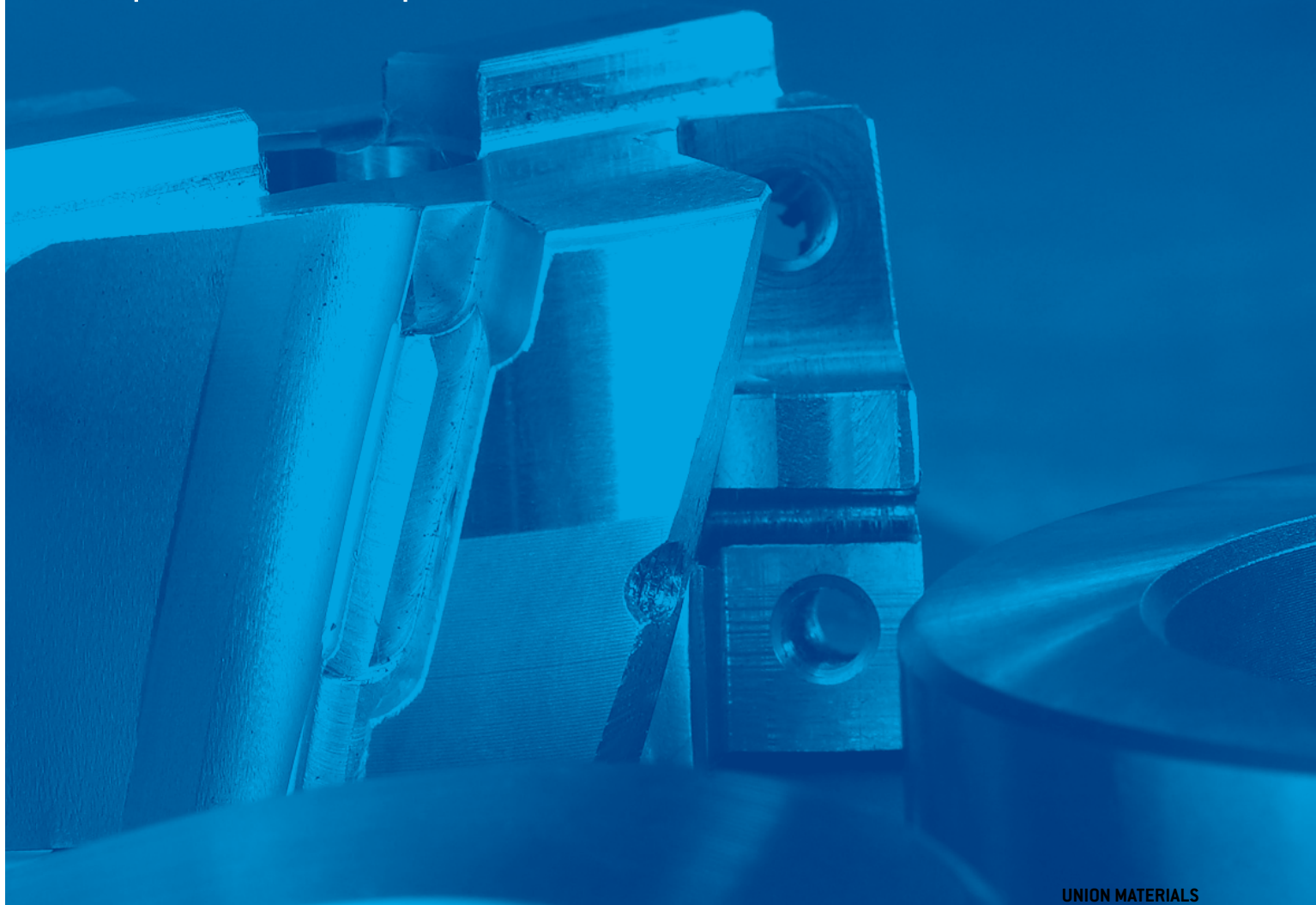


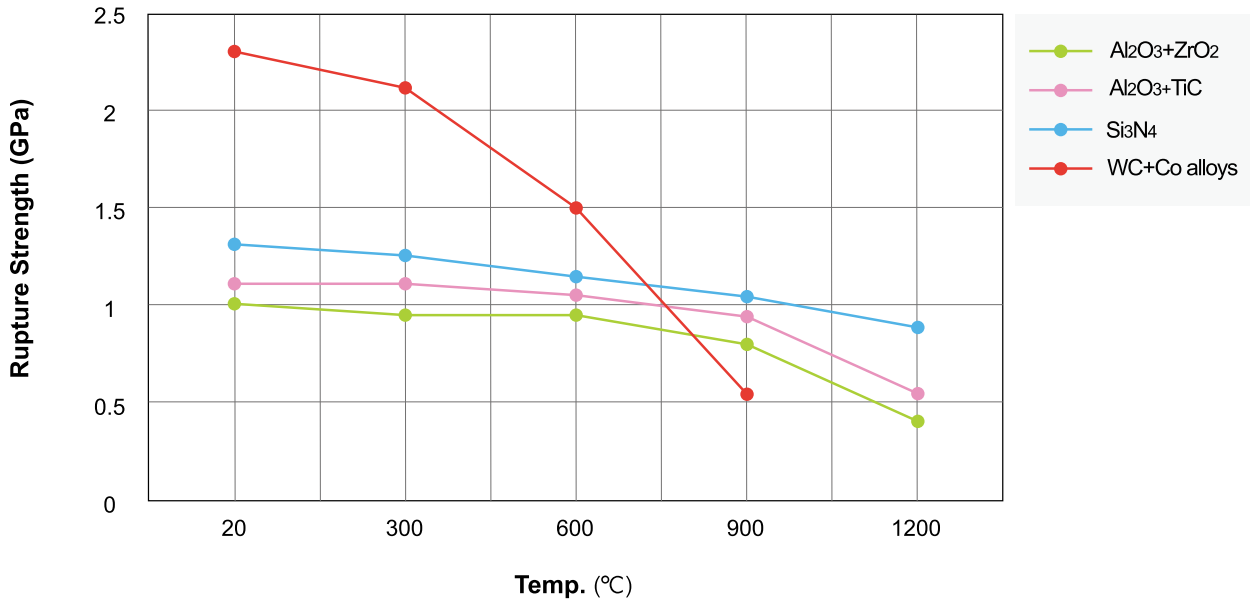
TECHNICAL DATA

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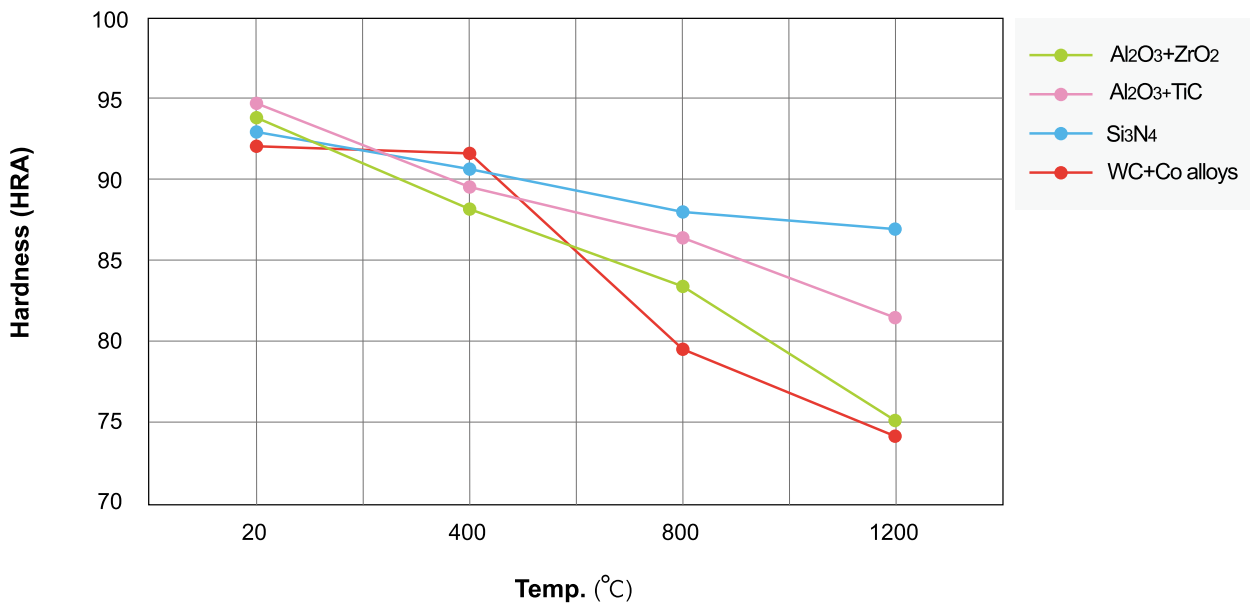




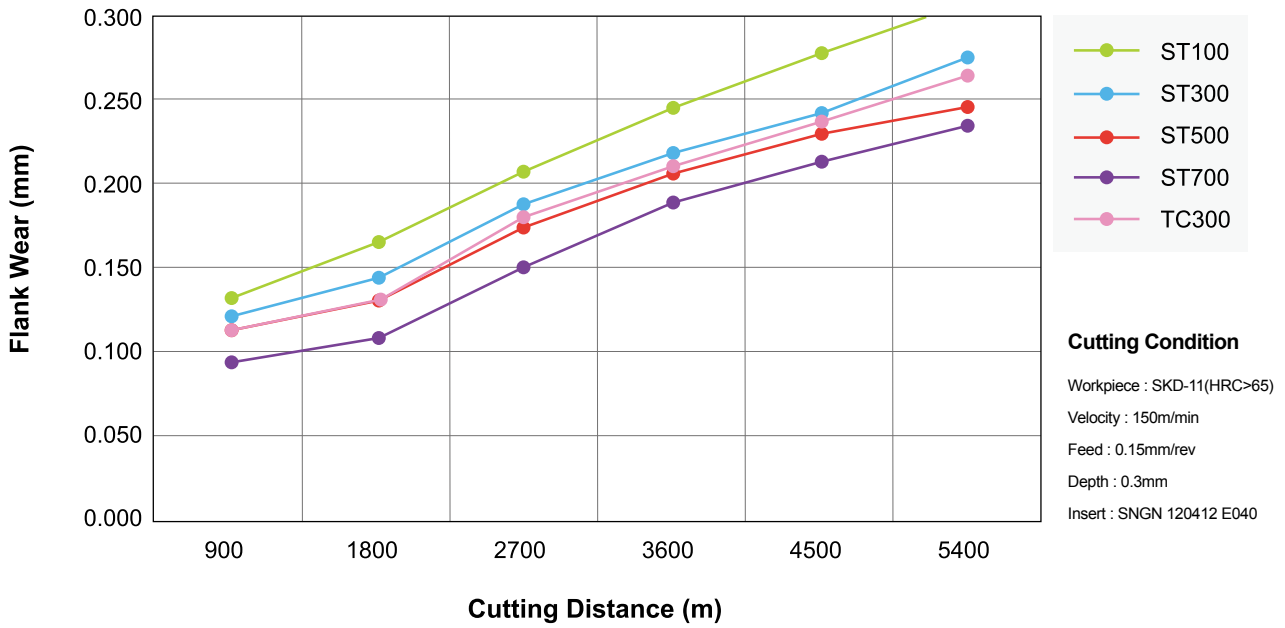
HIGH TEMPERATURE STRENGTH



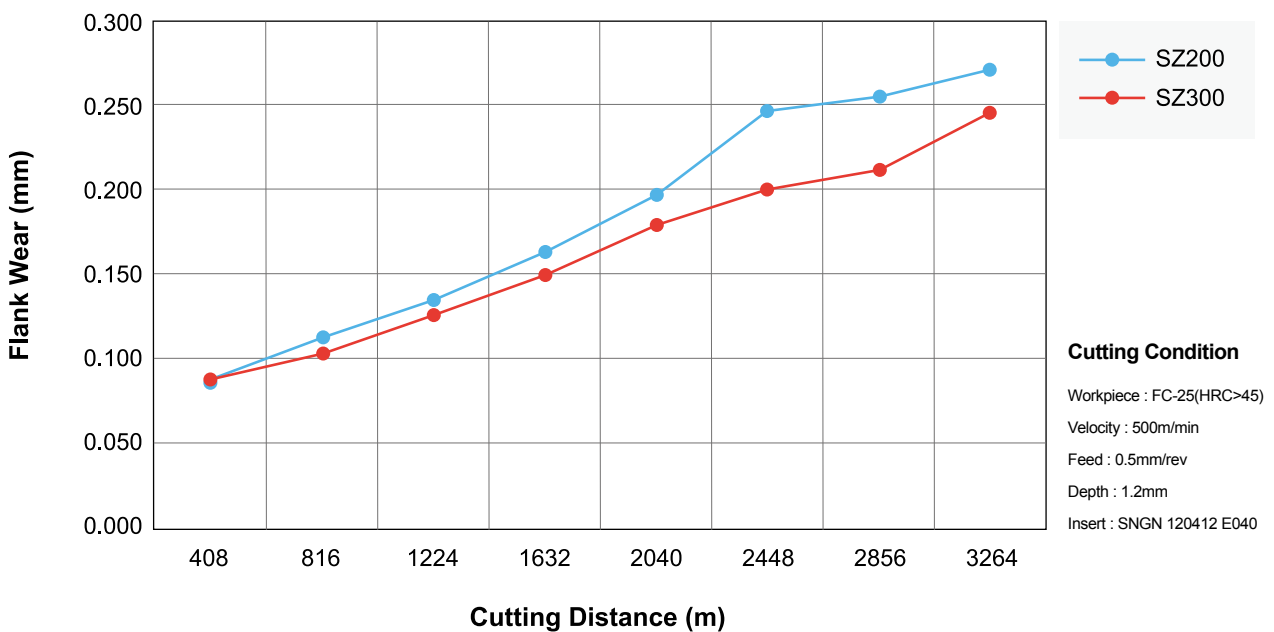
HARDNESS VS TEMPERATURE



FLANK WEAR VS CUTTING DISTANCE

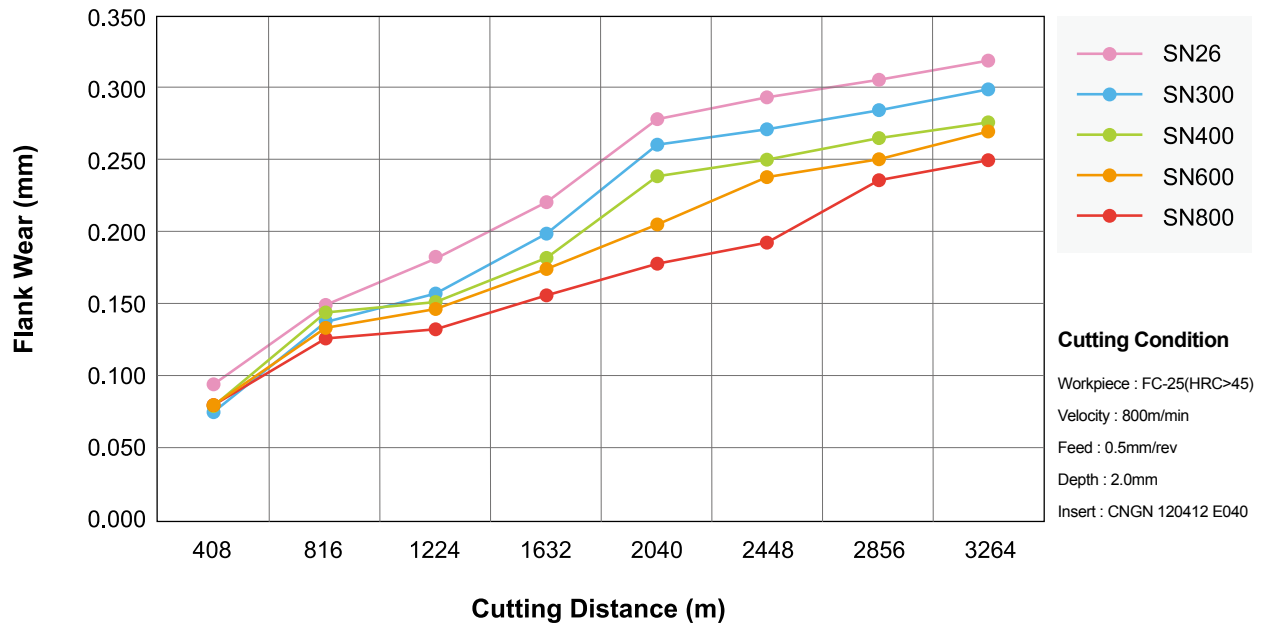


FLANK WEAR VS CUTTING DISTANCE

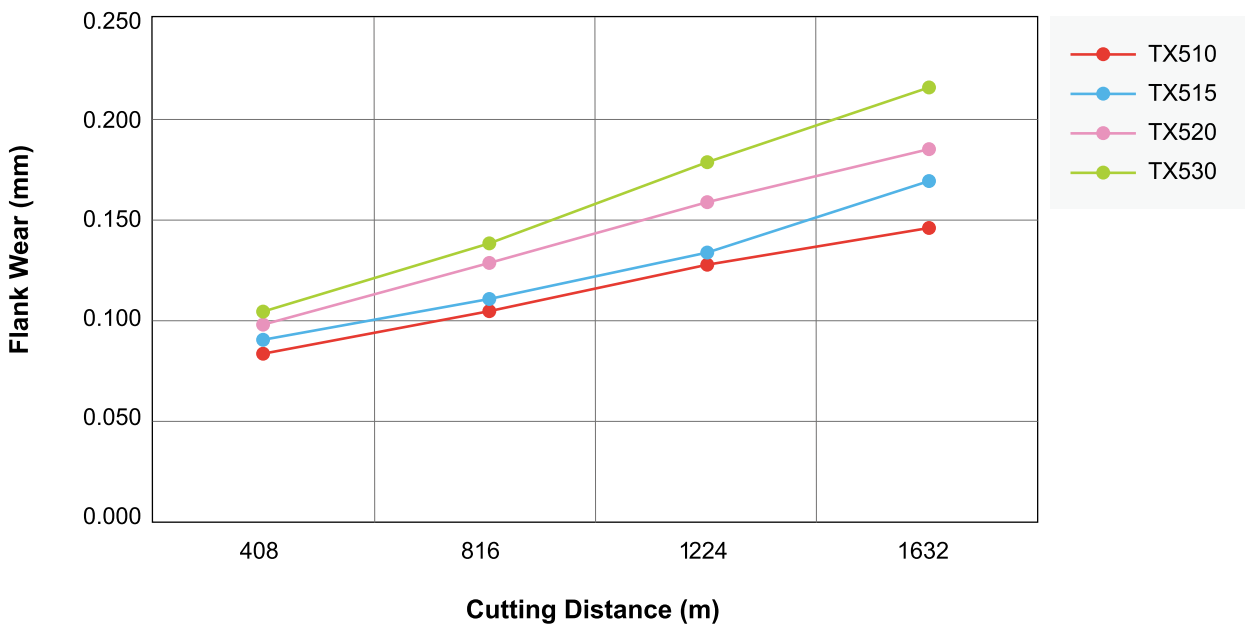


TECHNICAL DATA









FLANK WEAR VS CUTTING DISTANCE



FLANK WEAR VS CUTTING DISTANCE



TROUBLE SHOOTING

Types		Status	Cause	Countermeasures
Flank Wear		<ul style="list-style-type: none"> Variation of dimension Deteriorated finishing surface Increasing machining load 	<ul style="list-style-type: none"> Wear by grinded surface Excessive feed rate and cutting speed 	<ul style="list-style-type: none"> Reduce cutting Speed Use larger corner radius Use high wear-resistant grade
Crater Wear		<ul style="list-style-type: none"> Deterioration of chip disposal Deteriorated finishing surface 	<ul style="list-style-type: none"> Wear by chips (remarkable with ductile cast iron) Excessive cutting speed 	<ul style="list-style-type: none"> Reduce cutting Speed Use smaller lead angle Check edge geometry Use high wear-resistant grade
Thermal Cracking		<ul style="list-style-type: none"> Deteriorated finishing surface Occurrence of chipping 	<ul style="list-style-type: none"> Severe cycle of heating & cooling during cutting Excessive feed rate and cutting speed 	<ul style="list-style-type: none"> Reduce cutting speed Reduce feed rate Change to dry machining Use tougher grade
Notch Wear		<ul style="list-style-type: none"> Deteriorated finishing surface Increasing machining load 	<ul style="list-style-type: none"> Excessive feed rate and cutting depth 	<ul style="list-style-type: none"> Reduce cutting depth Reduce feed rate Use tougher grade Increase coolant supply
Edge Splintering		<ul style="list-style-type: none"> Occurrence of fire flower Occurrence of noise Increasing Machining load 	<ul style="list-style-type: none"> Excessive feed rate Falling-off of BUE Weak cutting edge 	<ul style="list-style-type: none"> Use tougher grade Check edge geometry Increase stability of the system Use larger lead angle
Plastic Deformation		<ul style="list-style-type: none"> Variation of dimension Chipping of cutting edge 	<ul style="list-style-type: none"> High machining load Use of improper grade 	<ul style="list-style-type: none"> Reduce cutting speed Reduce feed rate Reduce cutting depth Use harder grade
Built-up-Edge		<ul style="list-style-type: none"> Deteriorated finishing surface Variation of dimension Occurrence of chipping 	<ul style="list-style-type: none"> High affinity with work piece Low cutting speed 	<ul style="list-style-type: none"> Increase cutting speed Increase feed rate Use tougher grade Use larger rake angle
Breakage		<ul style="list-style-type: none"> Occurrence of fire flower Cutting impossible 	<ul style="list-style-type: none"> Using low toughness Insert Using improper clamping holder 	<ul style="list-style-type: none"> Use tougher grade Reduce feed rate Reduce cutting depth Increase stability of the system

HARDNESS CONVERSION TABLE

VICKERS HARDNESS NUMBER (HV)	KNOOP HARDNESS NUMBER (HK)	BRINELL HARDNESS NUMBER (HB)		ROCKWELL HARDNESS NUMBER (HR)				ROCKWELL SUPERFICIAL HARDNESS NUMBER (HR)			SHORE HARDNESS NUMBER (HS)	TENSILE STRENGTH [APPROX.]
		HBS 3000kgf LOAD 10mm STEEL BALL	HBW 3000kgf LOAD 10mm CARBIDE BALL	SCALE A 60kgf LOAD DIAMOND INDENTER	SCALE B 100kgf LOAD 1/16" STEEL BALL	SCALE C 150kgf LOAD DIAMOND INDENTER	SCALE D 100kgf LOAD DIAMOND INDENTER	SCALE 15N 15kgf LOAD DIAMOND INDENTER	SCALE 30N 30kgf LOAD DIAMOND INDENTER	SCALE 45N 45kgf LOAD DIAMOND INDENTER		
1865				92.1		80	86.5	96.5	92.0	87.0		
1787				91.6		79	85.7	96.3	91.5	86.2		
1710				91.1		78	84.9	96.1	90.9	85.4		
1633				90.6		77	84.2	95.8	90.3	84.5		
1556				90.1		76	83.4	95.5	89.7	83.6		
1478				89.6		75	82.6	95.2	89.1	82.5		
1400				89.0		74	81.8	94.9	88.5	81.6		
1323				88.5		73	81.0	94.6	87.9	80.7		
1245				88.0		72	80.1	94.3	87.2	79.7		
1160				87.1		71	79.4	94.0	86.5	78.7		
1076	972			86.8		70	78.6	93.7	85.8	77.6		
1004	946			86.2		69	77.8	93.4	85.1	76.4		
940	920			85.6		68	76.9	93.2	84.3	75.4		
900	895			85.0		67	76.1	92.9	83.6	74.2	95.2	
865	870			84.5		66	75.4	92.5	82.8	73.3	93.1	
832	846		739	83.9		65	74.5	92.2	81.9	72.0	91.0	
800	822		722	83.4		64	73.8	91.8	81.1	71.0	88.9	
772	799		705	82.8		63	73.0	91.4	80.1	69.9	87.0	
746	776		688	82.3		62	72.2	91.1	79.3	66.6	85.2	
720	754		670	81.8		61	71.5	90.7	78.4	67.7	83.3	
697	732		654	81.2		60	70.7	90.2	77.5	66.6	81.6	
674	710		634	80.7		59	69.9	89.8	76.6	65.5	79.9	
653	690		615	80.1		58	69.2	89.3	75.7	64.3	78.2	
633	670		595	79.6		57	68.5	88.9	74.8	63.2	75.6	
613	650		577	79.0		56	67.7	88.3	73.9	62.0	75.0	
595	630		560	78.5		55	66.9	87.9	73.0	60.9	73.5	212
577	612		543	78.0		54	66.1	87.4	72.0	59.8	71.9	205
560	594		525	77.4		53	65.4	86.9	71.2	58.6	70.4	199
544	576	500	512	76.8		52	64.6	86.4	70.2	57.4	69.0	192
528	558	487	496	76.3		51	63.8	85.9	69.4	56.1	67.6	186
513	542	475	481	75.9		50	63.1	85.5	68.5	55.0	66.2	179
498	526	464	469	75.2		49	62.1	85.0	67.6	53.8	64.7	172
484	510	451	455	74.7		48	61.4	84.5	66.7	52.5	63.4	167
471	495	442	443	74.1		47	60.8	83.9	65.8	51.4	62.1	161
458	480	432	432	73.6		46	60.0	83.5	64.8	50.3	60.8	156
446	466	421	421	73.1		45	59.2	83.0	64.0	49.0	59.6	151
434	452	409	409	72.5		44	58.5	82.5	63.1	47.8	58.4	146
423	438	400	400	70.0		43	57.7	82.0	62.2	46.7	57.2	141
412	426	390	390	71.5		42	56.9	81.5	61.3	45.5	56.1	136
402	414	381	381	70.9		41	56.2	80.9	60.4	44.3	55.0	132
392	402	371	371	70.4		40	55.4	80.4	59.5	43.1	53.9	127
382	391	362	362	69.9		39	54.6	79.9	58.6	41.9	52.9	124
372	380	353	353	69.4		38	53.8	79.4	57.7	40.8	51.8	120
363	370	344	344	68.9		37	53.1	78.8	56.8	39.6	50.7	118
354	360	336	336	68.4	109.0	36	52.3	78.3	55.9	38.4	49.7	114
345	351	327	327	67.9	108.5	35	51.5	77.7	55.0	37.2	48.7	110

VICKERS HARDNESS NUMBER (HV)	KNOOP HARDNESS NUMBER (HK)	BRINELL HARDNESS NUMBER (HB)		ROCKWELL HARDNESS NUMBER (HR)				ROCKWELL SUPERFICIAL HARDNESS NUMBER (HRS)			SHORE HARDNESS NUMBER (HS)	TENSILE STRENGTH (APPROX.)
		HBS 3000kgf LOAD 10mm STEEL BALL	HBW 3000kgf LOAD 10mm CARBIDE BALL	SCALE A 60kgf LOAD DIAMOND INDENTER	SCALE B 100kgf LOAD 1/16" STEEL BALL	SCALE C 150kgf LOAD DIAMOND INDENTER	SCALE D 100kgf LOAD DIAMOND INDENTER	SCALE 15N 15kgf LOAD DIAMOND INDENTER	SCALE 30N 30kgf LOAD DIAMOND INDENTER	SCALE 45N 45kgf LOAD DIAMOND INDENTER		
336	342	319	319	67.4	108.0	34	50.8	77.2	54.2	36.1	47.7	108
327	334	311	311	66.8	107.5	33	50.0	76.6	53.3	34.9	46.6	105
318	326	301	301	66.3	107.0	32	49.2	76.1	52.1	33.7	45.6	102
310	318	294	294	65.8	106.0	31	48.4	75.6	51.3	32.5	44.6	100
302	311	286	286	65.3	105.5	30	47.7	75.0	50.4	31.3	43.6	97
294	304	279	279	64.7	104.5	29	47.0	74.5	49.5	30.1	42.7	95
286	297	271	271	64.3	104.0	28	46.1	73.9	48.6	28.9	41.7	93
279	290	264	264	63.8	103.0	27	45.2	73.3	47.7	27.8	40.8	90
272	284	258	258	63.3	102.5	26	44.6	72.8	46.8	26.7	39.9	88
266	278	253	253	62.8	101.5	25	43.8	72.2	45.9	25.5	39.2	86
260	272	247	247	62.4	101.0	24	43.1	71.6	45.0	24.3	38.4	84
254	266	243	243	62.0	100.0	23	42.1	71.0	44.0	23.1	37.7	82
248	261	237	237	61.5	99.0	22	41.6	70.5	43.2	22.0	36.9	80
243	256	231	231	61.0	98.5	21	40.9	69.9	42.3	20.7	36.3	79
238	251	226	226	60.5	97.8	20	40.1	69.4	41.5	19.6	35.6	77
230	243	219	219		96.7	18					34.6	75
222	236	212	212		95.5	16					33.5	72
213	229	203	203		93.9	14					32.3	69
204	220	194	194		92.3	12					31.1	66
196	212	187	187		90.7	10					30.0	63
188	204	179	179		89.5	8						61
180	196	171	171		87.1	6						59
173	189	165	165		85.5	4						56
166	181	158	158		83.5	2						54

PROPERTIES OF ELEMENTS

Element	Density (g/cm ³)	Hardness (kg/mm ²)	Young's Modulus (X10 ³ kg/mm ²)	Thermal Expansion Coefficient (10 ⁻⁶ /°C)	Melting Point (°C)
WC	15.60	2,150	70	5.1	2,900
TiC	4.94	3,200	46	7.6	3,200
TaC	14.50	1,800	29	6.6	3,800
NbC	8.20	2,050	35	6.8	3,500
TiN	5.43	2,000	26	9.2	2,950
Al ₂ O ₃	3.98	3,000	42	8.5	2,050
CBN	3.48	4,500	71	4.7	
Diamond	3.52 >	9,000	99	3.1	
Co	8.90		10~18	12.3	1,495
Ni	8.90		20	13.3	1,455

GRADE COMPARISON

Maker Grade		Union	NTK	Ceram Tec	Kennametal	Sandvik	Tungaloy	Greenleaf	Kyocera	Mitsubishi	Sumitomo	Taegu Tec	
CERAMIC	Black Ceramic	ST100	HC2	SH1	K090		LX21		A65	XD202	NB90M		
		ST300	HC4	SH2/SH3	KY1615	CC650		GEM6		XD805	NB90S	AB20	
		ST500	HC5		MC2							AB20	
		ST900	HC7										
	SD200	HC6											
	Coated Ceramic	TC100	ZC4		KY4400								
		TC300	ZC7	SH2C	HTM85D	CC6050	LX11		A66N PT600M		NB100C		
		TM300											
	White Ceramic	SZ200	HC1	SN60	AC5	CC620	LXA	GEM9	AZ5000			W80	AW120
				SN80	K060				SN60				
	Pink	SZ300	HW2										AW120
		SN26	EC1	SL100	KY2000				KS5000			NS130	AS10
	Silicon Nitride	SN300	SX8	SL200	KY3000	CC690			KS5000				
		SN400/ SN600	SX2 SX6	SL500/SL506 SL608	KY1320/KY3500	CC6090	FX90 FX105	GSN	KS6000	XD515 XD520		NS260	AS10
		SN500	SX1	SL508			CX710 CSC73		KS7000			NS30	AS10
			SX5			CC680							
SN800 SN1000		SX9 SX7	SL800/SL806	KY1540/KY1310 KY2100	CC6080 CC6060/CC6065				KS6040			AS500	
Coated Silicon Nitride	NC400	SP2	SL550C	KY3400	GC1690	CXC73 TF110	HSN200	KX207			NS260C		
	SW400 SW800	WA5 WA1		KY1525 KY4300 MC3	CC670		WG300 WG600 WG700				WX120 WX2000	TC430	
CERMET	Non Coated	TX510	T3N/CTX XT3	SC35	KT125/HTX		NS520		TN30 TN6010		T110A		
		TX515	T15/C30	SC15	KT315/KT175/HT2	CT5015 CT525			TN40		T12A		
		TX520	C7X/N20/ C50	SC40	TT125/PS5	CT530	NS420 NS730		TN60 TN6020		T130A		
		TX530	N40/C45	SC60	KZ20S		NS540 NS740		TN90				
	Coated	TX910					GT520 GT720		PV30 PV7010				
		TX915	Q151Z15				AT530 GT730		PV7020	AP25N			
		TX920	Q50/ C7Z/Z50		KT513S	GC1525	GT530			UP35N	T1200A T130Z		
		TX930								UP45N			
PCBN	SBN1000	B22	WBN735 WBN750	KB1345 KD120		BX950		KBN65B	MB710 MB730		BN100 BN500 BN600 BN700		
	SBN2000	B20	WBN570	KB1610 KD050/KD081	CB7015	BX310		KBN10B	MB810		BN250 BNX10		
	SBN3000	B24	WBN560	KB1625	CB7020	BX330			MB825		BN250		
	SBN4000	B36	WBN555	KB1630	CB7050	BX360 BX380 BX450		KBN25B	MB8025 MB850 MB835		BN350 BN300 BNX20 BNS25 BN250 BN80		
	SBN5000	B16	WBN100 WBN101	KD230	CB50	BX90S		KBN900	MBS140		BNS800		
PCD	SPD1000					DX120		KPD001 KPD002	MD230		DA200		
	SPD2000	PA1		KD100 KD1415	CD10	DX140		KPD010	MD220		DA150		
	SPD3000	PD1		KD100		DX160		KPD025	MD205		DA90 DA1000		
						DX180							

COMPARISON OF WORK-PIECE

ISO	Korea KS	United Kingdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
P Steel	Carbon steels								
	SM15C	080M15	1015	Ck15	C15K	C16	1370	XC12	S15C
	SM25C	-	1025	Ck25	-	-	-	-	S25C
	SM35C	060A35	1035{1037}	Ck35	-	C36	1572	XC38TS	S35C
	SM45C	080M46	1045{1046}	Ck45	C45K	C45	1672	XC42	S45C
	SM50C	060A52	1049	Ck50	-	C53	1674	XC48TS	S50C
	SM55C	070M55	1055	Ck55	C55K	C5	-	XC55	S55C
	SM58C	080A62	1060	Ck58	-	C60	1678	XC60	S58C
	-	212M36	1140	35S20	F210G	-	1957	35MF4	-
	SCMn1	150M28	1330	28Mn6	-	-	-	20M5	SCMn1
	-	230M07	1215	9SMn36	12SMn35	CF9SMn36	-	S300	-
	SMn438(H)	-	1355	36Mn5	36Mn5	-	2120	40M5	SMn738(H)
	sum22	230M07	1213	9SMn28	11SMn28	CF9SMn28	1912	S250	sum22
	Low alloy steels								
	SNC815	655M13	3310:3415	14NiCr14	-	-	-	12NC15	SNC815(H)
	SNC415	-	3415	14NiCr10	15NiCr11	16NiCr11	-	14NC11	SNC415(H)
	SNC236	640A35	3435	36NiCr6	-	-	-	35NC6	SNC236
	SCM420,SCM430	1717DS110	41300	25CrMo4	55Cr3	25CrMo{KB}	2225	25CD4	SM420;SCM430
	SCM432,SCCRM3	708A37	4137:4135	34CrMo4	34CrMo4	35CrMo4	2234	35CD4	SM432;SCCRM3
	SCM415	-	-	15CrMo5	12CrMo4	-	2216	12CD4	SCM415(H)
	SCM440	708M40	4140	42CrMo4	42CrMo4	42CrMo4	2244	42CD4	SCM440(H)
	SCM440	708M40	4140:4142	41CrMo4	42CrMo4	41CrMo4	2244	42CD4TS	SCM440
	-	820A16	-	17CrNiMo6	14NiCrMo13	-	-	18NCD6	-
	-	1503-245-420	4520	16Mo5	16Mo5	16Mo5	-	-	-
	SCMnH1	Z120M12	-	G-X120Mn12	X120Mn12	XG120Mn12	-	Z120M12	SCMnH/1
	SCr415	523M15	5015	15Cr3	-	-	-	12C3	SCr415(H)
	-	{527M20}	5115	16MnCr5	16MnCr5	16MnCr5	2511	16MC5	-
	SCr430	530A32	5130	34Cr4	35Cr4	34Cr4{KB}	-	32C4	SCr430(H)
	SCr440	530M40	5140	42Cr4	42Cr4	41Cr4	-	42C4	SCr440(H)
	SPS	735A50	6050	50CrV4	51CrV4	50CrV4	2230	50CA4	SUP10
	SPS9	527M60	5155	55Cr3	-	-	-	55Cr3	SUP9(A)
	-	905M39	-	41CrAlMo7	41CrAlMo7	41CrAlMo7	2940	40CAD6,12	-
	SNCM220	805M20	8620	21NiCrMo22	20NiCrMo2	20NiCrMo2	2506	30NCD2	SNCM22(H)
	SNCM240	311-Type7	8637,8640	40NiCrMo22	40NiCrMo2	40NiCrMo2{KB}	-	-	SNCM240
	-	250A53	9255	55Si7	56Si7	55Si8	2085	55S7	-
	-	816M40	9840	36CrNiMo4	35NiCrMo4	38NiCrMo4{KB}	-	40NCD3	-
	SU2	534A99	52100	100Cr6	F.131	100Cr6	2258	100C6	SU2
	SUM22L	-	12L13	9SMnPb28	11SMnPb28	CF9SMnPb28	1914	S250Pb	SUM22L
	-	-	12L14	-SMnPb36	12SMnPb25	CF9SMnPb36	1926	S300Pb	-
	-	150-620Gr27	ASTM A182	13CrMo44	14CrMo45	14CrMo45	-	15CD3.5	-
	-	1501-622	ASTM A182	10CrMo910	TU.H	12CrMo9,10	2218	12CD9,10	-
	-	-	ASTM A350LF5	14Ni6	15Ni6	14Ni6	-	16N6	-
	-	1501-240	ASTM A204Gr.A	15Mo3	16Mo3	16Mo3KW	2912	15D3	-
	-	722M24	-32CrMo12	32CrMo12	F124.A	32CrMo12	2240	30CD12	-
	High alloy steels								
STD1	BD3	D3	X210Cr12	X210Cr12	X210CrMoV13KU	-	Z200C12	SKD1	
STS12	-	A2	Z100CrMoV51Z100CDV5	BA2	2260	Z100CrMoV51	Z100CrMoV51KU	SKD12	
-	-	-	X210CrW12	X210CrE12	X215CRW121KU	2312	-	SKD2	
STD61	BH21	H21	X30WCrV9	X30WCrV9	X28W09KU	-	Z30WCV9	SKD5	
-	BH13	H13	X40CrMoV51	X40CrMoV5	X35CrMoVKU	2242	Z40CDV5	SKS31	
STS31	-	-	105WCr6	05WCr5	3KU	2140	105WC13	SKS43	
STS43	BW2	W210	100Vi	-	-	-	Y105V	SKT4	
STF4	-	L6	55NiCrMoV6	F520.S	-	-	55NCDV7	SUH1	
-	401S45	HW3	X45GrSi93	F322	10WCr6	-	Z45CS9	SKH55	
-	-	-	-	-	-	-	-	-	
SKH55	-	-	S6-5-2-5	HS6-5-2-5	-	2723	Z85WDCV2723	SKH3	
SKH3	BT4	T4	S18-1-2-5	HS18-1-1-5	X78WCo1805KU	-	Z80WKCV	SKH9	
SKH51	BM2	M2	S6-5-2	HS6-5-2	X82WMo0650KU	-2722	Z85WDCV	-	
-	-	-	M7	HS2-9-2	Z100WCWHS2-9-2	2782	S2-9-2	-	
SKH2	BT1	T1	S18-0-1	HS18-0-1	X75W18KU	-	Z08WCV	SKH2	
-	BS1	S1	45WCrV7	45WCrSi8	45WCrV8KU	2710	-	-	

COMPARISON OF WORK-PIECE

ISO	Korea KS	United Kingdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
M Stainless Steel	Carbon steels								
	STS301	-	301	X12CrNi177	-	2331	F.3517	Z12CN17.07X12CrNi17.07	SUS301
	STS303	-	303	X12CrNiS188Z10CNF18.09	-	2346	F.3517	X10CrNiS18.09	SUS303
	-	-	304	X5CrNi189	304S31	X5CrNi18	2332/2333F.3551	Z6CN18.09	SUS304
	STS304	304S15	304	X5CrNi189	F.3551	X5CrNi1810	2332	Z6CN18.09	SUS304
	STS304L	-	304L	X2CrNi1911	304C12	2333	-	-	SUS304L
	SSC16	-	304LX2CrNi1819	Z2CrNi1810	304S12	2352	F.3503	X2CrNi1011	SCS16
	STS304L	304S62	304LN	Z2CrNiN,1810	-	-	2371	Z2CN1810	NSUS304LN
	STR31	-	HW3X45CrSi93	Z45CrSi93	401S45	-	SF322	X45CrSi8	SUH1
	STR309	-	309	X15CrNiSi201	-	-	-	Z15CNS2012	SUH309
	STR310	310S24	310S	X12CrNi2521	F.332	X60CrNi2520	2361	Z12CN2520	SUH310
	STS316	-	316	X5CrNiMo1810	346S16	X5CrNiMo17122347	F.3543	Z6CND1711	SUS316
	STS316LN	-	316LN	X2CrNiMoN	-	-	2375	X2CND1713	SUS316LN
	STS316L	-	316L	X2CrNiMo1812	-	-	-	-	SUS316L
	SSC16	-	316LXCrNiMo	Z2cndCND1712	316S13	2353	-	X2CrNiMo1712	SCS16
	-	320S17	316Ti	Z2CND1915	F.3535	X6CrNiMoTi1712	2350	Z6VDT17.12	-
	STS317L	-	317L	X24CrNiMo1816	317S12	2367	-	X2CrNiMo1816	317L
	-	-	X10CrNi	Z6CNDNb	-	-	-	X6CrNiMoMoNb	318
	-	-	S32304	"X2CrNiN,234"	-	-	2327	Z2CN23-04AZ	-
	-	-	S32900	X8CrNiMo.275	-	-	2324	-	-
	-	-	S31803	X2CrNiMoN	-	-	2377	Z2CND22-0503	-
	STS321	351S12	321	X10CrNiTi	F.3553	X6CrNiTi1811	2337	Z6CNT18.10	SUS321
	STS347	-	347	X6CrNiNb189	347S17	X6CrNiNb18.112338	F.3552	Z6CNSb18.10	SUS347
	STS12	BA2	A2	Z100CrMoV51	Z100CrMoV51	Z100CrMoV51KU	2260	Z100CDV5	SKD12
	High alloy steels								
	STS403	403S17	403	X7Cr13	F.3110	X6Cr13	2301	Z6C13	SUS403
	STS405	403S17	405	X10CrAl13	F.311	X10CrAl13	-	Z10C13	SUS405
	STS410	410S21	410	X10Cr13	F.3401	L13	2302	Z10C14	SUS410
	STS420J2	420S45	-	X46Cr13	F.3405	X40Cr145	2304	Z4CM	SUS420J2
	STS430	430S15	430	X8Cr17	F.3113	X8Cr17	2320	ZBC17	SUS430
	STS430F	-	430F	X12CrMoS17	F.3117	X10CrS17	2383	Z10CF17	SUS430F
	STS431	431S29	431	X22CrNi6	F.33427	X16CrNi16	2321	Z15CNi6.02	SUS431
	STS434	434S17	434	X6CrMo17	-	ZX8CrMo17	2325	ZBCD17.01	SUS434
	STR446	-	446	X10CrA124	-	X16Cr26	2322	Z10CAC24	SUH446
	SSC5	425C11	-	X5CrNi134	-	-	-	Z4CND13.4M	SCS5
	STR35,STR36	348S54	EV8	X53CrMnNiN219	-	X53CrMnNiN	-	Z52CMN21.09	SUH35,SUH36
	STR4	443S65	HNW6	X80CrNiSi20	F.320B	X80CrSiNi20	-	Z80CSN20.02	SUH4
	High alloy steels								
	HRHC15	330C11	-	GX40NiCrSi	-	XG50NiCr	-	-	SCH15
	STR330	-	X12NiCrSi	-	-	-	-	Z12NCS35.16	SUH330330
	-	3072-76	4676	NiCu30Al	-	-	-	-	-
	-	-	5390A	-	-	-	-	NC22FeD	-
	-	3146-3	5391	S-NiCr13A16MoNb	-	-	-	NC12D	-
	-	HR8	5383	NiCr19Fe19NbMo	-	-	-	NC19rNB	-
	-	-	5537C	CoCr20W15Ni	-	-	-	KC20WN	-
-	-	5660	NiFe35Cr14MoTi	-	-	-	ZSNCDT42	-	
-	-	5666	NiCr22Mo9Nb	-	-	-	NC22FeDNB	-	
-	-	AMS5397	NiCr15Cr10MoATi	-	-	-	-	-	
-	-	AMS5399	NiCr19Co11MoTi	-	-	-	NC19KDT	-	
-	-	AMS5544	NiCr19Fe19NbMo	-	-	-	NC20K14	-	
-	-	AMS5772	CoCr22W14Ni	-	-	-	KC22WN	-	
-	TA10-13/TA28	AMSR56400	TiAl6V4	-	-	-	T-A6V	-	
-	TA14/17	AMSR54520	TiAl5Sn2.5	-	-	-	T-A5E	-	

COMPARISON OF WORK-PIECE

ISO	Korea KS	United Kingdom BS	America AIS/SAE	German DIN	Spain UNF	Italy UNI	Sweden SS	France AFNOR	Japan JIS
K	Gray cast iron								
	GC100	-	No20B	GG10	-	G10	110	Ft100	FC100
	GC150	Grade150	No25B	GG15	-	G14	115	Ft15D	FC150
	GC200	Grade220	No30B	GG20	-	G20	120	Ft20D	FC200
	GC250	Grade260	No35B	GG25	-	G25	125	Ft25D	FC250
	GC300	Grade300	GNo45B	GG30	-	G30	130	Ft30D	FC300
	GC350	Grade350	No50B	GG35	-	G35	135	Ft35D	FC350
	GCD400	SNG420/2	60-40-18	GGG40	-	GS400-12	0717-02	FCS400-12	FCD400
	GCD500	SNG500/7	65-45-12	GGG50	-	GS500/7	0727-02	HGS500-7	FCD500
	GCD600	SNG600/3	80-55-06	GGG60	-	GS600/3	0732-03	FGS600-3	FCD600
GCD700	SNG700/2	100-70-03	GGG70	-	GS700/2	0737-01	FGS700-2	FCD700	
Cast iron	Ductile cast iron								
	-	B340/12	32510	GTS-35	-	-	0815	MN35-10	-
	-	P440/7	40010	GTS-45	-	-	0852	-	-
	-	P510/4	50005	GTS-55	-	-	0854	MP50-5	-
Aluminium	Aluminium alloy								
	HRHC15	330C11	-	GX40NiCrSi	-	XG50NiCr	-	-	SCH15
	STR330	-	X12NiCrSi	-	-	-	-	Z12NCS35.16	SUH330330
	-	3072-76	4676	NiCu30Al	-	-	-	-	-
	-	-	5390A	-	-	-	-	NC22FeD	-
	-	3146-3	5391	S-NiCr13A16MoNb	-	-	-	NC12D	-

COMPARISON OF WORK-PIECE (NI-BASED HEAT RESISTANT ALLOYS)

Material Condition	Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
		Ann.	Aged	Ni	Cr	Co	Fe	Mo	C	Mn	Si	Al	Ti	Others
Ni-based Alloys	Haynes 80A	-	-	70.9	20.0	2.0	3.0	-	0.1	-	-	1.5	2.5	-
	Haynes 75	-	-	73.7	20.0	-	5.0	-	0.12	-	-	0.25	0.4	0.5
	Haynes 263	-	-	51.4	20.0	20.0	-	6.0	0.06	-	-	1.0	1.5	-
	Haynes 600	-	-	75.9	16.0	-	8.0	-	0.08	-	-	-	-	-
	Haynes 625	-	-	61.4	21.0	-	5.0	9.0	0.1	-	-	-	-	3.5
	Haynes X-750	-	-	74.9	16.0	-	7.0	-	0.08	-	-	0.8	0.25	1.0
	Haynes 718	-	-	53.5	18.0	-	19.0	3.0	0.08	-	-	0.5	0.9	5.0
	Inconel 781	-	-	70.0	16.0	-	8.0	-	0.07	2.25	0.15	0.1	3.0	0.2
	Nimocast PE10	-	-	56.4	20.0	-	-	6.0	-	-	-	-	-	9.0
	Nimocast PD16	-	-	43.8	16.5	-	34.0	3.3	0.06	-	-	1.2	1.2	-
	Nimocast PK24	-	-	61.1	9.5	15.0	-	3.0	0.17	-	-	5.5	4.7	1.0
	Nimocast 842	-	-	57.7	22.0	10.0	-	10.0	0.3	-	-	-	-	-
	Nimocast 713	-	-	72.6	13.4	-	-	4.5	0.12	-	-	6.2	1.0	2.3
	Nimonic 95	-	-	49.9	19.5	-	5.0	-	0.11	-	1.0	2.0	3.5	-
	Nimonic 242	-	-	58.0	21.5	10.0	-	10.5	-	-	-	-	-	-
	Nimonic PE13	-	-	49.0	21.8	1.5	18.5	9.0	0.1	0.5	0.5	-	-	0.6
	Nimonic PK25	-	-	49.9	19.0	19.5	-	4.0	0.08	0.8	0.8	2.9	2.9	-
	Nimonic PK31	-	-	53.8	20.0	14.0	-	4.5	-	-	-	0.4	2.3	5.0
	Refractaloy 26	-	-	38.0	19.0	20.0	16.0	3.2	0.03	0.8	1.0	0.2	2.75	-
	Rene 63	-	-	54.4	14.0	15.0	0.5	6.0	0.05	0.1	0.2	3.8	2.5	3.5
	Rene 77	-	-	57.6	15.0	15.0	0.4	4.2	0.17	0.1	0.1	4.3	3.3	-
	Rene 80	-	-	61.0	14.0	9.5	-	4.0	0.15	-	-	-	.0	8.0
	Rene 95	-	-	64.5	14.0	8.0	-	3.5	0.15	-	-	-	2.5	3.5
	Rene 100	-	-	60.6	10.0	15.0	-	3.0	0.18	-	-	5.5	4.7	-
	Rene 125	-	-	60.0	8.9	10.0	-	2.0	0.1	-	-	4.7	2.5	7.0
	TRW 1800	-	-	70.0	13.0	-	-	-	0.1	-	-	6.0	0.06	10.5
TRW V1 A	-	-	70.5	6.0	7.5	-	2.0	0.13	-	-	5.4	1.0	6.3	
Udimet 630	-	-	41.0	17.0	-	17.5	3.0	0.04	-	-	0.6	1.1	4.1	
Udimet 700	-	-	54.6	15.0	17.5	-	-	0.1	-	-	4.4	3.4	-	
Udimet 710	-	-	55.0	18.0	15.0	0.5	1.5	0.07	-	-	2.5	5.0	1.5	
Annealed or Solution Treated	Hastalloy B	140	-	64.3	0.6	1.25	5.5	28.0	0.1	0.8	0.7	-	-	-
	Hastalloy C	200	-	54.1	16.0	1.25	5.75	17.0	0.07	0.8	0.7	-	-	4.0
	Hastalloy N	-	-	72.2	7.0	0.25	3.0	16.5	0.06	0.4	0.25	0.5	-	0.21
	Hastalloy W	-	-	62.7	5.0	1.25	5.5	24.5	0.06	0.5	0.5	-	-	-
	Hastalloy X	160	-	47.1	22.0	1.5	18.5	9.0	0.1	0.6	0.6	-	-	0.6
	Incoloy 804	-	-	41.0	29.5	-	26.0	-	0.1	1.0	0.75	0.25	0.6	0.5
	Incoloy 825	180	-	42.0	21.0	-	30.0	3.0	0.04	-	-	-	1.0	2.0
	Inconel 600	170	-	75.0	15.5	-	8.0	-	0.05	-	-	-	-	-
	Inconel 601	150	-	60.0	23.0	-	14.0	-	0.05	-	-	1.4	-	-
	Inconel 604	180	-	74.4	15.8	-	7.2	-	0.04	0.2	0.2	-	-	0.1
	Inconel 625	180	-	61.0	21.5	-	2.5	9.0	0.04	0.5	0.5	0.4	0.4	3.6
	Monel 400	110	-	64.0	-	-	1.5	-	0.12	1.0	-	-	-	32.0
	Monel R-405	110	-	66.0	-	-	1.2	-	0.15	1.0	-	-	-	31.06
Nimonic 75	170	-	75.0	19.5	-	4.0	-	0.12	-	-	-	0.4	-	

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	5542	-	NC15TNbA	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	NiFe33Cr17Mo	-
-	5397	-	NK15CAT	LW2.4674	-	-
-	-	-	-	-	-	-
5391A	-	HC204	NC13AD	2.4670	S-NiCr13Al6MoNb	-
-	-	3146	-	-	-	-
-	-	HC6,204	-	-	-	-
-	-	-	-	-	-	-
5536E	5754E	-	NC22FeD	2.4665	NiCr22Fe18Mo	-
5751A	5753	-	NKOD20ATU	2.4666	NiCr18CoMo	-
-	-	-	-	-	-	-
-	-	-	Z6NKCDT38	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	NC14K8	-	-	-
-	-	-	-	-	NiCo15Cr10MoAlTi	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	NiTa9Co8W6CrAl	-
-	-	-	-	2.4668	NiCr19NbMo	-
-	-	-	NCKD20AT	2.4636	NiCo15CrMoAlTi	-
-	-	-	NC18TDA	-	-	-
5396A	5596	-	ND37FeV	2.4800	S-NiMo30	N10001
5388C	5388	-	-	2.4602	NiCr17Mo17FeW	N10002
5771	5607	-	-	-	-	N10003
-	5786	-	-	-	-	N10004
5390A	5390	3072-76	NC22FeD	2.4603	-	N06002
-	-	3072-76	-	-	-	-
-	-	-	NC21FeDU	2.4858	NiCr21Mo	N08825
5540	5580	-	NC15Fe	2.4816	NiCr15Fe	N06600
-	5715	-	-	2.4851	NiCr23Fe	N06601
-	-	3072-76	-	-	-	-
-	5666	-	NC22FeDNB	2.4856	NiCr22Mo9Nb	N06625
4544	4574	HR5,203-4	NU30	2.4360	NiCu30Fe	N04400
4674	7234	-	-	-	-	N04405
-	-	-	NC20T	2.4630	NiCr20Ti	-

COMPARISON OF WORK-PIECE (NI-BASED HEAT RESISTANT ALLOYS)

Material Condition	Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
		Ann.	Aged	Ni	Cr	Co	Fe	Mo	C	Mn	Si	Al	Ti	Others
Aged or Solution Treated and Aged	Astrolloy	-	-	56.9	15.0	15.0	-	5.25	0.06	-	-	4.0	3.5	0.05
	Hastelloy R235	-	-	61.0	15.0	2.5	10.0	5.5	0.15	0.25	0.6	3.0	2.0	-
	Incoloy 901	180	300	44.3	12.5	-	34.0	6.0	0.05	0.24	0.12	0.15	2.7	0.15
	Incoloy 903	-	380	39.0	-	15.0	41.0	-	0.02	-	-	0.7	1.4	3.0
	Inconel 700	-	350	46.0	15.0	23.5	0.7	3.75	0.12	0.10.0	0.3	3.0	2.2	-
	Inconel 702	-	-	79.6	15.6	-	0.35	-	0.04	0.05	0.2	3.0	0.7	-
	Inconel 706	-	-	42.0	16.0	-	40.0	-	0.03	0.2	0.3	0.4	1.75	-
	Inconel 713	-	-	75.0	12.5	-	-	4.2	0.12	-	-	6.1	0.8	-
	Inconel 718	180	380	52.5	19.0	-	19.0	3.0	0.04	0.35	0.35	0.9	0.9	0.1
	Inconel 722	-	380	74.8	15.0	-	6.5	-	0.04	0.55	0.2	0.6	2.4	-
	Inconel X-750	-	390	73.0	15.5	-	7.0	-	0.04	0.35	0.35	0.7	2.5	-
	Inconel 751	-	-	70.0	15.5	-	7.0	-	0.1	1.0	0.5	1.5	2.6	0.5
	Jethete M-252	-	320	55.3	20.0	10.0	-	10.0	0.15	0.5	0.5	1.0	2.6	-
	MAR-M 246	-	270	59.5	9.0	10.0	0.2	2.5	0.15	-	-	5.5	1.5	11.5
	MAR-M 421	-	-	62.3	15.5	10.0	-	1.7	0.15	-	-	4.3	1.75	5.3
	MAR-M 432	-	-	52.3	15.5	20.0	-	-	0.15	-	-	2.8	4.3	5.0
	Monel K-500	120	290	64.0	-	-	1.0	-	0.13	0.8	-	2.8	0.6	30.0
	Nimocast 80	-	-	69.9	20.0	2.0	5.0	-	0.1	-	-	1.0	2.0	-
	Nimocast 90	-	-	52.9	20.0	18.0	5.0	-	0.1	-	-	1.5	2.5	-
	Nimonic 80A	-	350	75.0	19.5	-	-	-	0.08	-	-	1.4	2.4	-
	Nimonic 90	-	346	59.0	19.5	16.5	-	-	0.08	-	-	1.5	2.5	-
	Nimonic 105	-	320	53.0	15.0	20.0	-	5.0	0.12	-	-	4.7	1.2	-
	Nimonic 115	-	350	59.0	14.2	13.2	-	4.0	0.16	-	-	5.0	4.0	-
	Nimonic 901	-	350	44.0	12.5	-	35.0	5.7	0.04	-	-	0.3	2.9	-
	Nimonic 263/C263	-	275	51.5	20.2	20.0	-	6.0	0.06	-	-	0.5	2.0	-
	Nimonic PE16	-	250	43.5	16.5	-	34.0	3.3	0.06	-	-	1.2	1.2	-
	Nimonic PK33	-	350	55.9	18.0	14.0	0.5	7.0	0.05	0.25	0.25	2.1	2.2	-
	R-235	-	-	63.3	15.0	1.2	10.0	5.5	0.12	0.1	0.3	2.0	2.5	-
Rene 41	-	-	53.1	19.0	11.0	1.8	10.5	0.09	0.3	0.3	1.5	3.1	-	
Udimet 500	-	-	51.7	19.0	19.0	-	4.0	0.4	0.1	0.1	3.0	3.0	-	
Udimet 718	180	380	52.5	18.0	-	18.0	3.0	0.05	-	-	0.6	0.1	5.2	
Waspaloy	-	-	56.9	19.8	13.5	0.8	4.45	0.07	0.1	0.1	1.4	3.0	-	
Cast or Cast and Aged	GMR 235	-	-	63.3	15.5	-	10.0	5.2	0.15	0.25	0.6	3.0	2.0	0.06
	GMR 235D	-	-	63.0	15.5	-	4.5	5.0	0.15	0.1	0.3	3.5	2.5	0.05
	IN-100	-	-	61.6	10.0	15.0	-	3.0	0.18	1.2	0.5	5.5	4.75	-
	Jessop G39	130	-	67.5	19.5	-	5.0	3.0	0.5	-	-	-	-	4.5
	Jessop G64	220	-	60.7	11.0	-	2.0	3.0	0.15	-	-	6.0	-	4.0
	Jessop G81	-	300	79.3	20.0	13.0	-	-	0.05	-	-	1.3	2.3	-
MAR-M 200	-	-	69.4	9.0	10.0	-	-	0.15	-	-	5.0	2.0	13.5	

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	5660	-	ZSNCDT42	LW2.4662	NiFe35Cr14MoTi	N09901
-	-	-	-	-	-	-
-	-	-	NK27CADT	-	NiCo29Cr15MoAlTi	-
-	5550	-	-	-	-	N07702
-	5702	-	-	-	-	N09707
-	5391	3146-3	NC12AD	LW2.4670	S-NiCr13Al6MoNb	-
5383	5589	HR8	NC19FeNB	LW24668	NiCr19Fe19NbMo	N07713
-	5541	-	NC16FeTi	-	NiCr16FeTi	N07722
5542G	5582	-	NC16FeNb	2.4669	NiCr16FeTi	N07750
-	-	-	-	-	-	N07751
-	5551	-	-	2.4916	S-NiCr19Co	N07252
-	-	-	-	2.4675	NiCo10W10Cr9AlTi	-
-	-	-	-	-	NiCr16Co10WAlTi	-
-	-	-	-	-	NiCo20Cr16WAlTi	-
4676	-	3072-76	-	2.4375	NiCu30Al	N05500
-	-	3146	-	-	-	-
-	-	-	-	-	-	-
-	-	Hr401,601	NC20TA	2.4631	NiCr20TiAk	N07080
-	-	Hr2,202	NC20ATV	2.4632	NiCr20Co18Ti	N07090
-	-	HR3	NCKD20ATV	2.4634	NiCo20C15MoAlTi	-
-	-	HR4	NCK15ATD	2.4636	NiCo15C15MoAlTi	-
5660C	5661A	-	ZSNCDT42	2.4662	NiCr15MoTi	-
-	-	HR10	NCK20D	2.4650	NiCr15Co19MoTi	-
-	-	HR207	NW11AC	-	NiFe33Cr17Mo	-
-	-	-	NC19KDUV	-	NiCr20Co16MoTi	-
-	-	-	-	-	-	-
-	5399	-	NC19KDT	2.4973	NiCr19Co11MoTi	N07041
-	5751	-	NCK19DAT	2.4983	NiCr18Co18MoTi	N07500
5383	5589	HR8	NC19FeN	LW2.4668	NiCr19Co19NbMo	N07718
-	5544	-	NC20K14	LW2.4668	NiCr19Co19NbMo	N07001
-	-	-	-	-	-	AlSi:686
-	-	-	-	-	NiCr16MoAl	-
-	5397	-	-	LW2.4674	NiCo15Cr10MoAlTi	N13100
-	-	-	-	-	NiCr20MoW	-
-	-	-	-	-	NiCr11AlWNb	-
-	-	-	-	-	NiCr20Co18Ti	-
-	-	-	-	-	NiW13Co10Cr9AlTi	-

COMPARISON OF WORK-PIECE (NI-BASED HEAT RESISTANT ALLOYS)

Material Condition	Commercial designation	Hardness Brinell HB		Nominal composition Approximate content in %										
		Ann.	Aged	Ni	Cr	Co	Fe	Mo	C	Mn	Si	Al	Ti	Others
Co-based Alloys	Air Resist 13	-	-	1.0	-	79.6	2.5	-	11.0	-	-	3.5	-	4.12
	Air Resist 213	-	-	-	19.0	65.8	-	-	4.7	-	-	3.5	-	6.68
	Altemp S 816	-	-	20.0	20.0	47.6	-	4.0	4.0	-	-	-	-	0.4
	FSX 414	-	-	10.0	29.0	52.8	1.0	-	7.0	-	-	-	-	0.25
	Haynes 36	-	-	10.0	18.5	52.8	2.0	-	14.5	1.2	0.6	-	-	0.4
	Haynes 151	-	-	-	20.0	65.6	-	-	12.8	0.5	0.5	-	0.15	0.47
	HS 25	-	-	10.0	20.0	48.4	3.0	-	15.0	1.5	2.0	-	-	0.1
	HS 30	-	-	16.0	24.0	51.4	1.0	6.0	-	0.6	0.6	-	-	0.4
	HS 31	-	-	10.0	25.0	53.8	1.5	-	8.0	0.6	0.8	-	-	0.4
	HS 36	-	-	10.0	18.0	53.1	2.0	-	15.0	1.5	-	-	-	0.4
	Jessop 832	-	-	12.0	19.0	44.0	17.0	2.0	-	0.8	0.3	-	-	3.5
	Jessop 834	-	-	12.0	19.0	42.0	20.0	2.0	-	-	-	-	-	6.5
	Jessop 865	-	-	10.5	25.5	53.0	2.0	-	7.5	0.6	0.6	-	-	0.45
	Jessop 875	-	-	-	21.0	66.0	-	-	11.0	-	-	-	-	2.45
	Jessop 887	-	-	10.0	20.0	50.0	3.0	-	15.0	0.5	1.5	-	-	0.1
	Jetalloy 209	-	-	10.0	20.0	52.0	1.0	-	15.0	-	-	-	2.0	0.02
	L-251	-	-	10.0	19.0	56.0	1.0	-	14.0	-	-	-	-	0.4
	L-605	-	-	10.0	20.0	51.0	1.6	-	15.0	1.5	0.6	-	-	0.1
	M 203	-	-	25.0	20.0	38.0	1.6	-	12.0	0.8	1.0	0.7	2.0	1.67
	M 204	-	-	25.0	18.0	42.0	1.6	-	12.0	-	-	-	-	1.27
	M 205	-	-	25.0	18.0	40.0	1.6	-	12.0	-	-	2.7	-	1.67
	MAR-M 302	-	-	-	21.5	57.0	0.75	-	10.0	0.1	0.2	-	-	10.0
	MAR-M 322	-	-	-	21.5	60.0	0.75	-	9.0	0.1	0.1	-	0.75	7.7
	MAR-M 509	-	-	10.0	23.0	55.0	-	-	7.0	0.05	0.05	-	0.2	4.6
	MAR-M 905	-	-	20.0	20.0	55.0	-	-	-	-	-	-	0.5	7.65
	MAR-M 918	-	-	20.0	20.0	52.0	0.4	-	-	0.1	0.1	-	0.5	7.65
	Refractaloy 70	-	-	20.0	21.0	46.0	0.5	8.0	4.0	-	-	-	-	0.08
V-36	-	-	20.0	25.0	43.2	2.4	4.0	2.0	0.6	0.5	-	-	2.29	
WI-52	-	-	0.5	21.0	62.6	2.0	-	11.0	0.25	0.25	-	-	2.45	
Jessop X-40	-	-	10.5	25.5	53.0	1.5	-	7.5	0.75	0.75	-	-	0.5	
Jessop X-45	-	-	10.5	25.5	54.7	2.0	-	7.0	-	-	-	-	0.25	
Jessop X-50	-	-	20.5	25.5	40.3	4.0	-	12.0	-	-	-	-	0.75	
Jessop X-63	-	-	10.0	25.0	57.6	1.0	6.0	-	-	-	-	-	0.45	
Annealed or SolutionTreated	J 1650	-	-	27.0	19.0	38.0	-	-	12.0	-	-	-	-	0.2
In Aged Condition	Haynes 25	-	-	10.0	20.0	49.0	3.0	-	15.0	0.5	0.5	-	-	0.1
	Haynes 188	-	-	22.0	22.0	38.0	2.5	-	14.0	0.4	0.4	-	-	0.1
	HS 6	-	-	2.5	28.0	60.5	3.0	-	5.0	-	-	-	-	1.0
	HS 21	-	-	3.0	27.0	62.6	2.0	5.0	-	0.6	0.6	-	-	0.25
	J1570	-	-	28.0	19.0	39.0	2.0	-	7.0	-	-	-	-	-

USA		UK	France	Germany		Others
SAE	AMS	BS	AFNOR	Werkst.-Nr	DIN1706	
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	(5534)	-	-	LW2.4989	CoCr20Ni20W	-
-	-	-	-	-	-	-
-	-	-	-	-	CoCr19W14NiB	-
-	-	-	-	-	CoCr20W13	-
-	5759	-	KC20WN	LW2.4964	CoCr20W15Ni	-
5380	-	-	-	-	CoCr25NiW	R30030
5382	-	3146	-	LW2.4670	CoCr25NiW	R30031
-	-	-	-	-	CoCr19W14NiB	-
-	-	-	-	-	CoCr19Fe16NiMoVNB	-
-	-	-	-	-	CoCr19Fe20NiMoVNB	-
-	-	-	-	-	CoCr25NiW	-
-	-	-	-	-	CoCr21W11Nb	-
-	-	-	-	-	CoCr20W15Ni	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	5759	-	-	2.4964	CoCr20W15Ni	R30605
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	CoCrW10TaZrB	-
-	-	-	-	-	CoCr22W9TaZrNb	-
-	-	3146-3	-	-	CoCr24Ni10W1TaZrB	-
-	-	-	-	-	-	-
-	-	-	-	-	CoCr20Ni20Ta	-
-	-	-	-	-	-	-
-	-	-	-	-	CoCr25NiMoWNB	-
-	-	-	-	-	CoCr12MoW	-
-	5382	3156-2	-	LW2.4670	CoCr25NiW	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
5537C	5759	-	KC20WN	LW2.4964	CoCr20W15Ni	-
-	5772	-	KC22WN	-	CoCr22W14Ni	-
-	5373	-	-	-	-	R30006
-	5385	3531	-	-	CoCr29Mo	R30021
-	-	-	-	-	-	-