[Materials Data]
Comparisons of Materials between JIS and Foreign Standards 2

Stainless Steel, Heat-Resisting Steel

Japan Industrial Standards		International Standard	Foreign Standards								European Standard	
Standard Number, Name (Stainless Steel)	JIS	ISO TR 15510 L-No.	US		UK	Germany	France	Russia(Former USSR)			EN	
			UNS	AISI	BS	DIN	NF	Г ОСТ			Type	No.
JIS G 4303~	SUS 201	12	S20100	201			Z12CMN17-07Az				X12CMnNiN17-7-5	1.4372
4305	SUS 202		S20200	202	284S16				12Х17 Г 9АН4		X12CMnNiN18-9-5	1.4373
Bar	SUS 301	5	S30100	301	301S21	X12CrNi17 7	Z11CN17-08		07Х16Н6		X5CrNi17-7	1.4319
Hot-Rolled Plate and Band	SUS 301L	4				X2CrNiN18-7					X2CrNiN18-7	1.4318
Cold-Rolled Plate and Band	SUS 301J1					X12CrNi17 7						
JIS G 4308~	SUS 302		S30200	302	302S25		Z12CN18-09	12Х18Н9				
4309	SUS 302B		S30215	302B								
Wire Rod	SUS 303	13	S30300	303	303S21	X10CrNiS18 9	Z8CNF18-09				X8CrNiS18-9	1.4305
Wire	SUS 303Se		S30323	303Se	303S41			12Х18Н10Е				
	SUS 303Cu											
JIS G 4313~	SUS 304	6	S30400	304	304S31	X5CrNi18 10	Z7CN18-09	08Х18Н10			X4CrNi18-10	1.4301
4315	SUS 304L	1	S30403	304L	304S11	X2CrNi19 11	Z3CN19-11	03Х18Н11			X2CrNi19-11	1.4307
		2										1.4307
Band for Spring	SUS 304N1	10	S30451	304N			Z6CN19-09Az				X2CrNi18-9	1.4306
Wire for Spring	SUS 304N2		S30452									
Wire for Cold Forging	SUS 304LN	3	S30453	304LN		X2CrNiN18 10	Z3CN18-10Az				X2CrNiN18-10	1.4311
JIS G 4317~	SUS 304J1											
4320	SUS 304J2											
Hot-Rolled Equal-Leg Angle	SUS 304J3		S30431	S30431								
Cold-Finished Bar	SUS 305	8	S30500	305	305S19	X5CrNi18 12	Z8CN18-12	06Х18Н11			X4CrNi18-12	1.4303
Steel Piece for Forged Article	SUS 305J1											
Cold-Rolled Equal-Leg Angle	SUS 309S	X6CrNi23-14	S30908	309S			Z10CN24-13					
	SUS 310S	X6CrNi25-21	S31008	310S	310S31		Z8CN25-20	10Х23Н18			X6CrNi25-20	
	SUS 315J1											
	SUS 315J2											
	SUS 316	26	S31600	316	316S31	X5CrNiMo17 12 2	Z7CND17-12-02				X4CrNiMo17-12-2	1.4401
	SUS 316F	27				X5CrNiMo17 13 3	Z6CND18-12-03				X4CrNiMo17-13-3	1.4436
	SUS 316L	19	S31603	316L	316S11	X2CrNiMo17 13 2	Z3CND17-12-02				X2CrNiMo17-12-2	1.4404
		20				X2CrNiMo17 14 3	Z3CND17-13-03	03Х17Н14М3			X2CrNiMo17-13-3	1.4432
											X2CrNiMo18-14-3	1.4435
	SUS 316N		S31651	316N								
	SUS 316LN	22	S31653	316LN		X2CrNiMoN17 12 2	Z3CND17-11Az				X2CrNiMoN17-11-2	1.4406
		23				X2CrNiMoN17 13 3	Z3CND17-12Az				X2CrNiMoN17-13-3	1.4429
	SUS 316Ti	28	S31635			X6CrNiMoTi17 12 2	Z6CNDT17-12	08Х17Н13М2Т			X6CrNiMoTi17-12-2	1.4571
	SUS 316J1											
	SUS 316J1L											
	SUS 317		S31700	317	317S16							
	SUS 317L	21	S31703	317L	317S12	X2CrNiMo18 16 4	Z3CND19-15-04				X2CrNiMo18-15-4	1.4438
	SUS 317LN	24	S31753				Z3CND19-14Az				X2CrNiMoN18-12-4	1.4434
	SUS 317J1										X2CrNiMoN17-13-5	1.4439
	SUS 317J2											
	SUS 317J3L											
	SUS 836L		N08367									
	SUS 890L	31	N08904	N08904	904S14		Z2NCDU25-20				X1CrNiMoCuN25-25-5	1.4539
	SUS 321	15	S32100	321	321S31	X6CrNiTi18 10	Z6CNT18-10	08Х18Н10Т			X6CrNiTi18 10	1.4541
	SUS 347	17	S34700	347	347S31	X6CrNiNb18 10	Z6CNNb18-10	08Х18Н12 Б			X6CrNiNb18 10	1.4550
	SUS 384	9	S38400	384			Z6CN18-16					
	SUS XM7	D26(1)	S30430	304Cu	394S17		Z2CNU18-10				X3CrNiCu18-9-4	1.4587
	SUS XM15J1		S38100				Z1SCNS20-12				X1CrNiSi18-15-4	1.4381
	SUS 329J1		S32900	329								
	SUS 329J3L	33	S39240	S31803			Z3CNDU22-05Az	08Х21Н6М2Т			X2CrNiMoN22-5-3	1.4462
	SUS 329J4L	34	S39275	S31260			Z3CNDU25-07Az				X2CrNiMoCuN25-6-3	1.4507

Japan Industrial Standards		International Standard	Foreign Standards								European Standard	
Standard Number, Name (Stainless Steel)	JIS	ISO TR 15510 L-No.	US		UK	Germany	France	Russia(Former USSR)			EN	
			UNS	AISI	BS	DIN	NF	Г ОСТ			Type	No.
	SUS 405	40	S40500	405	405S17	X6CrAl13	Z8CA12				X6CrAl13	1.4002
	SUS 410L						Z3C14					
	SUS 429		S42900	429								
	SUS 430	41	S43000	430	430S17	X6Cr17	Z8C17	12Х17			X6Cr17	1.4016
	SUS 430F	42	S43020	430F		X7CrMoS18	Z8CF17				X6CrMoS17	1.4105
	SUS 430LX	44	S43035			X6CrTi17	Z4CT17				X3CrTi17	1.4510
						X6CrNb17					X2CrTi17	1.4520
	SUS 430J1L						Z4CNb17				X3CrNb17	1.4511
	SUS 434	43	S43400	434	434S17	X6CrMo17 1	Z8CD17-01				X6CrMo17-1	1.4113
	SUS 436L		S43600	436							X1CrMoTi16-1	1.4513
	SUS 436J1L											
	SUS 444	46	S44400	444			Z3CDT18-02				X2CrMoTi18-2	1.4521
	SUS 445J1											
	SUS 445J2											
	SUS 447J1		S44700									
	SUS XM27		S44627				Z1CD26-01					
	SUS 403		S40300	403								
	SUS 410	48	S41000	410	410S21	X10Cr13	Z13C13				X12Cr13	1.4006
	SUS 410S	39	S41008	410S	403S17	X6Cr13	Z8C12	08Х13			X6Cr13	1.4000
	SUS 410F2											
	SUS 410J1		S41025									
	SUS 416	49	S41600	416	416S21		Z11CF13				X12CrS13	1.4005
	SUS 420J1	50	S42000	420	420S29	X20Cr13	Z20C13	20Х13			X20Cr13	1.4021
	SUS 420J2	51	S42000	420	420S37	X30Cr13	Z33C13	30Х13			X30Cr13	1.4028
	SUS 420F		S42020	420F			Z30CF13				X29CrS13	1.4029
	SUS 420F2											
	SUS 429J1											
	SUS 431	57	S43100	431	431S29	X20CrNi17 2	Z15CN16-02	20Х17Н2			X19CrNi17 2	1.4057
	SUS 440A		S44002	440A			Z70C15				X70CrMo15	1.4109
	SUS 440B		S44003	440B								
	SUS 440C		S44004	440C			Z100CD17	95Х18			X105CrMo17	1.4125
	SUS 440F		S44020	S44020								
	SUS 630	58	S17400	S17400			Z6CNU17-04				X5CrNiCuNb16-4	1.4542
	SUS 631	59	S17700	S17700		X7CrNiAl17 7	Z9CNA17-07	09Х17Н7 Ю			X7CrNiAl17-7	1.4568
	SUS 632J1											
JIS G 4311~ 4315 Heat Resisting Steel Bar Heat Resisting Steel Plate	SUH 31				331S42		Z35CNWS14-14	45Х14Н14В2М				
	SUH 35	X53CrMnNi21 4 (2)			349S52		Z52CMN21-09Az					
	SUH 36		S63008		349S54	X53CrMnNi21 9	Z55CMN21-09Az	55Х20 Г 9АН4				
	SUH 37		S63017		381S34							
	SUH 38											
	SUH 309		S30900	309	309S24		Z15CN24-13					
	SUH 310		S31000	310	310S24	CrNi2520	Z15CN25-20	20Х25Н20С2				
	SUH 330		N08330	N08330			Z12NCS35-16					
	SUH 660		S66286				Z6NCTV25-20					
	SUH 661		R30155									
	SUH 21					CrAl1205						
	SUH 409	37	S40900	409	409S19	X6CrTi12	Z6CT12					
	SUH 409L	36					Z3CT12				X2CrTi12	1.4512
	SUH 446	X15CrN26(1)	S44600	446			Z12C25	15Х28				
	SUH 1	X45CrSi9-3(1)	S65007		401S45	X45CrSi9 3	Z45CS9					
	SUH 3						Z40CSD10	40Х10С2М				
	SUH 4				443S65		Z80CSN20-02					
	SUH 11	X10CrSi18-2(1)						40Х9С2				
	SUH 600							20Х12ВНМ Б ф г				
	SUH 616		S42200									

Reference 1. ISO:ISO TR 15510:1997. EN Symbols. (1) ISO 4954, (2) ISO 683, 15.
2. US:UNS registration numbers and the AISI Steel Manual
3. European Standard:EN 10088-1:1995
4. European countries:BS, DIN, NF, etc. These national standards are to be abolished in favor of EN.
5. Г ОСТ: 5632

Tool Steel

Japan Industrial Standards		Steel Type Related to Foreign Standards					
Standard Number Name	Code	ISO	AISI ASTM	BS	DIN VDEh	NF	Г ОСТ
JIS G 4401 Carbon Tool Steel	SK140(Old SK1)	TC140	–	–	–	C140E3U	Y13
	SK120(Old SK2)	TC120	W1–11 1/2	–	–	C120E3U	Y12
	SK105(Old SK3)	TC105	W1–10	–	C105W1	C105E2U	Y11
	SK95(Old SK4)	TC 90	W1–9	–	–	C90 E2U	Y10
	SK85(Old SK5)	TC 90 TC 80	W1–8	–	C 80W1	C90 E2U C80 E2U	Y8 Г Y9
	SK75(Old SK6)	TC 80 TC 70	–	–	C 80W1	C80 E2U C70 E2U	Y8
	SK65(Old SK7)	–	–	–	C 70W2	C70 E2U	Y7
JIS G 4403 High-Speed Tool Steel	SKH 2	HS18–0–1	T 1	BT 1		HS18–0–1	P18
	SKH 3	HS18–1–1–5	T 4	BT 4	S18–1–2–5	HS18–1–1–5	–
	SKH 4	HS18–0–1–10	T 5	BT5	–	HS18–0–2–9	–
	SKH10	HS12–1–5–5	T15	BT15	S12–1–4–5	HS12–1–5–5	–
	SKH51	HS 6–5–2	M2	BM2	S 6–5–2	HS 6–5–2	–
	SKH52	–	M3–1	–	–	–	–
	SKH53	HS 6–5–3	M3–2	–	S 6–5–3	HS 6–5–3	–
	SKH54	–	M4	BM4	–	HS 6–5–4	–
	SKH55	HS 6–5–2–5	–	BM35	S 6–5–2–5	HS 6–5–2–5HC	P6M5K5
	SKH56	–	M36	–	–	–	–
	SKH57	HS10–4–3–10	–	BT42	S10–4–3–10	HS10–4–3–10	–
	SKH58	HS 2–9–2	M7	–	–	HS 2–9–2	–
	SKH59	HS 2–9–1–8	M42	BM42	S 2–10–1–8	HS 2–9–1–8	–
JIS G 4404 Alloy Tool Steel	SKS11	–	F2	–	–	–	XB4
	SKS 2	105WCr1	–	–	105WCr6	105WCr5	XB Г
	SKS21	–	–	–	–	–	–
	SKS 5	–	–	–	–	–	–
	SKS51	–	L6	–	–	–	–
	SKS 7	–	–	–	–	–	–
	SKS 8	–	–	–	–	C140E3UCr4	13X
	SKS 4	–	–	–	–	–	–
	SKS41	–	–	–	–	–	–
	SKS43	TCV105	W2–9 1/2	BW2	–	100V2	–
	SKS44	–	W2–8	–	–	–	–
	SKS 3	–	–	–	–	–	9ХВ Г
	SKS31	105WCr1	–	–	105WCr6	105WCr5	XB Г
	SKS93	–	–	–	–	–	–
	SKS94	–	–	–	–	–	–
	SKS95	–	–	–	–	–	–
	SKD 1	210Cr12	D3	BD3	X210Cr12	X200Cr12	X12
	SKD11	–	D2	BD2	–	X160CrMoV12	–
	SKD12	100CrMoV5	A2	BA2	–	X100CrMoV5	–
	SKD 4	30WCrV5	–	–	–	X32WCrV3	–
	SKD 5	30WCrV9	H21	BH21	–	X30WCrV9	–
	SKD 6	–	H11	BH11	X38CrMoV51	X38CrMoV5	4Х5МФС
	SKD61	40CrMoV5	H13	BH13	X40CrMoV51	X40CrMoV5	4Х5М01С
	SKD62	–	H12	BH12	–	X35CrWMoV5	3Х3М3Ф

Japan Industrial Standards		Steel Type Related to Foreign Standards					
Standard Number Name	Code	ISO	AISI ASTM	BS	DIN VDEh	NF	Г ОСТ
JIS G 4404 (Continued)	SKD 7	30CrMoV3	H10	BH10	X32CrMoV33	32CrMoV12–18	–
	SKD 8	–	H19	BH19	–	–	–
	SKT 3	–	–	–	55CrNiMoV4	–	–
	SKT 4	55NiCrMoV2	–	BH224/5	55NiCrMoV6	55NiCrMoV7	5ХНМ

Special Purpose Steels

Japan Industrial Standards		Steel Type Related to Foreign Standards					
Standard Number Name	Code	ISO	AISI SAE	BS	DIN	NF	Г ОСТ
JIS G 4801 Spring Steel	SUP 3	–	1075 1078	–	–	– 75 85 80	
	SUP 6	59Si7	–	–	–	60Si7	60С2
	SUP 7	59Si7	9260	–	–	60Si7	60С2 Г
	SUP 9	55Cr3	5155	–	55Cr3	55Cr3	–
	SUP 9A	–	5160	–	–	60Cr3	–
	SUP10	51CrV4	6150	735A51,735H51	50CrV4	51CrV4	ХФА50Х Г ФА
	SUP11A	60CrB3	51B60	–	–	–	50Х Г Р
	SUP12	55SiCr63	9254	685A57,685H57	54SiCr6	54SiCr6	–
	SUP13	60CrMo33	4161	705A60,705H60	–	60CrMo4	–
JIS G 4804 Sulfuric and Sulfur Compound Free Cutting Steel	SUM11	–	1110	–	–	–	–
	SUM12	–	1108	–	–	–	–
	SUM21	9 S20	1212	–	–	–	–
	SUM22	11SMn28	1213	(230M07)	9 SMn28	S250	–
	SUM22L	11SMnPb28	12L13	–	9 SMnPb28	S250Pb	–
	SUM23	–	1215	–	–	–	–
	SUM23L	–	–	–	–	–	–
	SUM24L	11SMnPb28	12L14	–	9 SMnPb28	S250Pb	–
	SUM25	12SMn35	–	–	9 SMn36	S300	–
	SUM31	–	1117	–	15S10	–	–
	SUM31L	–	–	–	–	–	–
	SUM32	–	–	210M15,210A15	–	(13MF4)	–
	SUM41	–	1137	–	–	(35MF6)	–
	SUM42	–	1141	–	–	(45MF6.1)	–
	SUM43	44SMn28	1144	(226M44)	–	(45MF6.3)	–
JIS G 4805 High Carbon Chrome Bearing Steel	SUJ 1	–	51100	–	–	–	–
	SUJ 2	B1 or 100Cr6	52100	–	100Cr6	100Cr6	ШХ15
	SUJ 3	B2 or 100CrMnSi4-4	ASTM A 485 Grade 1	–	–	–	–
	SUJ 4	–	–	–	–	–	–
	SUJ 5	–	–	–	–	–	–

Steel Brands Comparative Table/Hardness of Materials and Corresponding Tools

Steel Brand Comparative Table

Type	Steel Types Related to the Foreign Standards				Hitachi Metals, Ltd.	Aichi Steel Works, Ltd.	Kobe Steel Co., Ltd.	Sanyo Special Steel Co., Ltd.	Daido Steel Co., Ltd.	Nippon Koshuha Steel Co., Ltd.	Nachi-Fujikoshi	Riken Steel	Uddeholm (Sweden)	Bohler (Germany)
	JIS	AISI	DIN	ISO										
Carbon Tool Steel	SK105(Old SK3)	W1-10		TC105	YC3	SK3		QK3	YK3	K3				K990
Alloy Tool Steel	SKS93				YCS3	SK301		QKSM	YK30	K3M	SK3M			
	SKS3				SGT	SKS3		QKS3	G0A	KS3	SKS3	RS3	ARNE	K460
	SKD1	D3		X210Cr12	CRD	SKD1		QC1	DC1	KD1			SVERKER3	K100 K107
	SKD11	D2	X210Cr12	X210Cr12W12	SLD	SKD11		QC11	DC11	KD11	CDS11	RD11	SVERKER21	K105 K110
	SKD11(Modification)				SLD8 SLD10	AUD15		QCM8 QCM10	DC53	KD11S KD21	MDS9		SLEIPNER	K340
	Matrix Group CrSKD				ARK1	SXACE		QCM7	DCX					
	SKD12			X100CrMoV5	SCD	SKD12			DC12	KD12			RIGOR	K305
	Pre-Hardened 40HRC	A2			HPM2T				G040F	KAP65			IMPAX	
	Pre-Hardened 50HRC or more				PRE2				CX1	RC55				
	Flame-Hardened Steel				HMD5 HMD1	SX105V SX4		QF3	G05	FH5			FERNO	
	Low Temperature Air Cooled Steel				ACD37	AKS3			G04	KSM				
	Shock Resistance Steel				YSM	AKS4		QF1	GS5	KTV5	SRS6		PREGA COMPAX	K630
	Others				ACD8	AUD11 SX5 SX44					ICS22 MCR1		CALMAX VIKING ELMAX VANADIS4 VANADIS6 VANADIS10	K190
High-Speed Tool Steel	SKH51	M2	H6.5.2	HS6–5–2	YXM1			QH51	MH51	H51	SKH9	RHM1		S600
	SKH55 Group		S6.2.5	HS6–5–2–5	YXM4				MH55	HM35	HM35 HS53M	RHM5		S705
	SKH57 Group		S10–4–3–10	HS10–4–3–10	XVC5				MH8	MV10	HS93R HS98M FM38V	RHM7		S700
	Matrix Group				YXR33 YXR3 YXR7			QHZ	MH85 MH88	KXM KMX2 KMX3	MDS1 MDS3 MDS7 MATRIX2 ATM3			
P/M High Speed Tool Steel	SKH40			HS6–5–3–8	HAP40		KHA30		DEX40		FAX38		ASP30	S590
	Matrix Group				HAP5R		KHA3VN		DEX–M1 DEX–M3					
	Others				HAP10									S690
							KHA32	SPM23	DEX21		FAX31		ASP23	S790
					HAP50				DEX60					S390
									DEX61		FAX55			
					HAP72		KHA60	SPM60	DEX80		FAXG1		ASP60	
							KHA77				FAX18			
											FAXG2			
							KHA30N							
							KHA33N							
							KHA3NH							
							KHA5NH							

Reference:"Special Steel", Nov. 2001

Matrix Group: This is a type of tool steels that has enhanced machinability and toughness by decreasing the large-size carbide responsible for expedited tool abrasion during a cutting process and flexibility reduction.

Machining Method		Equipment	Required Tool
Machining	Hole Machining on Side and Bottom	General Purpose Milling Cutter NC Milling Cutter Machining Center	Drills Reamer End Mills Cutting Tools
	Hole Machining	Drilling Machine Drill Press Boring Machine Jig Borer	Drills Tapped Reamer Cutting Tools
	Machining Cylinders	General Purpose Lathe NC Lathe Turning Center	Drills Reamer Tapped Cutting Tools
Grinding		Surface Grinder Cylindrical Grinder Jig Grinder Profile Grinder Forming Grinder	Grindstone
Electric Discharging		EDM	Electrode Master
		WEDM	Wire

Tool	Tool Material	Parts Material	Machined Material: Non-Ferrous Metal	Untreated	Thermal Refined	Hardening/Tempered
		For Press Die	(Al)	(Al–alloi) SS400(SS41) SKD11 S45C S50C DC53	(Be–Cu) SCM435 HPM2T	DC53(Carbide) SKD11 S45C SKS3 SUJ2 SKH51
		For Plastic Mold	CU BsBM2	SKD61 STAVAX ESR RIGOR(SKD12 Group)	HPM7 NAK55 PX5 HPM1 NAK80 HPM38 HPM50 S–STAR FDAC STAVAX ESR DH2F	(Electroforming-Outside) (Electroforming-Inside) ORAVAR SUPREME (Age-Hardened)MAS1C HPM38 S–STAR SKD61 STAVAX ESR RIGOR (SKD12 Group)
			HRC	10 20	30 40	50 60 70
Drills Reamer	High-Speed Steel	SKH–				
	Carbide	Wn–Co				
Tapped	High-Speed Steel	SKH–				
	Carbide	Wn–Co				
End Mills Cutting Tools	High-Speed Steel	SKH–				
	Carbide	Wn–Co				
	Boron	CBN				
	Diamond	D		(Non-Ferrous Metal)		(Carbide)
Grindstone	White Fused Alumina	WA				
	Brown Fused Alumina	A				
	Pink Fused Aluminum	PA				
	Green Silicon Carbide	GC				
	Black Silicon Carbide	C		(Non-Ferrous Metal)		
	Electrodeposited Boron	CBN				
	Electrodeposited Diamond	D		(Non-Ferrous Metal)		(Carbide)
Electrode Master	Electrolytic Copper, Brass	CU–				
	Copper Tungsten, Silver Tungsten	–Wn				
Wire	Brass	CU–Zn				
	Tungsten	Wn				