

Material Group	SAPPHIRE CUTTING TOOLS Group	Material Example	Hardness	D.O.C		Feed		Vc		Advised D.O.C [mm]	Advised Feed [mm/t]	Advised Vc [m/min]	
				min[mm]	max[mm]	min[mm/t]	max [mm/t]	min [m/min]	max [m/min]				
Steel	Non Alloyed	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	7	0.18	0.38	190	330	3	0.26	250	
			190 HB	0.5	7	0.18	0.38	190	300	3	0.26	220	
			250 HB	0.5	7	0.18	0.38	190	250	3	0.26	200	
	Low Alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	230 HB	0.5	7	0.15	0.3	150	210	3	0.23	180
				280 HB	0.5	7	0.15	0.26	130	190	3	0.21	150
				180 HB	0.5	7	0.15	0.3	150	240	3	0.23	200
				350 HB	0.5	7	0.15	0.26	130	170	3	0.21	140
	High Alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	5	0.12	0.26	90	150	2.3	0.21	130
				280 HB	0.5	5	0.12	0.26	90	130	2.3	0.21	120
				320 HB	0.5	5	0.12	0.22	60	110	2.3	0.18	100
				350 HB	0.5	5	0.12	0.22	60	90	2.3	0.18	80
	Stainless Steel	Austenitic	304, 316, X5CrNi18-9	180 HB	0.5	7	0.15	0.26	190	250	3	0.21	220
240 HB				0.5	7	0.12	0.24	160	210	3	0.21	190	
Duplex		X2CrNiN23-4, S31500	290 HB	0.5	5	0.12	0.22	70	130	2.3	0.18	100	
			310 HB	0.5	5	0.12	0.22	70	120	2.3	0.18	90	
Ferritic & Martensitic		6	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	7	0.15	0.26	150	210	3	0.21	190
				42 HRc	0.5	5	0.15	0.22	90	150	2.3	0.18	130
Cast Iron	Grey	GG20, GG40, EN-GJL-250, N030B	150 HB	0.5	7	0.18	0.38	150	240	3	0.26	200	
			200 HB	0.5	7	0.18	0.38	150	220	3	0.26	180	
			250 HB	0.5	7	0.18	0.38	150	190	3	0.26	160	
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.5	7	0.15	0.34	100	200	3	0.23	180
				200 HB	0.5	7	0.15	0.34	100	180	3	0.23	150
				250 HB	0.5	7	0.15	0.34	100	150	3	0.23	130
NITI Alloy	Fe, Ni & Co Based	9	Incoloy 800	240 HB	0.5	5	0.12	0.22	30	50	2.3	0.18	32
			Inconel 700	250 HB	0.5	5	0.12	0.22	30	50	2.3	0.18	30
			Stellite 21	350 HB	0.5	5	0.12	0.22	30	50	2.3	0.18	30
	Ti Based	10	T40	-	0.5	5	0.12	0.22	30	60	2.3	0.18	40
TiAl6V4			-	0.5	5	0.12	0.24	40	70	2.3	0.21	55	
Hardened Materials	Steel Chilled Cast Iron White Cast Iron	11	G-X300CrMo15	55 HRc	0.5	1.5	0.1	0.17	30	60	0.8	0.14	40
			Ni-Hard 2	400 HB	0.5	2	0.1	0.22	40	80	1.1	0.16	50
			X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	2.5	0.1	0.22	40	80	1.5	0.16	60
				50 HRc	0.5	1.8	0.1	0.19	40	70	1.1	0.15	55
				55 HRc	0.5	1.5	0.1	0.17	40	60	0.8	0.14	50
Aluminium	Al (>8%Si)	12	AISI12	130 HB	0.5	7	0.18	0.38	200	400	3	0.29	280