-40Cr13	14-160 rolled round bar	Blades, shafting, cutlery, medical instruments, springs, etc.	
14Cr17Ni2			90-200 rolled round bar			
4	duplex	GB/T 1220 or agreement	022Cr23Ni5Mo3N	14-160 rolled round bar	intensive corrosion area in petrochemical industry	
022Cr25Ni6Mo2N			90-400 rolled round bar			
03Cr25Ni6Mo3Cu2N			rolled round bar			
5	Precipitation	GB/T	05Cr17Ni4Cu4Nb	14-160	shafting, springs, high strength	

		on hardening	1220 GB/T 1221 or agreement	07Cr17Ni7Al 07Cr15Ni7Mo2Al	rolled round bar 90-200 rolled round bar	containers, etc.
6	Valve steel	Martensitic	GB/T 12773 or agreement	45Cr9Si3	14-85 rolled round bar	engine valves
				40Cr10Si2Mo		
				51Cr8Si2		
				42Cr9Si2		
				85Cr18Mo2V		
7		austenitic		53Cr21Mn9Ni4N	14-85 rolled round bar	engine valves and heat-resistant standard parts
				55Cr21Mn8Ni2N		
				33Cr23Ni8Mn3N		
				20Cr21Ni12N		
				45Cr14Ni14W2Mo		
				50Cr21Mn9Ni4Nb2WN		
8		austenitic tube blank	agreement	022Cr19Ni10	60-200 rolled round bar	boilers, heat exchanges, tubes for catalytic cracking, chemical media fluid transport, petrochemical industry
				06Cr18Ni10Ti		
				TP304	90-400	
				TP347H	rolled round bar	
				TP347HFG		
				S30432		
				S31042		
9	steel for specific applications	martensitic tube blank	agreement	P91	60-90	boiler steel for power station
				T91	100-500	
				T92	rolled round bar	
10		dual phase tube blank	agreement	022Cr23Ni5Mo3N	60-160	chemical industry
				022Cr25Ni7Mo4WCuN	100-500 rolled round bar	
11		free cutting stainless steel	GB/T1220	Y10Cr17	14-50	bolts, nuts, etc.
				Y12Cr13	rolled round bar	

No.	Product Categories		Standards	Typical grades	Specifications mm	Applications	
	Type of grades	Itemized					
1	Stainless steel	ferritic	agreement	00Cr17-1Cr17	5.5-40 rolled round bar	hardware for decoration, etc.	
2		austenitic	agreement	304、304H、304T 316	5.5-40 rolled round bar	springs, rack rods, wire mesh, etc.	
3		Martensitic	agreement	1Cr13-4Cr13	5.5-20 rolled round bar	standard parts, shafting	
6	Valve steel	Martensitic	GB/T12773 or agreement	45Cr9Si3、 40Cr10Si2Mo 51Cr8Si2、42Cr9Si2 85Cr18Mo2V	5.5-14 rolled round bar	engine valves	
7				austenitic			53Cr21Mn9Ni4N
							33Cr23Ni8Mn3N
		20Cr21Ni2N					
45Cr14Ni14W2Mo		engine valves and heat-resistant					
50Cr21Mn9Ni4Nb							
2WN							
8	steel for specific applications	stainless steel for fasteners	agreement	304C1	5.5-28 rolled round bar	nuts and screws	
304HC2							
304HC3							
9	steel for specific applications	free cutting stainless steel	agreement	BT303CuS2	5.5-20 rolled round bar	shafting	
316Cu							
Y1Cr17							
Y1Cr13							

### ➤ Tool And Die Steel

Tool and die steel product is one of the main products of Special Material. The tool & die steel production line consists of electric arc furnaces, electroslag remelting furnaces, vacuum refining furnaces, ingot casting/continuous casting, blooming, hot continuous rolling, forging ...

#### Tool Steel Products

Product Categories	grades	GB	Q/B QB	AISI/AST M	JIS	EN
rolled carbon tool steel	T8A	T8A	-	W1-71/2	SK6	C70W2
	T10A	T10A	-	W1-91/2	SK4	-

forged carbon tool steel	T10A	T10A	-	W1-1.0C	SK3	C100W2
rolled alloy tool steel	9SiCr	9SiCr	-	-	-	
	6CrW2Si	6CrW2Si	-	S1	-	60WCrV7
	22SiMnNi2CrMoA	-	-	-	-	FF710
forged alloy tool steel	9SiCr	-	-	-	-	90SiCr5
	CrWMn	-	-	-	SKS31	1.2510
	9Mn2V	-	-	O2		1.2842
rolled high speed tool steel	W18Cr4V	W18Cr4V	-	T1	SKH2	S18-0-1
	W9Mo3Cr4V	W9Mo3Cr4V	-	-	-	-
	W6Mo5Cr4V2	W6Mo5Cr4V2	-	M2	SKH51	S6-5-2
	W2Mo9Cr4VCo8	W2Mo9Cr4VCo8	-	M42	-	-
	W18Cr4V	W18Cr4V	-	T1	SKH2	S18-0-1
forged high speed tool steel	W6Mo5Cr4V2	W6Mo5Cr4V2	-	M2	SKH51	1.3343
	W18Cr4V	W18Cr4V	-	T1	SKH2	1.3355
	W2Mo9Cr4VCo8	W2Mo9Cr4VCo8	-	M42	SKH59	1.3247

### Die Steel Products

Product Categories	Grades	GB	Q/BQB	AISI/ASTM	JIS	EN
die steel for plastics(alloy)	SWP20	3Cr2Mo	-	P20	-	1.2312
	SW718H	3Cr2MnNiMo	-	P20+Ni	PDS5S	1.2738
die steel for plastics(carbon)	55	55	-	AISI1055	S55C	CK55
rolled hot working die steel	H13	4Cr5MoSiV1	4Cr5MoSiV1/H13	H13	SKD61	X40CrMoV5-1
	3Cr2W8V	3Cr2W8V		H21	SKD5	-
forged hot working die steel	H13	4Cr5MoSiV1	4Cr5MoSiV1/H13	H13	SKD61	1.2344
	SWPH13	4Cr5MoSiV1	SWPH13	H13	SKD61	8407
	5CrNiMo	5CrNiMo	-	-	SKT4	1.2713
	3Cr2W8V	3Cr2W8V	-	H21	SKD5	1.2581

### Steel for Specific Application

Product Categories	Grades	GB	Q/BQB	AISI/ASTM	JIS	EN
roll blank	MC5	-	-	-	MC5	-
	MC3A	-	-	-	MC3A	-
	9Cr3Mo	-	-	-	-	-
	9Cr2Mo	9Cr2Mo	9Cr2Mo	-	-	-
retained mandrel	BTXB-1、H13X1、H13X2					

➤ **Alloy plate And Sheet**

Plate and sheet line special metal and alloy consisting part of special steel elaborate site. Mainly aiming at producing special steel plates to meet the requirements of national key industries developing such as aero ...

✚ Ti and Ti alloy

Type	trademark	JIS	ANSI	RUSSIA	Type	trademark	JIS	ANSI	RUSSIA
Ti	TA1	JIS CLASS1	GR1	BT1-0	TA Alloy	TA7	-	GR6	BT5-1
	TA2	JIS CLASS2	GR2	-		TA10	-	GR1 2	-
	TA3	JIS CLASS3	GR3	-		TA9	-	GR7	-
	TA4	JIS CLASS4	GR4	-		TA15	-	-	BT20
TA alloy	TB2	-	-	-		Ti80	-	-	-
	TB5	-	-	-		TC3	-	GR2 3	-
	TA5	-	-	-		TC4	-	GR5	BT6
	TA6	-	-	BT5		-	-	-	-

✚ Corrosion Resistant Alloy

Steel Grade	trademark				
	GB	ASTM	UNS	JIS	DIN
Hastelloy Corrosion Resistant-Hastelloy	NS322	Hastelloy B2	N10665	-	NiMo28
	-	Hastelloy B3	-	-	-
	NS335	Hastelloy C4	N06455	-	NiMo16Cr16Ti
	-	Hastelloy C22	-	-	-
	NS333	Hastelloy C276	N10276	-	NiMo16Cr15W
	-	Hastelloy C2000	-	-	-
	-	Hastelloy G30	-	-	-
	-	Hastelloy D205	-	-	-
	-	Hastelloy S	-	-	-
	-	Hastelloy X	-	-	-
Corrosion Monel Corrosion Resistant-Monel	-	Monel400	-	-	-
Inconel Corrosion Resistant-Inconel	NS312	Inconel 600	N06600	NCF600	NiCr15Fe
	-	Inconel 601	-	-	-
	NS336	Inconel 625	N06625	NCF625	NiCr22MoSNb
Incoloy Corrosion Resistant-Inconel	NS111	Incoloy 800	N08800	NCF800	X10 NiCrAlTi32-20
	NS112	Incoloy 800H	N08810	-	X10 NiCrAlTi32-20
	-	Incoloy 800HT	-	-	-



Super Alloy

Steel Grade	Steel Grade									
	China		Japan	America		Germany (1)		France	Russia	UK (2)
	Grade	Grade	JIS	Commercial Grade	AMS/SAE	DIN	W-Nr.(L-Nr.)	NF	TOCT	DS/DTD
ironbase super alloy	GH140	GH140	-	-	-	-	-	-	3π602	-
	GH2132	-	GH132	A285	AMSS525, 5731, SAEHEV7	X5NiCrTi26-15	1.4980(1.4944)	Z6NCT25	3π786	DTD5026 ATVSMO
	GH1015	GH15	-	-	-	-	-	-	3π868	-
	GH1131	GH131	-	-	-	-	-	-	3π126	-
	GH2135	GH135	-	-	-	-	-	-	3π437	-
	GH2150	-	-	-	-	-	-	-	3π718	-
	GH2302	GH302	-	-	-	-	-	-	3π617	-
GH2696	-	-	-	-	-	-	-	3π33	-	
Ni-based super alloy	GH3030	GH30	-	-	-	-	-	ATGRNC20T	3π435	HR5, DTD7038;N203, N403
	GH3039	GH39	-	-	-	-	-	-	3π602	-
	GH3044	GH44	-	-	-	-	-	-	3π868	-
	GH3128	GH128	-	-	-	-	-	-	-	-
	GH4099	-	-	-	-	-	-	-	3π693	-
	GH4145	GH145	NCF7508	InconelX-750	AMS5542, 5567	NiCr15Fe7TiAl	2.4669	ATGF:NC15FeTNbA	3π974	Inconel X-750x
GH4169	GH169	-	Inconel718	AMS5596, 5662 SAEXEV-1	NiCr19NbMo	2.4668	ATGC1:NC19FeNb	-	Inconel1B	

Normal and Special Stainless Steel

steel grade	trademark	GB	JIS	ANSI	EN
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		2007 trademark	1992 trademark			
Duplex Stainless Steel	00Cr23Ni4MoCuN	022Cr23Ni4MoCuN	00Cr23Ni4MoCuN	-	S32304	1.4362
	00Cr25Ni7Mo3N	022Cr25Ni6Mo3N	00Cr25Ni7Mo3N	-	S32750	1.4507
	S32101	-	-	-	S32101	
	00Cr22Ni5Mo3N	022Cr22Ni5Mo3N	00Cr22Ni5Mo3N	-	S31803 S32205	1.4462
	00Cr18Ni5Mo3Si2	022Cr19Ni5Mo3Si2	00Cr18Ni5Mo3Si2	SUS329J3L	-	1.4417
	0Cr26Ni5Mo2	0Cr26Ni5Mo2	-	SUS329J1	S32900	1.4477
	724L	-	-	-	-	-
	1Cr18Mn10Ni5Mo3N	1Cr18Mn10Ni5Mo3N	-	-	-	-
	0Cr17Mo14Mo2N	0Cr17Mo14Mo2N	-	-	-	-
	1Cr21Ni5Ti	12Cr21Ni5Ti	1Cr21Ni5Ti	-	-	-
	0Cr21Ni5Ti	0Cr21Ni5Ti	-	-	-	-
	00Cr18Ni6Mo3Si2Nb	00Cr18Ni6Mo3Si2Nb	-	-	-	-
	00Cr26Ni7Mo2Ti	00Cr26Ni7Mo2Ti	-	-	-	-
	00Cr25Ni7Mo3WCuN	00Cr25Ni7Mo3WCuN	-	-	-	-
	1Cr18Ni11Si4AlTi	1Cr18Ni11Si4AlTi	-	-	-	-
Ferritic Stainless Steel	00Cr30Mo2	00Cr30Mo2	00Cr30Mo2	SUS447J1	-	-
	00Cr26Mo1	00Cr26Mo1	-	-	-	-
	00Cr25Ni4Mo4Ti	00Cr25Ni4Mo4Ti	-	-	-	-
	00Cr29Mo4Ni2	00Cr29Mo4Ni2	-	-	-	-
	SUS410L	022Cr12	00Cr12	SUS410L	-	-
	SUS409L	022Cr11Ti	-	SUS409L	-	1.4512
	SUS444	019Cr19Mo2NbTi	00Cr18Mo2	SUS444	444	1.4521
	SUS430	10Cr17	1Cr17	SUS430	430	1.4016
	10Cr17Mo	10Cr17Mo	1Cr17Mo	SUS430L	-	-
	022Cr17Ti	022Cr17Ti	00Cr17	SUS430LX	-	-
	022Cr11NbTi	022Cr11NbTi	-	-	-	-
	022Cr12Ni	022Cr12Ni	-	-	-	-
	019Cr18MoTi	019Cr18MoTi	-	-	-	-
022Cr18NbTi	022Cr18NbTi	-	-	-	-	

Martensitic Stainless Steel	12Cr12	12Cr12	1Cr12	SUS403	-	-
	SUS410	12Cr13	1Cr13	SUS410	410	1.40 06
	SUS410S	06Cr13	0Cr13	SUS410 S	401S	1.40 00
	SUS420J1	20Cr13	2Cr13	SUS420 J1	420	1.40 21
	SUS420J2	30Cr13	3Cr13	SUS420 J2	-	-
	SUS429J1	-	3Cr16	SUS429 J1	-	-
	04Cr13Ni5Mo	04Cr13Ni5Mo	-	-	-	-
	6Cr13(Mo)	6Cr13(Mo)	-	-	-	-
	8Cr16	8Cr16	-	-	-	-
	9Cr13(Mo)	9Cr13(Mo)	-	-	-	-
	17Cr16Ni2	17Cr16Ni2	-	SUS440 A	-	-
Austenitic Stainless Steel	0Cr20Ni26Mo2Cu2( RS-2)	0Cr20Ni26Mo2Cu2( RS-2)	-	-	-	-
	00Cr25Ni22Mo2N	00Cr25Ni22Mo2N	-	-	-	-
	00Cr20Ni25Mo4.5Cu	00Cr20Ni25Mo4.5Cu	-	-	-	-
	00Cr18Ni14Mo3(N)	00Cr18Ni14Mo3(N)	-	-	-	-
	00Cr18Ni14Mo3	00Cr18Ni14Mo3	-	-	-	-
	00Cr18Ni15Mo3N	00Cr18Ni15Mo3N	-	-	-	-
	12Cr17Ni17	12Cr17Ni17	1Cr17Ni17	SUS301	301	1.43 19
	SUS301L	-	00Cr17Ni17	SUS301 L	301L	-
	SUS304	06Cr18Ni9	0Cr18Ni9	SUS304	304	1.43 01
	SUS321	06Cr18Ni10Ti	0Cr18Ni10Ti	SUS321	321	1.45 41
	316Ti	06Cr18Ni12Mo2Ti	0Cr18Ni12Mo2 Ti	SUS316 Ti	316Ti	-
	316	06Cr17Ni12Mo2	0Cr17Ni12Mo2	SUS316	316	1.44 01
	316L	022Cr17Ni12Mo2	00Cr17Ni12Mo 2	SUS316 L	316L	1.44 04
	309S	06Cr23Ni13	0Cr23Ni13	SUS309 S	309S	1.48 33
310S	06Cr25Ni20	0Cr25Ni20	SUS310 S	310S	1.48 45	
Precipitation hardening Stainless Steel	17-7PH	07Cr17Ni7Al	0Cr17Ni7Al	-	17-7PH	-
	PH15-7Mo	07Cr15Ni7Mo2Al	0Cr15Ni7Mo2Al	-	PH15-7 Mo	-
	PH13-8Mo	04Cr18Ni8Mo2Al	-	-	PH13-8 Mo	-

	17-4PH	05Cr17Ni4Cu4Nb	0Cr17Ni4Cu4Nb b	-	17-4PH	-
	15-5PH	0Cr15Ni5Cu4Nb	-	-	15-5PH	-
	AM350	-	-	-	AM350	-

### **Structural Steel Long Products**

Special Material is a premium special steel production .Except general alloy structural steel, Special Material successfully developed automotive steel, gear steel, spring steel, bearing steel, non-quenched and tempered steel, marine anchor chain ...

No.	Type of Grades	Grades	ASTM	JIS	EN
1	quality carbon structural steel	10-60	1010-1060	S10C-S58C	C25-C60
2	alloy structural steel	20Mn2		SMn420	
		30Mn2	1330	SMn433	28Mn6
		35Mn2-45Mn2	1335-1345	SMn438-SMn443	
		15Cr(A)	5115	SCr415	17Cr3
		20Cr-45Cr	5120-5145	SCr420-SCr445	28Cr4-41Cr4
		50Cr	5150		
		15CrMo-20CrMo	4118	SCM415-SCM420	
		30CrMo-42CrMo	4130-4140	SCM430-SCM440	18CrMo4
		38CrMoAl		SACM645	
		50CrVA	6150		50CrV4
		12CrNi3		SNC415/SNC815	
		30CrNi3		SNC631	
		37CrNi3		SNC836	
		20CrNiMo	8620/8720	SNCM220	
40CrNiMoA	4340	SNCM439			
20CrMoH		SCM420			
3	spring steel	65-85	1065-1084	SUP2-SUP3	Ck67-Ck85
		65Mn	1566		
		55Si2Mn	9255	SUP6	56Si7
		60Si2MnA	9260	SUP7	
		60Si2CrA		SWOSC-V	61SiCr7
		55CrMnA	5155	SUP9	55Cr3
		60CrMnA	5160	SUP9A	
		60CrMnMoA	4161	SUP13	60CrMo33
		50CrVA	6150	SUP10A	50Cr4
		60CrMnBA	51B60	SUP11A	60CrB3
		55SiCr	9254		
4	bearing steel	GCr6	50100		SKF9(瑞典 Sweden)
		GCr9	51100	SUJ1	SKF13(瑞典 Sweden)
		GCr15	52100	SUJ2	SKF3(瑞典 Sweden)

		GCr15SiMn			SKF332(瑞典 Sweden)
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### Steel for Specific Applications

No.	Type of Grades	Company Standards or Agreement	ASTM	JIS	EN
1	gear steel	SAE8617H-8627H	SAE8617H-8627H	SNCM220	20NiCrMo(S)2-2
		18CrNiMo7-6			18CrNiMo7-6
		16-28MnCr5			16-28MnCr5
2	steel for transmission shafts	SAE8617H	8617H	SNCM220	20NiCrMo(S)2-2
		SAE8620H	8620H	SNCM220	20NiCrMo(S)2-2
		UC1,UC2			CK53,CK45
3	cold heading steel	20-42CrMo	4118-4142	SCM415-440	34-42CrMo4
		ML15Mn-35Mn	1015-1035	SWR8A(K)-35A(K)	XC12-XC48
		ML20Cr-ML40Cr	5120-5140	SCr440	41Cr4
4	free cutting steel	Y12		SUM11	
		Y15		SUM25	

## Special Metallurgical

### Carbon, alloy structure seamless pipe

#### Production specification

outside diameter x wall thickness(mm) YB/T681-1997( original YB681-71)							
4x0.4	6x1	15x1	26x1	38x1	9x1.5	38x1.5	12x2.5
10x0.5	7x1	16x1	27x1	42x1	11x1.5	43x1.5	32x2.5
16x0.5	8x1	18x1	30x1	6.25x1.25	12x1.5	9x1.8	
20x0.5	10x1	20x1	32x1	6x1.4	20x1.5	8x2	
25x0.5	11x1	22x1	34x1	8x1.4	22x1.5	12x2	
10x0.8	12x1	24x1	35x1	7x1.5	23x1.5	16x2	
5x1	14x1	25x1	37x1	8x1.5	35x1.5	10x2.5	
outside diameter x wall thickness(mm) YB/T679-1997(original YB681-71)							
3x0.5	6x0.5	5x0.75	5x1	8x1	7x1.5	20x1.5	10x2.5
4x0.5	7x0.5	10x0.75	6x1	10x1	14x1.5	6x1.75	12x2.5

5x0.5	8x0.5	4x1	7x1	12x1	16x1.5	8x2.5	
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**Note:** According to the requirement of the customers we can produce the pipe which standard is not mentioned above.



## Stainless seamless pipe

**Usage:** this product applied for manufacturing fuel, lubricant and hydraulic system pipe for all kinds of fighter plane, attack aircraft, bomber, transporter, helicopter and training plane.

### Production specification

outside diameter x wall thickness(mm)							
4x0.5	8x0.65	25x0.8	6.5x1	20x1	34x1	16x1.25	28x1.5
5x0.5	10x0.7	6x0.85	8x1	22x1	35x1	18x1.25	30x1.5
6x0.5	10x0.75	8x0.85	9x1	24x1	36x1	50x1.25	33x1.5
8x0.5	12x0.75	9.5x0.85	10x1	25x1	38x1	8x1.5	35x1.5
10x0.5	16x0.75	13x0.85	12x1	26x1	44x1	9x1.5	38x1.5
12x0.5	20x0.75	12x0.9	13x1	27x1	8x1.1	10x1.5	43x1.5
14x0.5	6x0.8	19x0.9	14x1	28x1	12x1.1	12x1.5	7.5x1.75
25x0.5	8x0.8	7.7x0.95	15x1	29x1	15x1.1	13x1.5	10x2
6x0.6	16x0.8	5x1	16x1	30x1	14x1.2	16x1.5	12x2
9x0.6	22x0.8	6x1	18x1	32x1	8x1.25	27x1.5	20x2

## Duplex stainless tube

### Grade

China		US	SW	DE
GB/T21833 steel grade	Old Grade			
022Cr19Ni5Mo3Si2N	00Cr18Ni5Mo3Si2	S31500	3RE60	1.4417
022Cr22Ni5Mo3N	00Cr22Ni5Mo3N	S31803	-	1.4462
022Cr23Ni5Mo3N	00Cr22Ni5Mo3N	S32205	SAF2205	-
022Cr25Ni7Mo4N	022Cr25Ni7Mo4N	S32750	SAF2507	1.4410

## Nickle based alloy seamless tube

## ➤ Section

### Products catalogue

Classification	Typical grade	Product size	Standard
<b>Angle steel</b>	Q235, Q345, Q420, Q460	18#、20#、22# 25#、28#、 30#、10#-16# 12.5/8#-16/10#、4-9#	GB/T 706-2008、GB/T 12-2000、CCS norm GB/T 700-2006、GB/T 1591-2008 state grid angle steel-2012 technical

			standard 02
<b>Heavy rail</b>	U71Mn; U75V; U77MnCr; U78CrV	50 Kg/m; 60 Kg/m; 75 Kg/m BS100A; 60E1; 60E2	GB2585-2007 TB/T2344-2012 《350m/ passenger dedicated line 60kg/m Rail steel temporarily technical norm》
<b>I-section steel for mine</b>	20MnK	9#, 11#, 12#	YB/T5047、JX007
<b>Channel steel</b>	10# 20# 35# 45#	16# 20#	GB/T 706-2008
<b>Light rail</b>	55Q	18 kg/m、24kg/m、 30kg/m	GB/T11264-2012
<b>Round steel</b>	45#、Q345	Φ50~Φ110	GB/T 699-1999 GB/T 1591-2008
<b>steel sheet pile</b>	Q295bz,Q420bz	400	GB/T 20933-2014
<b>electrode flat steel</b>	SAE1006、Q235	130*180、120*245	
<b>U-section steel</b>	20MnK-25MnK	25U、25UY 29U、36U、 40U 18UY、	GB/T 4697-2008 2012JX49
<b>Billet</b>	S15C、S35C、 Q275-Cr3、1535-2 Q235A、Q345	100×100-160×160 60×60、68×68 、90×90	YB/T 002-1991、GB/T 700-2006

## ➤ Strip

### Products catalogue

Classification	Typical grade	Product size	Standard
<b>Hot rolled weathering steel strip</b>	SPA-H	Width 145-276mm Thickness 2.0-5.0mm	JIS G 3125-1987
<b>Hot rolled low carbon and low silicon steel strip</b>	08D1、08D2	Width 145-276mm Thickness 1.5-5.0mm	Q/XG 02.76-2011
<b>Low carbon structural hot rolled steel strip</b>	20MnSi 、23D Q295 、 Q345 Q390 、Q420A Q420B	width 145-530mm Thickness 1.5-7.75mm	Q/XG 02.76-2012 Q/XG 02.76-2012 GB/T 3524--2005
<b>Quality carbon structural hot rolled steel strip</b>	10-50# 40Mn、65Mn、 23Mn	Width 145-530mm Thickness 1.5-7.75mm	GB/T 8749-2008 Q/CB027-2006
<b>carbon structural hot rolled steel strip</b>	Q195、Q215 Q235	Width 145-276mm Thickness 1.5- 5.0mm	GB/T 3524-2005
<b>steel strip for cold rolling</b>	Q195L	Width 350-530mm Thickness 2.5-7.75mm	GB/T 3524--2005
<b>Steel strip for pipeline of crude oil and natural gas transmission</b>	S290	Width 350-530mm Thickness 2.5-7.75mm	GB/T14164-93
<b>Quality carbon structural steel strip</b>	20# 45#	Width 350-530mm Thickness 2.5-7.75 mm	GB/T 8749-88 GB/T 699-99
<b>Carbon structural steel strip</b>	Q235	Width 350-530mm Thickness 2.5-7.75 mm	GB/T 3524--2005