



DONGGUAN CITY OTAI SPECIAL STEEL CO.,LTD

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Otai Special Steel Co.Ltd was founded on June 23rd, 1999 under the name of Alltech Steel. At the beginning, we were retail-oriented and offered mould steel to local factories in Dongguan, in Guangdong Province. Due to rapid growth and development, we adjusted from just the retail market to serving the wholesale market as well. At the same time, we purchased several new and high-tech pieces of machinery, to meet customer demand and expand our operations even further, such as:

- Horizontal Saw
- Vertical Sawing Machine
- CNC Flame Cutting Machines
- Surface Milling
- Face Milling
- Plane Milling
- End Milling
- Grinding Equipment
- Plasma cutting machines
- Lathes

This helped us to serve a wider market and led to more growth and development.

Rapid Growth, New Challenge

On November 20th, 2007, Alltech Steel was renamed Yao Tang Special Steel Co Ltd, and we registered the comprehensive steel company, Otai Special Steel Co Ltd, mainly for international business. In the meantime, based on the original mould steel, we added the following into our business range. mechanical carbon steels, mechanical alloy steels and high speed tool steels.

According to customers' different quality and price requirements, we stock or purchas the right steel materials from various known domestic steel mills, then supply to our customers.

We have experience in desaling various types of producing steel mills, we know the advantages and disadvantages of each mill. We supply the following steel brands:

- Baosteel,
- Wuyang Iron and Steel,
- Northeast Special Steel,
- Wuhan Iron and Steel,
- Changcheng Special Steel,

Product display

- Vallin Iron & Steel,
- Xinyu Steel,
- Xingcheng Special Steel,
- Xiwang Special Steel,
- Shougang,
- And other known mills.

We were now fully operational, with advanced machinery for and high competence in:

- Hot rolled Steel,
- Forged Steel,
- Cold draw hot works steel,
- Cold works steel,
- Plastic mold steel,
- Carbon machinery steel,
- Mechanical alloy steel,
- High speed tool steel,
- Other special steel.

It was an exciting time, and we had only just begun our expansion.

Gaining Confidence, Going Global

We started to explore international market on April 12, 2009. Our products have been exported to Mexico, Columbia, Brazil, Turkey, Dubai, Saudi Arabia, Algeria, Syria, Iran, Egypt, Philippines, Indonesia, Malaysia, Singapore, Vietnam, India and so on. Our customers are mainly located in Latin America, the Middle East and Southeast Asia.

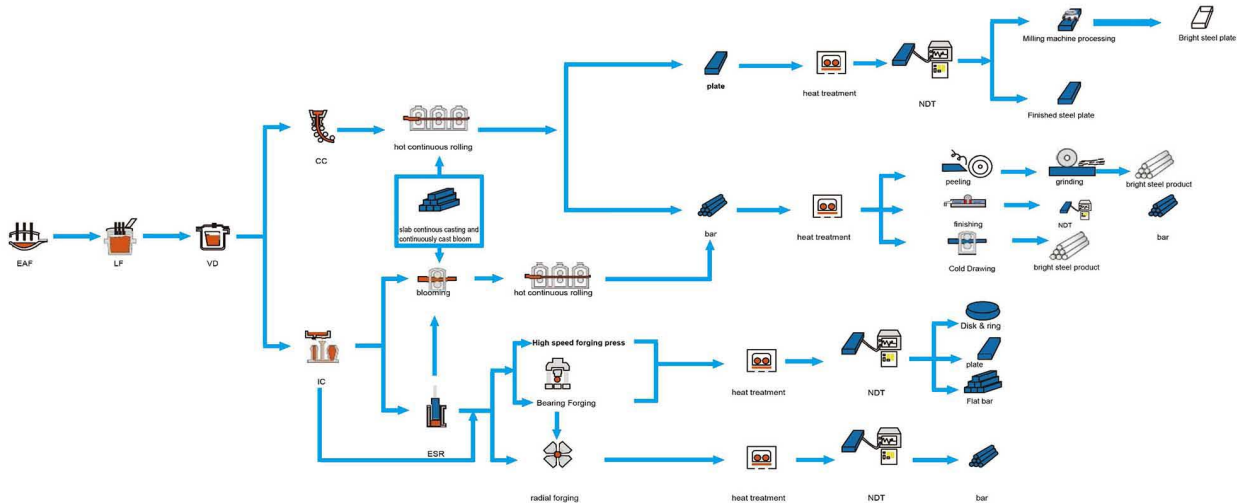
Our Success Formula

Although we are not the biggest company in China, we are able to choose the right mills and the right steel brands for our customers. We make decisions quickly and pride ourselves on the high standard of supplied products, delivery and customer satisfaction!



Process Flow

DONGGUAN CITY OTAI SPECIAL STEEL CO.LTD



Steel Making



Steel Ingot

Hot Forging



Hot Rolling

Turning Process



Milling Process

Vertical Saw Cutting



Horizontal Saw Cutting

Finished Steel Products



Loading & Delivery



Alloy steel ASTM 4140



Alloy steel ASTM 4140

Product display



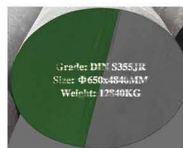
Alloy steel DIN 18NiCrMo5



Alloy steel ASTM 4340



Carbon steel DIN C45



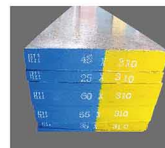
Carbon steel DIN S355JR



Carbon steel ASTM 1020



Hot work tool steel JIS SKD61



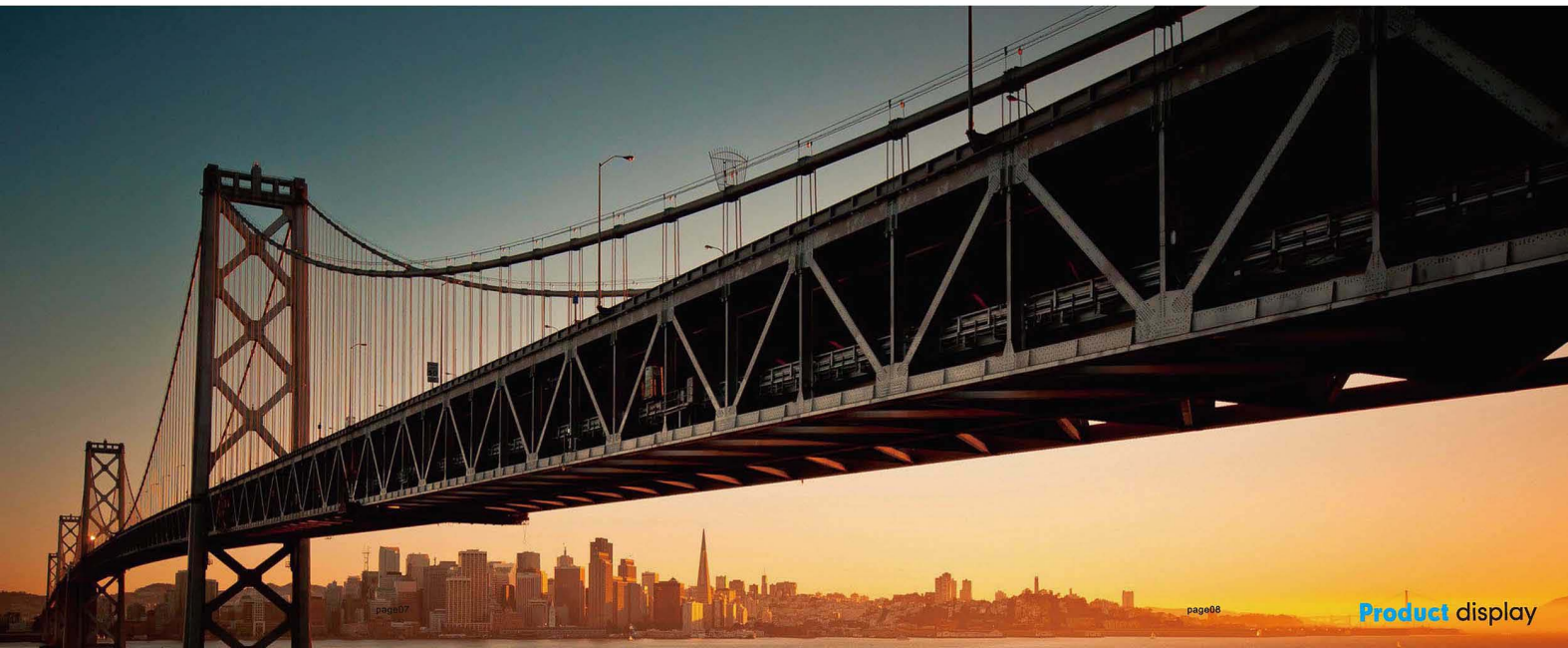
Hot work tool steel ASTM H11



High speed tool steel ASTM M2



High speed tool steel DIN 1.3243

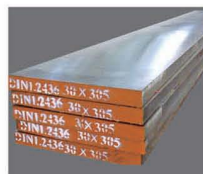




Cold work tool steel ASTM A2



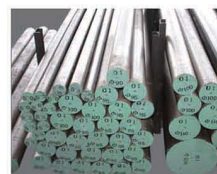
Cold work tool steel DIN 1.2080



Cold work tool steel DIN 1.2436



Cold work tool steel ASTM D2



Cold work tool steel ASTM O1



Plastic mould steel DIN 1.2083

Different Steel Grades and Equivalents

DONGGUAN CITY OTAI SPECIAL STEEL CO.,LTD

GB	DIN	W-Nr.	NF	ISO	JIS	ROCT	SS	BS	ASTM	UNS	KS
Q235A	S235JR	1.0037	S235JR	Fe 360A	S ₄₀₀	Cr.3 ₀₀ -2	1311	S235JR	A570 Gr.A	K02501	K02501
Q235B	S235JRC1	1.0036	S235JRG1	Fe 360D	(SS 41)	Cr.3 ₀₀ -3	1312	S235JRG1	A570 Gr.D	K02502	K02502
20	C22E/Ck22	1.1151	C22E/XC18	...	S20C		20	1435	C22E/070M20	1020	G10200
45	C45E/Ck45	1.1151	C45E/XC48	C45E4	S45C		45	1660	C45E/080M46	1045	G10450
50	C50E/Ck53	1.1206	C50E	C50E4	S50C		50	1674	C50E/080M50	1050	G10500
55	C55E/Ck55	1.1203	C55E/XC55	C55E4	S55C		55	1665	C55E/070M55	1050	G10550
T10	C105W	1.1545	(C105E2U)	TC105	SK3/SK4	y10	1880	BW1B	W1A-9/2	T72301	STC3
GCr15	100Cr6/(W3)	1.3505	100C6	1	SLU2	IIIX15	SKF3	535A99	E52100	G52986	STB3
G20CrNiMo	21NiCrMo2	1.8523	20NCD2	12	SNCM220		SKF152	805A20	A534 8820H		SNCM220
9Cr18Mo	X102CrMo17	1.3543	Z100CD17	21	SUS440C		SKF577 STORA577		A756 440C		STS440C
20Mn2	20Mn6	1.1169	20M5	22Mn6	Smm420	20r2		150M19	1320		Smm420
15Cr	15Cr3	1.7015	12C3		SCr415	15X		523A14 523M15	5115	G51150	SCr415
20Cr	20Cr4	1.7027	18C3	20Cr4	SCr420	20X		527A20	5120	G51200	SCR420
30Cr	28Cr4	1.7030	32C4		SCr430	30X		530A30	5130	G51300	SCR430
35Cr	34Cr4	1.7033	38C4	34Cr4	SCr435	35X		530A36	5135	G51350	SCR435
40Cr	41Cr4	1.7035	42C4	41Cr4	SCr440	40X	2245	530A40 530M40	5140	G51400	SCR440
20CrMo	20CrMo5	1.7264	18CD4	18CrMo4	SCM420	20XM		CDS12	4118	G41180	SCM420
35CrMo	34CrMo4	1.7220	35CD4	34CrMo4	SCM435	35XM	2234	708A37	4135	G41350	SCM435
42CrMo	42CrMo4	1.7225	42CD4	42CrMo4	SCM440	35XMΦ	2244	708M40	4140	G41400	SCM440
50CrVA	51CrV4 50CrV4	1.8159	50CV4	13	SUP10	50XΦA	2230	735A50	6150	G61500	SPS6
12CrNi2	14NiCr10	1.5732	14NC11		SNC415	12XΦA			3415		SNC415
12CrNi3	14NiCr14	1.5752	14NC12	15NiCr13	SNC815	12XH3A		665A12 665M13	3310	G33100	SNC815
30CrNi3	31NiCr14	1.5755	30NC11		SNC836	30XH3A		656M31	3435		SNC836
20CrNiMo	21NiCrMo2	1.8523	20NCD2	20NiCrMo2	SNCM220	20XHM	2506	809M20	8620	G86200	SNCM220
40CrNiMo	36CrNiMo4	1.8511	40NCD3		SNCM439	40XHM		818M40	4340	G43400	SNCM439

Different Steel Grades and Equivalents

DONGGUAN CITY OTAI SPECIAL STEEL CO.,LTD

GB	DIN	W-Nr.	NF	ISO	JIS	ROCT	SS	BS	ASTM	UNS	KS
2Cr13	X20Cr13	1.4021	Z20C13	X20Cr13	SUS420J1	12X12	2303	420S37	420	S42000	STS420J1
3Cr13	X30Cr13	1.4028	Z30C13	X30Cr13	SUS420J2	30X13	2304	420S45			STS420J2
4Cr13	X38Cr13		Z40C14	X38Cr13		40X13					
6CrW2Si	≈45WCrV7	1.2542	≈45WCrV8	≈45WCrV2		5XB2C	≈2710	BS1	S1	T41901	
8CrW2Si	≈80WCrV7	1.2550	(≈55WC20)	≈80WCrV2		6XB2C					
Cr12	X210Cr12	1.2080	X200Cr12	210Cr12	SKD11	X12		BD3	D3	T30403	STD1
Cr12MoV	X185CrMoV12	1.2601			SKD11	X12M	2310				STD11
Cr12Mo1V1	X155CrMoV12-1	1.2379	X160CrMoV12	X160CrMoV12				BD2	D2	T30402	
Cr5Mo1V	X100CrMoV5-1	1.2363	X100CrMoV5	X100CrMoV5	SKD12		2260	BA2	A2	T30102	STS12
9Mn2V	90MnCrV8	1.2842	90MnV8	90MnV2				BO2	O2	T31502	
CrWMn	105WCr6	1.2419	105WCr5	105WCr1	SKS31	XBr					STS31
9CrWMn	100MnCrW4	1.2510	90MnWCrV5	95MnWCr1	SKS3	9XBr	2140	B01	O1	T31501	STS3
3Cr2Mo	≈40CrMnMo7	1.2311				5XM				P20	
5CrNiMo	55NiCrMoV6	1.2713	55NiCrMoV7	55NiCrMoV2	SKT4	5XHM	≈2550	BH224/5	L6	T81206	STT4
30Cr2W8V	X30WCrV9-3	1.2581	X30WCrV9	30WCrV9	SKD05	3X2B8Φ	2730	BH21	H21	T20821	STD5
4Cr3Mo3SiV	≈X32CrMoV3-3	1.2385	≈32CrMoV12-28			3X3M3Φ		BH10	H10	T20810	
4Cr5MoSiV	X38CrMoV5-1	1.2343	X38CrMoV5	35CrMoV5	SKD06	4X5MΦC		BH11	H11	T20811	STD6
4Cr5MoSiV	X40CrMoV5-1	1.2344	X40CrMoV5	40CrMoV5	SKD061	4X5MΦC		BH13	H13	T20813	STD61
W18Cr4V	S18-0-1	1.3355	HS18-0-1	HS18-0-1	SKH2	P18	2750	BTI	T1	T12001	SKH2
W18Cr4VCo5	S18-1-2-5	1.3255	HS18-1-1-5	HS18-1-1-15	SKH3	≈P18K5Φ2	2754	BT4	T4	T12004	SKH3
W18Cr4V2Co8	≈S18-1-2-10	1.3265	HS18-0-2-9		≈SKH4		2756	BT5	T5	T12005	≈SKH4
W12Cr4V5Co5	S12-1-4-5	1.3202	HS12-1-5-5	HS12-1-5-5	SKH10	P10K5Φ5		BT15	T15	T12015	SKH10
W6Mo5Cr4V2	S6-5-2	1.3343		HS6-5-2	SKH9	P6M5	2722	BM2	M2	T11302	SKH9
W8Mo5Cr4V2Co5	S6-5-2-5	1.3243	HS6-5-2-5	HS6-5-2-5	SKH55	P6M5K5	2723				SKH55
W7Mo4Cr4V2Co5	S7-4-2-5	1.3246	HS7-4-2-5							MM1	T11341
W2Mo9Cr4VCo8	S2-10-1-8	1.3247	HS2-9-1-8	HS2-9-1-8	SKH59		2716	BM42	M42	T11342	SKH59

Type	Carbon		Manganese		Phosphorus	Sulfur	Silicon		Chromium		Vanadium		Tungsten		Molybdenum		Others	Preheat Temperature, (°C)	Austenitizing Temperature, (°C)		Austenitizing Time (minutes)	Quench Medium	Tempering Temperature, (°C)	Minimum Hardness, RC
	min	max	min	max	max	max	min	max	min	max	min	max	min	max	min	max			Salt Bath	Controlled Atmosphere Furnace				
H10	0.35	0.45	0.20	0.70	0.030	0.030	0.80	1.25	3.00	3.75	0.25	0.75	...	...	2.00	3.00	788	1010	1024	5-5	Air	552	55
H11	0.33	0.43	0.20	0.60	0.030	0.030	0.80	1.25	4.75	5.50	0.30	0.60	...	...	1.10	1.60	788	996	1010	5-5	Air	552	53
H12	0.30	0.40	0.20	0.60	0.030	0.030	0.80	1.25	4.75	5.50	0.20	0.50	1.00	1.70	1.25	1.75	788	996	1010	5-5	Air	552	53	
H13	0.32	0.45	0.20	0.60	0.030	0.030	0.80	1.25	4.75	5.50	0.80	1.20	...	...	1.10	1.75	788	996	1010	5-5	Air	552	52
H14	0.35	0.45	0.20	0.60	0.030	0.030	0.80	1.25	4.75	5.50	...	...	4.00	5.25	...	...	788	1038	1052	5-5	Air	552	55
H19	0.32	0.45	0.20	0.50	0.030	0.030	0.15	0.50	4.00	4.75	1.75	2.20	3.75	4.50	0.30	0.55	Co 4.00-4.50	788	1177	1191	5-6	Air	552	55
H21	0.26	0.36	0.15	0.40	0.030	0.030	0.15	0.50	3.00	3.75	0.30	0.60	8.50	10.00	...	...	788	1177	1191	5-5	Air	552	52
H22	0.30	0.40	0.15	0.40	0.030	0.030	0.15	0.40	1.75	3.75	0.25	0.50	10.00	11.75	...	...	788	1177	1191	5-5	Air	552	53
H23	0.25	0.35	0.15	0.40	0.030	0.030	0.15	0.60	11.00	12.75	0.75	1.25	11.00	12.75	...	...	816	1246	1260	5-5	Oil	649	42
H24	0.42	0.53	0.15	0.40	0.030	0.030	0.15	0.40	2.50	3.00	0.40	0.60	14.00	16.00	...	...	788	1204	1218	5-5	Air	552	55
H25	0.22	0.32	0.15	0.40	0.030	0.030	0.15	0.40	3.75	4.50	0.40	0.60	14.00	16.00	...	...	788	1232	1246	5-5	Air	552	44
H26	0.45	0.55 ^{6E}	0.15	0.40	0.030	0.030	0.15	0.40	3.75	4.50	0.75	1.25	17.25	19.00	...	...	843	1246	1260	5-5	Air	552	58
H41	0.60	0.75 ^{6E}	0.15	0.40	0.030	0.030	0.20	0.45	3.50	4.00	1.00	1.30	1.40	2.10	8.20	9.20	788	1163	1177	5-5	Air	552	60	
H42	0.55	0.70 ^{6E}	0.15	0.40	0.030	0.030	0.20	0.45	3.75	4.50	1.75	2.20	5.50	6.75	4.50	5.50	788	1191	1204	5-5	Air	552	60	
H43	0.50	0.65 ^{6E}	0.15	0.40	0.030	0.030	0.20	0.45	3.75	4.50	1.80	2.20	...	...	7.75	8.50	788	1177	1191	5-5	Air	552	58
A2	0.95	1.05	0.40	1.00	0.030	0.030	0.10	0.50	4.75	5.50	0.15	0.50	...	...	9.50	1.40	788	941	954	5-5	Air	204	60
A3	1.20	1.30	0.40	0.80	0.030	0.030	0.10	0.70	4.75	5.50	0.80	1.40	...	...	0.90	1.40	788	968	962	5-5	Air	204	63
A4	0.95	1.05	1.80	2.20	0.030	0.030	0.10	0.70	0.90	2.20	...	...	...	...	0.90	1.40	877	843	857	5-5	Air	204	63
A5	0.95	1.05	2.80	3.20	0.030	0.030	0.10	0.70	0.90	1.40	...	...	...	...	0.90	1.40	...	...	...	5-5	Air	204	61
A6	0.65	0.75	1.80	2.50	0.030	0.030	0.10	0.70	0.90	1.40	...	...	...	...	0.90	1.40	649	829	843	5-5	Air	204	58
A7	2.00	2.85	0.20	0.80	0.030	0.030	0.10	0.70	5.00	5.75	3.90	5.15	0.50	1.50	0.90	1.40	816	954	968	5-5	Air	204	63	
A8	0.50	0.60	0.20	0.50	0.030	0.030	0.75	1.10	4.75	5.50	...	...	1.00	1.50	1.15	1.65	788	996	1010	5-5	Air	510	56
A9	0.45	0.55	0.20	0.50	0.030	0.030	0.95	1.15	4.75	5.50	0.80	1.40	1.30	1.80	Ni 1.25-1.75	788	996	1010	5-5	Air	510	56
A10	1.25	1.50	1.60	2.10	0.030	0.030	1.00	1.50	1.25	1.75	Ni 1.55-2.05	649	802	816	5-5	Air	204	59
D2	1.40	1.60	0.10	0.60	0.030	0.030	0.10	0.60	11.00	13.00	0.50	1.10	0.70	1.20	...	816	996	1010	10-0	Air	204	59
D3	2.00	2.35	0.10	0.60	0.030	0.030	0.10	0.60	11.00	13.50	...	...	1.00	...	...	...	816	954	968	10-0	Oil	204	61
D4	2.05	2.40	0.10	0.60	0.030	0.030	0.10	0.60	11.00	13.00	0.15	1.00	...	...	0.70	1.20	816	962	996	10-0	Air	204	62
D5	1.40	1.60	0.10	0.60	0.030	0.030	0.10	0.60	11.00	13.00	1.00	...	0.70	1.20	Co 2.50-3.5	816	996	1010	10-0	Air	204	61
D7	2.15	2.50	0.10	0.60	0.030	0.030	0.10	0.60	11.50	13.50	3.80	4.40	...	...	0.70	1.20	816	1052	1066	10-0	Air	204	63
O1	0.85	1.00	1.00	1.40	0.030	0.030	0.10	0.50	0.40	0.70	...	0.30	0.40	0.60	...	...	649	788	802	5-5	Oil	204	59
O2	0.85	0.95	1.40	1.80	0.030	0.030	...	0.50	...	0.50	...	0.30	...	...	0.30	...	649	788	802	5-5	Oil	204	59
O6	1.25	1.55	0.30	1.10	0.030	0.030	0.55	1.50	...	0.30	...	0.30	...	...	0.20	0.30	...	788	802	5-5	Oil	204	59
O7	1.10	1.30	0.20	1.00	0.030	0.030	0.10	0.60	0.35	0.85	0.15	0.40	1.00	2.00	...	0.30	649	857	871	5-5	Oil	204	62	
S1	0.40	0.55	0.10	0.40	0.030	0.030	0.15	1.20	1.00	1.80	0.15	0.30	1.50	3.00	...	0.50	677	841	854	5-5	Oil	204	56	
S2	0.40	0.55	0.30	0.50	0.030	0.030	0.90	1.20	...	...	...	0.50	...	...	0.30	0.60	677	885	899	5-5	Brine	204	58
S4	0.50	0.65	0.60	0.95	0.030	0.030	1.75	2.25	0.10	0.50	0.15	0.35	...	...	...	...	677	885	899	5-5	Oil	204	58
S5	0.50	0.65	0.60	1.00	0.030	0.030	1.75	2.25	0.10	0.50	0.15	0.35	...	...	0.20	1.35	677	885	899	5-5	Oil	204	58
S6	0.40	0.50	1.20	1.50	0.030	0.030	2.00	2.50	1.20	1.50	0.20	0.40	...	...	0.30	0.50	788	927	941	5-5	Oil	204	56
S7	0.45	0.55	0.20	0.90	0.030	0.030	0.20	1.00	3.00	3.50	...	0.35	...	...	1.30	1.80	677	941	954	5-5	Air	204	56
L2	0.45	1.00	0.10	0.90	0.030	0.030	0.10	0.50	0.70	1.20	0.10	0.30	...	...	...	0.25	649	857	871	5-5	Oil	204	53A
L3	0.95	1.10	0.25	0.80	0.030	0.030	0.10	0.50	1.30	1.70	0.10	0.30	...	...	...	...	649	829	843	5-5	Oil	204	62
L6	0.65	0.75	0.25	0.80	0.030	0.030	0.10	0.50	0.60	1.20	0.50	Ni 1.25 - 2.00	649	816	829	5-5	Oil	204	58
F1	0.95	1.25	...	0.50	0.030	0.030	0.10	0.50	...	...	...	...	1.00	1.75	...	...	649	829	843	5-5	Brine	204	64
F2	1.20	1.40	0.10	0.50	0.030	0.030	0.10	0.50	0.20	0.40	3.00	4.50	649	829	843	5-5	Brine	204	64
P2	...	0.10	0.10	0.40	0.030	0.030	0.10	0.40	0.75	1.25	0.15	0.40	Ni 0.10-0.50
P3	...	0.10	0.20	0.60	0.030	0.030	...	0.40	0.40	0.75	Ni 1.00-1.50
P4	...	0.12	0.20	0.60	0.030	0.030	0.10	0.40	4.00	5.25	0.40	1.00
P5	0.06	0.10	0.20	0.60	0.030	0.030	0.10	0.40	2.00	2.50	0.35
P6	0.05	0.15	0.35	0.70	0.030	0.030	0.10	0.40	1.25	1.75	Ni 3.25 - 3.75
P20	0.28	0.40	0.60	1.00	0.030	0.030	0.20	0.80	1.40	2.00	0.30	0.55
P21F	0.18	0.22	0.20	0.40	0.030	0.030	0.20	0.40	0.20	0.30	0.15	0.25	Ni 3.90-4.25

Type	Carbon		Manganese		Phosphorus	Sulfur	Silicon		Chromium		Vanadium		Tungsten		Molybdenum		Cobalt		Annealed BHN	Austenitizing Temperature, (°C)		Tempering Temperature (°C)	Minimum Hardness, Rockwell C	
	min	max	min	max	max	max	min	max	min	max	min	max	min	max	min	max	min	max		Salt Bath	Controlled Atmosphere Furnace			
Tungsten-Type High-Speed Steels											Tungsten-Type High-Speed Steels													
T1	0.85	0.80	0.10	0.40	0.03	0.03	0.20	0.40	3.75	4.50	0.90	1.30	17.25	18.75	...	...	...	...	255	1277	1288	552	63	
T2	0.80	0.90	0.20	0.40	0.03	0.03	0.20	0.40	3.75	4.50	1.80	2.40	17.50	19.00	...	1.00	...	...	255	1277	1288	552	63	
T4	0.70	0.80	0.10	0.40	0.03	0.03	0.20	0.40	3.75	4.50	0.80	1.20	17.50	19.00	0.40	1.00	4.25	5.75	269	1277	1288	552	63	
T5	0.75	0.85	0.20	0.40	0.03	0.03	0.20	0.40	3.75	5.00	1.80	2.40	17.50	19.00	0.50	1.25	7.00	9.50	285	1277	1288	552	63	
T6	0.75	0.85	0.20	0.40	0.03	0.03	0.20	0.40	4.00	4.75	1.50	2.10	18.50	21.00	0.40	1.00	11.00	13.00	302	1277	1288	552	63	
T8	0.75	0.85	0.20	0.40	0.03	0.03	0.20	0.40	3.75	4.50	1.80	2.40	13.25	14.75	0.40	1.00	4.25	5.75	255	1277	1288	552	63	
T15	1.50	1.60	0.15	0.40	0.03	0.03	0.15	0.40	3.75	5.00	4.50	5.25	11.75	13.00	...	1.00	4.75	5.25	277	1227	1238	538	65	
Molybdenum-Type High-Speed Steels											Molybdenum-Type High-Speed Steels													
M1	0.78	0.88	0.15	0.40	0.03	0.03	0.20	0.50	3.50	4.00	1.00	1.35	1.40	2.10	8.20	9.20	...	...	248	1196	1207	552	64	
M2	regular C	0.78	0.88	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.75	2.20	5.50	6.75	4.50	5.50	...	...	248	1216	1227	552	64
		high C	0.95	1.05	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.75	2.20	5.50	6.75	4.50	5.50	255	1204	1216	552	65
M3	Class 1	1.00	1.10	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	2.25	2.75	5.00	6.75	4.75	6.50	...	...	255	1204	1216	552	64
		Class 2	1.15	1.25	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	2.75	3.25	5.00	6.75	4.75	6.50	1204	1216	552	64
M4		1.25	1.40	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.75	3.75	4.50	5.25	6.50	4.25	5.50	...	...	255	1204	1216	552	64
M6		0.75	0.85	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.30	1.70	3.75	4.75	4.50	5.50	11.00	13.00	277	1188	1199	552	64
M7		0.97	1.05	0.15	0.40	0.03	0.03	0.20	0.55	3.50	4.00	1.75	2.25	1.40	2.10	8.20	9.20	...	...	255	1204	1216	552	65
M10	regular C	0.84	0.94	0.10	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.80	2.20	...	...	7.75	8.50	...	...	248	1196	1207	552	63
		high C	0.95	1.05	0.10	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.80	2.20	7.75	8.50	255	1196	1207	552	64
M30		0.75	0.85	0.15	0.40	0.03	0.03	0.20	0.45	3.50	4.25	1.00	1.40	1.30	2.30	7.75	9.00	4.50	5.50	269	1204	1216	552	64
M33		0.85	0.92	0.15	0.40	0.03	0.03	0.15	0.50	3.50	4.00	1.00	1.35	1.30	2.10	9.00	10.00	7.75	8.75	269	1204	1216	552	65
M34		0.85	0.92	0.15	0.40	0.03	0.03	0.20	0.45	3.50	4.00	1.90	2.30	1.40	2.10	7.75	9.20	7.75	8.75	269	1204	1216	552	64
M36		0.80	0.90	0.15	0.40	0.03	0.03	0.20	0.45	3.75	4.50	1.75	2.25	5.50	6.50	4.50	5.50	7.75	8.75	269	1204	1216	552	64
M41		1.05	1.15	0.20	0.80	0.03	0.03	0.15	0.50	3.75	4.50	1.75	2.25	6.25	7.00	3.25	4.25	4.75	5.75	269	1190	1202	538	66
M42		1.05	1.15	0.15	0.40	0.03	0.03	0.15	0.85	3.50	4.25	0.95	1.35	1.15	1.85	9.00	10.00	7.75	8.75	269	1177	1188	538	66
M43		1.15	1.25	0.20	0.40	0.03	0.03	0.15	0.65	3.50	4.25	1.50	1.75	2.25	3.00	7.50	8.50	7.75	8.75	269	1177	1188	538	66
M44		1.10	1.20	0.20	0.40	0.03	0.03	0.30	0.55	4.00	4.75	1.85	2.20	5.00	5.75	6.00	7.00	11.00	12.25	285	1188	1199	538	66
M46		1.22	1.30	0.20	0.40	0.03	0.03	0.40	0.85	3.70	4.20	3.00	3.30	1.90	2.20	8.00	8.50	7.80	8.80	269	1204	1216	538	66
M47		1.05	1.15	0.15	0.40	0.03	0.03	0.20	0.45	3.50	4.00	1.15	1.35	1.30	1.80	9.25	10.00	4.75	5.25	269	1190	1202	538	66
M48		1.42	1.52	0.15	0.40	0.03	0.07	0.15	0.40	3.50	4.00	2.75	3.25	9.50	10.50	4.75	5.50	8.00	10.00	311	1190	1202	538	66
M62		1.25	1.35	0.15	0.40	0.03	0.07	0.15	0.40	3.50	4.00	1.80	2.10	5.75	6.50	10.00	11.00	...	...	285	1190	1202	538	66
Intermediate High Speed Steels											Intermediate High Speed Steels													
M50		0.78	0.88	0.15	0.45	0.03	0.03	0.20	0.60	3.75	4.50	0.80	1.25	...	...	3.90	4.75	...	...	248	1104	1116	538	61
M52		0.85	0.95	0.15	0.45	0.03	0.03	0.20	0.60	3.50	4.30	1.65	2.25	0.75	1.50	4.00	4.90	...	...	248	1163	1174	538	63

American Standard alloy steel

Chemical Requirements

DOMESTIC CITY SPECIAL STEEL CO., LTD.



Grade Designation	Heat Chemical Ranges and Limits, %							
	Carbon	Manganese	Phosphorus, max	Sulfur, max	Silicon*	Nickel	Chromium	Molybdenum
4028	0.25-0.30	0.70-0.90	0.035	0.035-0.050	0.15 to 0.35	...	...	0.20-0.30
4032	0.30-0.35	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.20-0.30
4037	0.35-0.40	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.20-0.30
4042	0.40-0.45	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.20-0.30
4047	0.45-0.50	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.20-0.30
4118	0.18-0.23	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.40-0.60	0.08-0.15
4120	0.18-0.23	0.90-1.20	0.035	0.040	0.15 to 0.35	...	0.40-0.60	0.13-0.20
4121	0.18-0.23	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.45-0.65	0.20-0.30
4130	0.28-0.33	0.40-0.60	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4135	0.33-0.38	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4137	0.35-0.40	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4140	0.38-0.43	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4142	0.40-0.45	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4145	0.43-0.48	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4147	0.45-0.50	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4150	0.48-0.53	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.80-1.10	0.15-0.25
4161	0.56-0.64	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.70-0.90	0.25-0.35
4320	0.17-0.22	0.45-0.65	0.035	0.040	0.15 to 0.35	1.65-2.00	0.40-0.60	0.20-0.30
4340	0.38-0.43	0.60-0.80	0.035	0.040	0.15 to 0.35	1.65-2.00	0.70-0.90	0.20-0.30
E4340	0.38-0.43	0.65-0.85	0.025	0.025	0.15 to 0.35	1.65-2.00	0.70-0.90	0.20-0.30
4419	0.18-0.23	0.45-0.65	0.035	0.040	0.15 to 0.35	...	...	0.45-0.60
4422	0.20-0.25	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.35-0.45
4427	0.24-0.29	0.70-0.90	0.035	0.040	0.15 to 0.35	...	...	0.35-0.45
4615	0.13-0.18	0.45-0.65	0.035	0.040	0.15 to 0.35	1.65-2.00	...	0.20-0.30
4620	0.17-0.22	0.45-0.65	0.035	0.040	0.15 to 0.35	1.65-2.00	...	0.20-0.30
4621	0.18-0.23	0.70-0.90	0.035	0.040	0.15 to 0.35	1.65-2.00	...	0.20-0.30
4626	0.24-0.29	0.45-0.65	0.035	0.040	0.15 to 0.35	0.70-1.00	...	0.15-0.25
4715	0.13-0.18	0.70-0.90	0.035	0.040	0.15 to 0.35	0.70-1.00	0.45-0.65	0.45-0.60
4718	0.16-0.21	0.70-0.90	0.035	0.040	0.15 to 0.35	0.90-1.20	0.35-0.55	0.30-0.40
4720	0.17-0.22	0.50-0.70	0.035	0.040	0.15 to 0.35	0.90-1.20	0.35-0.55	0.15-0.25
4815	0.13-0.18	0.40-0.60	0.035	0.040	0.15 to 0.35	3.25-3.75	...	0.20-0.30
4817	0.15-0.20	0.40-0.60	0.035	0.040	0.15 to 0.35	3.25-3.75	...	0.20-0.30
4820	0.18-0.23	0.50-0.70	0.035	0.040	0.15 to 0.35	3.25-3.75	...	0.20-0.30
5015	0.12-0.17	0.30-0.50	0.035	0.040	0.15 to 0.35	...	0.30-0.50	...
5046	0.43-0.48	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.20-0.35	...
5115	0.13-0.18	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5120	0.17-0.22	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5130	0.28-0.33	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.80-1.10	...

Grade Designation	Heat Chemical Ranges and Limits, %							
	Carbon	Manganese	Phosphorus, max	Sulfur, max	Silicon*	Nickel	Chromium	Molybdenum
5132	0.30-0.35	0.60-0.80	0.035	0.040	0.15 to 0.35	...	0.75-1.00	...
5135	0.33-0.38	0.60-0.80	0.035	0.040	0.15 to 0.35	...	0.80-1.05	...
5140	0.38-0.43	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5145	0.43-0.48	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5147	0.46-0.51	0.70-0.95	0.035	0.040	0.15 to 0.35	...	0.85-1.15	...
5150	0.48-0.53	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5155	0.51-0.59	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
5160	0.56-0.61	0.75-1.00	0.035	0.040	0.15 to 0.35	...	0.70-0.90	...
E50100	0.98-1.10	0.25-0.45	0.025	0.025	0.15 to 0.35	...	0.40-0.60	...
E51100	0.98-1.10	0.25-0.45	0.025	0.025	0.15 to 0.35	...	0.90-1.15	...
E52100	0.98-1.10	0.25-0.45	0.025	0.025	0.15 to 0.35	...	1.30-1.60	...
52100 ⁸	0.93-1.05	0.25-0.45	0.025	0.015	0.15 to 0.35	...	1.35-1.60	...
6118	0.16-0.21	0.50-0.70	0.035	0.040	0.15 to 0.35	...	0.50-0.70	(0.10-0.15 V)
6150	0.48-0.53	0.70-0.90	0.035	0.040	0.15 to 0.35	...	0.80-1.10	(0.15 min V)
8115	0.13-0.18	0.70-0.90	0.035	0.040	0.15 to 0.35	0.20-0.40	0.30-0.50	0.08-0.15
8615	0.13-0.18	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8617	0.15-0.20	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8620	0.18-0.23	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8622	0.20-0.25	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8625	0.23-0.28	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8627	0.25-0.30	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8630	0.28-0.33	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8637	0.35-0.40	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8640	0.38-0.43	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8642	0.40-0.45	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8645	0.43-0.48	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8650	0.48-0.53	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8655	0.51-0.59	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8660	0.56-0.64	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.15-0.25
8720	0.18-0.23	0.70-0.90	0.035	0.040	0.15 to 0.35	0.40-0.7	0.40-0.60	0.20-0.30
8740	0.38-0.43	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.20-0.30
8822	0.20-0.25 ¹	0.75-1.00	0.035	0.040	0.15 to 0.35	0.40-0.70	0.40-0.60	0.30-0.40
9254	0.51-0.59	0.60-0.80	0.035	0.040	1.20-1.60	...	0.60-0.80	...
9255	0.51-0.59	0.70-0.95	0.035	0.040	1.80-2.20	...	...	...
9259	0.56-0.64	0.75-1.00	0.035	0.040	0.70-1.10	...	0.45-0.65	...
9260	0.56-0.64	0.75-1.00	0.035	0.040	1.80-2.20	...	...	...
E9310	0.08-0.13	0.45-0.65	0.025	0.025	0.15 to 0.30	3.00-3.50	1.00-1.40	0.08-0.15

Steel name	W.N.	Chemical composition												Hardness (annealed) HRA HB max	Hardening test					
		C	Si	Mn	S	P	Cr	Mo	Ni	V	W	Co	Hardening temperature °C (±10°C)		Quen- ching medium	Tempering temperature °C (±10°C)	Hardness HRC min.			
Alloy cold-work tool steels																				
105V	1.2834	1.00 to 1.10	0.10 to 0.30	0.10 to 0.40	≤0.030	≤0.030	—	—	—	0.10 to 0.20	—	—	—	—	—	212	790	Water	180	61
50WCrV8	1.2549	0.45 to 0.55	0.70 to 1.00	0.15 to 0.45	≤0.030	≤0.030	0.90 to 1.20	—	—	0.10 to 0.20	1.70 to 2.20	—	—	—	—	228	920	Oil	180	56
60WCrV8	1.2550	0.55 to 0.65	0.70 to 1.00	0.15 to 0.45	≤0.030	≤0.030	0.90 to 1.20	—	—	0.10 to 0.20	1.70 to 2.20	—	—	—	—	228	910	Oil	180	58
102Cr6	1.2067	0.95 to 1.10	0.15 to 0.35	0.25 to 0.45	≤0.030	≤0.030	1.35 to 1.65	—	—	—	—	—	—	—	—	223	840	Oil	180	60
21MnCr5	1.2162	0.18 to 0.24	0.15 to 0.35	1.10 to 1.40	≤0.030	≤0.030	1.00 to 1.30	—	—	—	—	—	—	—	—	217	e	e	e	e
70MnMoCr8	1.2824	0.65 to 0.75	0.10 to 0.50	1.80 to 2.50	≤0.030	≤0.030	0.90 to 1.20	0.90 to 1.40	—	—	—	—	—	—	—	248	835	Air	180	58
90MnCrV8	1.2842	0.85 to 0.95	0.10 to 0.40	1.80 to 2.20	≤0.030	≤0.030	0.20 to 0.50	—	—	0.05 to 0.20	—	—	—	—	—	229	790	Oil	180	60
95MnWCr5	1.2825	0.90 to 1.00	0.10 to 0.40	1.05 to 1.35	≤0.030	≤0.030	0.40 to 0.65	—	—	0.05 to 0.20	0.40 to 0.70	—	—	—	—	229	800	Oil	180	60
X100CrMoV5	1.2363	0.95 to 1.05	0.70 to 0.40	0.40 to 0.80	≤0.030	≤0.030	4.80 to 5.50	0.90 to 1.20	—	0.15 to 0.35	—	—	—	—	—	241	970	Air	180	60
X163CrMoV12	1.2379	1.45 to 1.60	0.10 to 0.60	0.20 to 0.60	≤0.030	≤0.030	11.00 to 13.00	0.70 to 1.00	—	0.70 to 1.00	—	—	—	—	—	255	1020	Air	180	61
X210Cr12	1.2080	1.90 to 2.20	0.10 to 0.60	0.20 to 0.60	≤0.030	≤0.030	11.00 to 13.00	—	—	—	—	—	—	—	—	248	970	Oil	180	62
X210CrW12	1.2436	2.00 to 2.30	0.10 to 0.40	0.30 to 0.60	≤0.030	≤0.030	11.00 to 13.00	—	—	—	—	0.60 to 0.80	—	—	—	255	970	Oil	180	62
35CrMo7	1.2302	0.30 to 0.40	0.30 to 0.70	0.60 to 1.00	≤0.030	≤0.030	1.50 to 2.00	0.35 to 0.55	—	—	—	—	—	—	—	/	/	/	/	/
40CrMnNiMo8-6-4	1.2738	0.35 to 0.45	0.20 to 0.40	1.30 to 1.60	≤0.030	≤0.030	1.80 to 2.10	0.15 to 0.25	0.90 to 1.20g	—	—	—	—	—	—	/	/	/	/	/
40CrMnNiMo8-6-4	1.2312	0.35 to 0.45	0.20 to 0.40	1.30 to 1.60	0.050 to 0.100	≤0.030	1.80 to 2.10	0.15 to 0.25	—	—	—	—	—	—	—	/	/	/	/	/
45NiCrMo16	1.2767	0.40 to 0.50	0.10 to 0.40	0.20 to 0.60	≤0.030	≤0.030	1.20 to 1.50	0.15 to 0.35	3.80 to 4.30	—	—	—	—	—	—	285	850	Oil	180	52
X40Cr14	1.2083	0.38 to 0.42	≤1.00	≤1.00	≤0.030	≤0.030	12.50 to 14.50	—	—	—	—	—	—	—	—	241	1010	Oil	180	52
X38CrMo16	1.2316	0.33 to 0.45	≤1.00	≤1.50	≤0.030	≤0.030	15.50 to 17.50	0.80 to 1.30	≤1.00	—	—	—	—	—	—	/	/	/	/	/
40CrNiMo7	1.2311	0.35~0.45	0.20~0.40	1.80~1.60	≤0.035	≤0.035	1.60~2.10	0.15~0.25	—	—	—	—	—	—	—	/	/	/	/	/
Hot-work tool steels																				
55NiCrMoV7	1.2714	0.50 to 0.60	0.10 to 0.40	0.60 to 0.90	≤0.030	≤0.030	0.80 to 1.20	0.35 to 0.55	1.50 to 1.80	0.05 to 0.15	—	—	—	—	—	248	850	Oil	500	42
32CrMoV12-28	1.2365	0.28 to 0.35	0.10 to 0.40	0.15 to 0.45	≤0.030	≤0.030	2.70 to 3.20	2.50 to 3.00	—	0.40 to 0.70	—	—	—	—	—	228	1040	Oil	550	46
X37CrMoV5-1	1.2343	0.33 to 0.41	0.80 to 1.20	0.25 to 0.50	≤0.030	≤0.030	4.80 to 5.50	1.10 to 1.50	—	0.30 to 0.50	—	—	—	—	—	229	1020	Oil	550	48
X38CrMoV9-3	1.2367	0.35 to 0.40	0.30 to 0.50	0.30 to 0.50	≤0.030	≤0.030	4.80 to 5.20	2.70 to 3.20	—	0.40 to 0.60	—	—	—	—	—	229	1040	Oil	550	50
X40CrMoV5-1	1.2344	0.35 to 0.42	0.80 to 1.20	0.25 to 0.50	≤0.030	≤0.030	4.80 to 5.20	1.20 to 1.50	—	0.85 to 1.15	—	—	—	—	—	228	1020	Oil	550	50
50CrMoV13-15	1.2355	0.45 to 0.55	0.20 to 0.80	0.50 to 0.90	≤0.030	≤0.030	3.00 to 3.50	1.30 to 1.70	—	0.15 to 0.35	—	—	—	—	—	248	1010	Oil	510	56
X30WCrV9-3	1.2581	0.25 to 0.35	0.10 to 0.40	0.15 to 0.45	≤0.030	≤0.030	2.50 to 3.20	—	—	0.30 to 0.50	8.50 to 9.50	—	—	—	—	241	1150	Oil	800	48
X35CrNiMoV5	1.2605	0.32 to 0.40	0.80 to 1.20	0.20 to 0.50	≤0.030	≤0.030	4.75 to 5.50	1.25 to 1.60	—	0.20 to 0.50	1.10 to 1.60	—	—	—	—	229	1020	Oil	550	48
38CrNiWV18-17-17	1.2681	0.35 to 0.45	0.15 to 0.50	0.20 to 0.50	≤0.030	≤0.030	4.00 to 4.70	0.30 to 0.50	—	1.70 to 2.10	3.80 to 4.50	4.00 to 4.50	—	—	—	280	1120	Oil	600	48
High-speed tool steel																				
HS0-4-1	1.3325	0.77 to 0.85	≤0.65	≤0.030	≤0.030	3.90 to 4.40	4.00 to 4.50	—	—	0.90 to 1.10	—	—	—	—	—	262	1120	—	560	60
HS1-4-2	1.3326	0.85 to 0.95	≤0.65	≤0.030	≤0.030	3.60 to 4.30	4.10 to 4.80	—	—	1.70 to 2.20	0.80 to 1.40	—	—	—	—	269	1180	—	560	63
HS18-0-1	1.3355	0.73 to 0.83	≤0.45	≤0.030	≤0.030	3.80 to 4.50	—	—	—	1.00 to 1.20	17.20 to 18.70	—	—	—	—	269	1260	—	560	63
HS2-9-2	1.3348	0.95 to 1.05	≤0.70	≤0.030	≤0.030	3.50 to 4.50	8.20 to 9.20	—	—	1.70 to 2.20	1.50 to 2.10	—	—	—	—	269	1200	—	560	64
HS1-8-1	1.3327	0.77 to 0.87	≤0.70	≤0.030	≤0.030	3.50 to 4.50	8.00 to 9.00	—	—	1.00 to 1.40	1.40 to 2.00	—	—	—	—	262	1190	—	560	63
HS3-3-2	1.3333	0.95 to 1.03	≤0.45	≤0.030	≤0.030	3.80 to 4.50	2.50 to 2.90	—	—	2.20 to 2.50	2.70 to 3.00	—	—	—	—	255	1190	—	560	62
HS6-5-2	1.3339	0.80 to 0.88	≤0.45	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.20	—	—	1.70 to 2.10	5.90 to 6.70	—	—	—	—	262	1220	—	560	64
HS6-5-2C	1.3343	0.88 to 0.94	≤0.45	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.20	—	—	1.70 to 2.10	5.90 to 6.70	—	—	—	—	269	1210	—	560	64
HS6-5-3	1.3344	1.15 to 1.25	≤0.45	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.20	—	—	2.70 to 3.20	5.90 to 6.70	—	—	—	—	269	1200	—	560	64
HS6-5-3C	1.3345	1.25 to 1.32	≤0.70	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.20	—	—	2.70 to 3.20	5.90 to 6.70	—	—	—	—	269	1180	—	560	64
HS6-6-2	1.3350	1.00 to 1.10	≤0.45	≤0.030	≤0.030	3.80 to 4.50	5.50 to 6.50	—	—	2.30 to 2.60	5.90 to 6.70	—	—	—	—	262	1200	—	560	64
HS6-5-4	1.3351	1.25 to 1.40	≤0.45	≤0.030	≤0.030	3.80 to 4.50	4.20 to 5.00	—	—	3.70 to 4.20	5.20 to 6.00	—	—	—	—	269	1210	—	560	64
HS6-5-2-5	1.3243	0.87 to 0.95	≤0.45	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.20	—	—	1.70 to 2.10	5.90 to 6.70	4.50 to 5.00	—	—	—	269	1210	—	560	64
HS6-5-3-8	1.3244	1.23 to 1.33	≤0.70	≤0.030	≤0.030	3.80 to 4.50	4.70 to 5.30	—	—	2.70 to 3.20	5.90 to 6.70	8.00 to 8.80	—	—	—	302	1180	—	560	65
HS10-4-3-10	1.3207	1.20 to 1.35	≤0.45	≤0.030	≤0.030	3.80 to 4.50	3.20 to 3.90	—	—	3.00 to 3.50	9.00 to 10.00	9.50 to 10.50	—	—	—	302	1230	—	560	66
HS2-9-1-8	1.3247	1.05 to 1.15	≤0.70	≤0.030	≤0.030	3.50 to 4.50	9.00 to 10.00	—	—	0.90 to 1.30	1.20 to 1.90	7.50 to 8.50	—	—	—	277	1190	—	550	66

Steel designation		Chemical composition										Quenching °C	Quenching agent	Tempering °C	Maximum HB in condition
Name	Number	C	Si max.	Mn	P max.	S	Cr	Mo	Ni	V					
34Cr4	1.7033	0.30 to 0.37	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	...	...	...	830 to 870	Water or oil	540 to 680	223
34CrS4	1.7037					0.020 to 0.040								223	
37Cr4	1.7034	0.34 to 0.41	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	...	...	...	825 to 865	Oil or water	540 to 680	235
37CrS4	1.7038					0.020 to 0.040								235	
41Cr4	1.7035	0.38 to 0.45	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	...	...	...	820 to 860	Oil or water	540 to 680	241
41CrS4	1.7039					0.020 to 0.040								241	
25CrMo4	1.7218	0.22 to 0.29	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	0.15 to 0.30	...	...	840 to 880	Water or oil	540 to 680	212
25CrMoS4	1.7213					0.020 to 0.040								212	
34CrMo4	1.7220	0.30 to 0.37	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	0.15 to 0.30	...	...	830 to 870	Oil or water	540 to 680	223
34CrMoS4	1.7226					0.020 to 0.040								223	
42CrMo4	1.7225	0.38 to 0.45	0.40	0.60 to 0.90	0.025	max. 0.035	0.90 to 1.20	0.15 to 0.30	...	...	820 to 860	Oil or water	540 to 680	241
42CrMoS4	1.7227					0.020 to 0.040								241	
50CrMo4	1.7228	0.46 to 0.54	0.40	0.50 to 0.80	0.025	max. 0.035	0.90 to 1.20	0.15 to 0.30	...	...	820 to 860	Oil	540 to 680	248
38CrNiMo4	1.6511	0.32 to 0.40	0.40	0.50 to 0.80	0.025	max. 0.035	0.90 to 1.20	0.15 to 0.30	0.90 to 1.20	...	820 to 850	Oil or water	540 to 680	248	
34CrNiMo6	1.6582	0.30 to 0.38	0.40	0.50 to 0.80	0.025	max. 0.035	1.30 to 1.70	0.15 to 0.30	1.30 to 1.70	...	830 to 860	Oil	540 to 680	248	
30CrNiMo8	1.6580	0.26 to 0.34	0.40	0.50 to 0.80	0.025	max. 0.035	1.80 to 2.20	0.30 to 0.50	1.80 to 2.20	...	830 to 860	Oil	540 to 680	248	
36NiCrMo16	1.6773	0.32 to 0.39	0.40	0.50 to 0.80	0.025	max. 0.025	1.60 to 2.00	0.25 to 0.45	3.60 to 4.10	...	865 to 885	Air or oil	540 to 680	269	
51CrV4	1.8159	0.47 to 0.55	0.40	0.70 to 1.10	0.025	max. 0.025	0.90 to 1.20	...	...	0.10 to 0.25	820 to 860	Oil	540 to 680	248
20MnCr5	1.7147	0.17 to 0.22	0.40	0.10 to 1.40	0.025	≤0.035	1.00 to 1.30	...	...	...	780 to 820	...	150 to 200	217
22CrMoS3-5	1.7333	0.19 to 0.24	0.40	0.70 to 1.00	0.025	0.20 to 0.040	0.70 to 1.00	0.40 to 0.50	...	...	780 to 820	...	150 to 200	217
20MoCr3	1.7320	0.17 to 0.23	0.40	0.60 to 0.90	0.025	≤0.035	0.40 to 0.70	0.30 to 0.40	...	...	780 to 820	...	150 to 200	217
20MoCr4	1.7321	0.17 to 0.23	0.40	0.70 to 1.00	0.025	≤0.035	0.30 to 0.60	0.40 to 0.50	...	...	780 to 820	...	150 to 200	207
16NiCr4	1.5714	0.13 to 0.19	0.40	0.70 to 1.00	0.025	≤0.035	0.60 to 1.00	...	0.80 to 1.10	...	780 to 820	...	150 to 200	217	
10NiCr5-4	1.5805	0.07 to 0.12	0.40	0.60 to 0.90	0.025	≤0.035	0.90 to 1.20	...	1.20 to 1.50	...	780 to 820	...	150 to 200	192	
18NiCr5-4	1.5810	0.16 to 0.21	0.40	0.60 to 0.90	0.025	≤0.035	0.90 to 1.20	...	1.20 to 1.50	...	780 to 820	...	150 to 200	223	
17CrNi8-6	1.5918	0.14 to 0.20	0.40	0.50 to 0.90	0.025	≤0.035	1.40 to 1.70	...	1.40 to 1.70	...	780 to 820	...	150 to 200	229	
15NiCr13	1.5752	0.14 to 0.20	0.40	0.40 to 0.70	0.025	≤0.035	0.60 to 0.90	...	3.00 to 3.50	...	780 to 820	...	150 to 200	229	
20NiCrMo2-2	1.6523	0.17 to 0.23	0.40	0.65 to 0.95	0.025	≤0.035	0.35 to 0.70	0.15 to 0.25	0.40 to 0.70	...	780 to 820	...	150 to 200	212	
17NiCrMo6-4	1.6566	0.14 to 0.20	0.40	0.60 to 0.90	0.025	≤0.035	0.80 to 1.10	0.15 to 0.25	1.20 to 1.50	...	780 to 820	...	150 to 200	229	
20NiCrMoS6-4	1.6571	0.16 to 0.23	0.40	0.50 to 0.90	0.025	0.20 to 0.040	0.60 to 0.90	0.25 to 0.35	1.40 to 1.70	...	780 to 820	...	150 to 200	229	
18CrNiMo7-6	1.6587	0.15 to 0.21	0.40	0.50 to 0.90	0.025	≤0.035	1.50 to 1.80	0.25 to 0.35	1.40 to 1.70	...	780 to 820	...	150 to 200	229	
14NiCrMo13-4	1.6657	0.11 to 0.17	0.40	0.30 to 0.60	0.025	≤0.035	0.80 to 1.10	0.20 to 0.30	3.00 to 3.50	...	780 to 820	...	150 to 200	241	