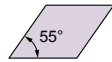
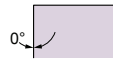


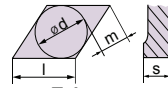
DNMG



Shape

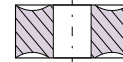


Clearance Angle



Tolerance

s ± 0.13
For l = 11, d ± 0.05 m ± 0.08
For l = 15, d ± 0.08 m ± 0.13



Fixing Chip breaker

NN All purpose Chipbreaker

DNMG

Insert Designation	Grade	l	s	r	Catalog Nr.
DNMG 110404 NN	LT 1000	11	4.76	0.4	T0001905
DNMG 110408 NN	LT 1000	11	4.76	0.8	T0001906
DNMG 150404 NN	LT 1000	15	4.76	0.4	T0001907
DNMG 150408 NN	LT 1000	15	4.76	0.8	T0001908
DNMG 150412 NN	LT 1000	15	4.76	1.2	T0001909
DNMG 150604 NN	LT 1000	15	6.35	0.4	T0001910
DNMG 150608 NN	LT 1000	15	6.35	0.8	T0001911
DNMG 150612 NN	LT 1000	15	6.35	1.2	T0001912

Application Guide

	Finishing	Medium	Roughing / Interrupted cut	
DNMG 110404 NN	😊	😐	😞	😊 = Good 😐 = Acceptable 😞 = Not recommended Finishing: d.o.c. = 0.30 - 1.50 mm fn = 0.08 - 0.20 mm/rev Medium: d.o.c. = 0.70 - 4.50 mm fn = 0.15 - 0.45 mm/rev Roughing d.o.c. = 3.00 - 7.00 mm fn = 0.35 - 0.70 mm/rev
DNMG 110408 NN	😐	😊	😐	
DNMG 150404 NN	😊	😐	😞	
DNMG 150408 NN	😐	😊	😊	
DNMG 150412 NN	😞	😐	😊	
DNMG 150604 NN	😊	😐	😞	
DNMG 150608 NN	😐	😊	😊	
DNMG 150612 NN	😞	😐	😊	

Stainless Steel
↑ V_C

↑ V_C ⇒
↑ Productivity

55° Diamond shape inserts. Suitable for roughing complex shapes operations such as Profiling, Copying and Finishing turning operations.

Machine Recommendations Guide. Details on page 10

DNMG 110404 NN LT 10 & LT 1000

Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm ²]	V _c [m/min]		Optimal cutting conditions		
					min	max	min	max		min	max	D.O.C.	Feed	V _c
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.2	3.0	0.11	0.23	0.60	180	330	2.0	0.18	300
		2		190 HB		2.5		0.22	0.52		280			
		3		250 HB		2.5		0.20	0.48		250			
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.2	2.5	0.10	0.20	0.50	120	280	2.0	0.15	260
		4,6		230 HB		2.5		0.20	0.48		250			
		5,7		280 HB		2.0		0.18	0.40		210			
		8		350 HB		2.0		0.18	0.36		180			
		10		220 HB		2.5		0.18	0.40		190			
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	280 HB	0.2	2.5	0.09	0.16	0.40	70	150	2.0	0.12	140
		10		320 HB		2.0		0.14	0.32		130			
		11		350 HB		2.0		0.14	0.26		110			
11		350 HB		2.0		0.14		0.26	110					
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.2	2.5	0.10	0.18	0.32	170	270	2.0	0.12	260
		14		240 HB		2.5		0.18	0.26	160	220			
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.2	2.0	0.09	0.14	0.20	80	150	2.0	0.12	140
		14		310 HB		2.0		0.14	0.20	70	140			
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.2	2.5	0.10	0.18	0.32	170	250	2.0	0.15	240
		13		42 HRC		2.0		0.16	0.26	120	190			
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.2	3.0	0.08	0.20	0.64	170	250	2.0	0.18	240
		15		200 HB		3.0		0.20	0.60	160	230			
		16		250 HB		3.0		0.20	0.60	150	210			
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.2	2.5	0.08	0.18	0.48	120	230	2.0	0.15	220
		17,19		200 HB		2.5		0.18	0.40	190				
18,20	250 HB	2.5	0.18	0.40	190									
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.2	2.0	0.09	0.15	0.26	25	50	2.0	0.12	40
		33		250 HB		2.0		0.15	0.26	25	50			
		34		350 HB		2.0		0.15	0.26	23	45			
	Ti based	10	TiAl6V4, T40	-	0.2	2.0	0.09	0.16	0.32	45	65	2.0	0.15	60
37	-	2.0		0.14		0.26		35	60					
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.2	1.8	0.05	0.12	0.20	50	100	1.5	0.11	90
		38		50 HRc		1.5		0.10	0.17	40	90			
		38		55 HRc		1.4		0.09	0.13	40	80			
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.2	1.6	0.05	0.17	0.17	40	60	1.2	0.11	70
White Cast Iron	41	G-X300CrMo15	55 HRc	0.2	1.4	0.05	0.09	0.13	30	50	1.0	0.07	40	
NF	Al (>8%Si)	12	AISI12	130 HB	0.2	4.0	0.10	0.30	0.70	200	400	2.0	0.20	350

DNMG 110408 NN LT 10 & LT 1000

Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm²]	V _c [m/min]		Optimal cutting conditions			
					min	max	min	max		min	max	D.O.C.	Feed	V _c	
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB		5.0		0.50	1.80		330	3.0	0.35	240	
		2		190 HB	0.5	5.0	0.21	0.50	1.80	180	280			220	
		3		250 HB		5.0		0.45	1.50		250			200	
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	5.0	0.21	0.45	1.20	120	190	280	3.0	0.32	200
				230 HB		4.0	0.21	0.45	1.20			250			180
				280 HB		4.0	0.18	0.40	1.20			210			150
				350 HB		3.5	0.18	0.40	1.00			180			130
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	4.0	0.18	0.40	1.20	70	190	150	2.5	0.30	140
				280 HB		4.0		0.40	1.20			130			120
				320 HB		3.0		0.35	0.80			110			100
				350 HB		3.0		0.35	0.80			90			
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.5	5.0	0.20	0.40	1.20	170	270	3.0	0.25	190	
				240 HB		5.0		0.40	1.00	160	220			170	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.5	4.0	0.18	0.35	0.80	80	150	2.5	0.28	100	
				310 HB		4.0		0.35	0.80	70	140			90	
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	5.0	0.22	0.40	1.00	170	250	3.0	0.32	190	
				42 HRc		4.0		0.40	1.00	120	190			130	
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	5.0	0.15	0.60	2.00	170	250	3.0	0.35	200	
				200 HB		5.0		0.60	1.80	160	230			180	
				250 HB		5.0		0.55	1.80	150	210			160	
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.5	5.0	0.15	0.50	1.50		250	3.0	0.30	180	
				200 HB		5.0		0.50	1.30	120	230			160	
250 HB	5.0	0.50	1.20		190	140									
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.5	3.0	0.20	0.35		25	45	2.0	0.28	32	
				250 HB		3.0		0.35	0.70	25	45			30	
				350 HB		3.0		0.35	0.70	23	40			28	
	Ti based	10	TiAl6V4, T40	-	0.5	3.5	0.20	0.40	0.80	45	65	2.0	0.33	55	
				-		3.0		0.35	0.70	35	55			45	
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	2.5	0.11	0.30	0.60	50	100	2.0	0.25	80	
				50 HRc		2.0		0.25	0.40	40	90			70	
				55 HRc		1.5		0.20	0.30	40	80			60	
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.5	2.0	0.11	0.25	0.40	40	60	1.5	0.18	50	
	White Cast Iron	41	G-X300CrMo15	55 HRc	0.5	1.5	0.11	0.20	0.30	30	50	1.0	0.15	40	
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.5	6.0	0.20	0.60	1.80	200	400	3.0	0.40	280

DNMG 150404 NN LT 10 & LT 1000

Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm ²]	V _c [m/min]		Optimal cutting conditions			
					min	max	min	max		min	max	D.O.C.	Feed	V _c	
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.2	3.0	0.11	0.23	0.60	180	330	2.0	0.18	300	
		190 HB		2.5		0.22		0.52						280	
		250 HB		2.5		0.20		0.48						250	
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.2	2.5	0.10	0.20	0.50	120	280	2.0	0.15	260	
		230 HB		2.5		0.20		0.48						250	
		280 HB		2.0		0.18		0.40						210	
		320 HB		2.0		0.18		0.36						180	
		350 HB		2.0		0.18		0.36						180	
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.2	2.5	0.09	0.18	0.40	70	190	2.0	0.12	180	
		280 HB		2.5		0.16		0.40						150	
		320 HB		2.0		0.14		0.32						130	
350 HB		2.0		0.14		0.26		110							
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.2	2.5	0.10	0.18	0.32	170	270	2.0	0.12	260	
		240 HB		2.5		0.18		0.26		160				220	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.2	2.0	0.09	0.14	0.20	80	150	2.0	0.12	140	
		310 HB		2.0		0.14		0.20		70				140	
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.2	2.5	0.10	0.18	0.32	170	250	2.0	0.15	240	
		42 HRc		2.0		0.16		0.26		120				190	
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.2	3.0	0.08	0.20	0.64	170	250	2.0	0.18	240	
		200 HB		3.0		0.20		0.60		160				230	
		250 HB		3.0		0.20		0.60		150				210	
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.2	2.5	0.08	0.18	0.48	120	230	2.0	0.15	220	
		200 HB		2.5		0.18		0.40						190	
250 HB	2.5	0.18	0.40	190											
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.2	2.0	0.09	0.15	0.26	25	50	2.0	0.12	40	
		250 HB		2.0		0.15		0.26		25				50	
		350 HB		2.0		0.15		0.26		23				45	
	Ti based	10	TiAl6V4, T40	-	0.2	2.0	0.09	0.16	0.32	45	65	2.0	0.15	60	
-	2.0	0.14		0.26		35		60							
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.2	1.8	0.05	0.12	0.20	50	100	1.5	0.11	90	
				50 HRc		1.5		0.10		0.17				40	90
				55 HRc		1.4		0.09		0.13				40	80
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.2	1.6	0.05	0.17	0.17	40	60	1.2	0.11	70	
	White Cast Iron	41	G-X300CrMo15	55 HRc	0.2	1.4	0.05	0.09	0.13	30	50	1.0	0.07	40	
NF	Al (>8%Si)	12	25	AISI12	130 HB	0.2	4.0	0.10	0.30	0.70	200	400	2.0	0.20	350

DNMG 150408 NN LT 10 & LT 1000

Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm²]	V _c [m/min]		Optimal cutting conditions				
					min	max	min	max		min	max	D.O.C.	Feed	V _c		
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB		5.0		0.50	1.80		330	3.0	0.35	240		
		2		190 HB	0.5	5.0	0.21	0.50	1.80	180	280			220		
		3		250 HB		5.0		0.45	1.50		250			200		
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	5.0	0.21	0.45	1.20	120	190	280	3.0	0.32	200	
				230 HB		4.0	0.21	0.45	1.20			250			0.32	180
				280 HB		4.0	0.18	0.40	1.20			210			0.30	150
				350 HB		3.5	0.18	0.40	1.00			180			0.30	130
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	4.0	0.18	0.40	1.20	70	150	190	2.5	0.30	140	
				280 HB		4.0		0.40	1.20			130			0.28	100
				320 HB		3.0		0.35	0.80			110			0.28	90
				350 HB		3.0		0.35	0.80							
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.5	5.0	0.20	0.40	1.20	170	270	3.0	0.25	190		
				240 HB		5.0		1.00	160	220	0.22			170		
	Duplex	5	X2CrNi23-4, S31500	290 HB	0.5	4.0	0.18	0.35	0.80	80	150	2.5	0.28	100		
				310 HB		4.0		70	140	90						
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	5.0	0.22	0.40	1.00	170	250	3.0	0.32	190		
				42 HRc		4.0		120	190	130						
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	5.0	0.15	0.60	2.00	170	250	3.0	0.35	200		
				200 HB		5.0		0.60	1.80	160	230			180		
				250 HB		5.0		0.55	1.80	150	210			160		
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.5	5.0	0.15	0.50	1.50	120	230	3.0	0.30	180		
				200 HB		5.0		1.30	190	160						
250 HB	5.0	1.20	190	140												
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.5	3.0	0.20	0.35	0.70	25	45	2.0	0.28	32		
				250 HB		3.0		23	40	30						
				350 HB		3.0				28						
	Ti based	10	TiAl6V4, T40	-	0.5	3.5	0.20	0.40	0.80	45	65	2.0	0.33	55		
				-		3.0		0.35	0.70	35	55			0.30	45	
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	2.5	0.11	0.30	0.60	50	100	2.0	0.25	80		
				50 HRc		2.0		0.25	0.40	40	90			1.5	0.20	70
				55 HRc		1.5		0.20	0.30	40	80			1.0	0.18	60
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.5	2.0	0.11	0.25	0.40	40	60	1.5	0.18	50		
	White Cast Iron	41	G-X300CrMo15	55 HRc	0.5	1.5	0.11	0.20	0.30	30	50	1.0	0.15	40		
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.5	6.0	0.20	0.60	1.80	200	400	3.0	0.40	280	

DNMG 150412 NN LT 10 & LT 1000

Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm ²]	V _c [m/min]		Optimal cutting conditions				
					min	max	min	max		min	max	D.O.C.	Feed	V _c		
Steel	Non-alloyed	1	C35, Ck45, 1020,	125 HB	0.7	6.0	0.26	0.68	3.06	180	330	4.0	0.46	240		
		2	1045, 1060,	190 HB		6.0		0.68	3.06		280			220		
		3	28Mn6	250 HB		6.0		0.61	2.55		250			200		
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.7	6.0	0.26	0.61	2.04	120	280	4.0	0.42	200	
			4,6		230 HB		4.8	0.26	0.61	2.04		250			180	
			5,7		280 HB		4.8	0.23	0.54	2.04		210			150	
			8		350 HB		4.2	0.23	0.54	1.70		180			130	
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.7	4.8	0.23	0.54	2.04	70	190	3.4	0.40	140		
				280 HB		4.8		0.54	2.04		150			120		
				320 HB		3.6		0.47	1.36		130			100		
				350 HB		3.6		0.47	1.36		110			90		
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.7	6.0	0.25	0.54	2.04	170	270	4.0	0.40	190		
				240 HB		6.0		0.54	1.70	160	220			0.38	170	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.7	4.8	0.23	0.47	1.36	80	150	3.4	0.32	100		
				310 HB		4.8		0.47	1.36	70	140			90		
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.7	6.0	0.28	0.54	1.70	170	250	4.0	0.40	190		
				42 HRC		4.8		0.54	1.70	120	190			3.0	0.35	130
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.7	6.0	0.20	0.81	3.40	170	250	4.0	0.46	180		
				200 HB		6.0		0.81	3.06	160	230			160		
				250 HB		6.0		0.74	3.06	150	210			160		
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.7	6.0	0.20	0.68	2.55	120	230	4.0	0.40	160		
				200 HB		6.0		0.68	2.21	190	140					
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800 Inconel 700 Stellite 21	240 HB	0.7	3.6	0.25	0.47	1.19	25	45	2.7	0.37	32		
				250 HB		3.6		0.47	1.19	25	45			30		
				350 HB		3.6		0.47	1.19	23	40			28		
	Ti based	10	TiAl6V4 T40	-	0.7	4.8	0.25	0.54	1.36	45	65	2.7	0.44	55		
				-		3.6		0.47	1.19	35	55			45		
	Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.7	3.0	0.14	0.41	1.02	50	100	2.7	0.33	80	
50 HRc					2.4		0.34		0.68	40	90	2.0			0.26	70
55 HRc					1.8		0.27		0.51	40	80	1.3			0.24	60
Chilled Cast Iron		40	2.4	0.14	0.34	0.68	40	60	2.0	0.24	50					
White Cast Iron		41	G-X300CrMo15	55 HRc	0.7	1.8	0.14	0.27	0.51	30	50	1.3	0.20	40		
NF	Al (>8%Si)	12	AlSi12	130 HB	0.7	7.0	0.25	0.81	3.10	200	400	4.0	0.50	280		

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Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm²]	V _c [m/min]		Optimal cutting conditions				
					min	max	min	max		min	max	D.O.C.	Feed	V _c		
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.2	3.0	0.11	0.23	0.60	180	330	2.0	0.18	300		
		2		190 HB		2.5		0.22	0.52		280			260		
		3		250 HB		2.5		0.20	0.48		250			240		
	Low alloyed	2	42CrMo4, S150, Ck60, 4140, 4340, 100Cr6	180 HB	0.2	2.5	0.10	0.20	0.50	120	280	2.0	0.15	260		
		4,6		230 HB		2.5		0.20	0.48		250			240		
		5,7		280 HB		2.0		0.18	0.40		210			200		
		8		350 HB		2.0		0.18	0.36		180			180		
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.2	2.5	0.09	0.18	0.40	70	190	2.0	0.12	180		
		10		280 HB		2.5		0.16	0.40		150			140		
		11		320 HB		2.0		0.14	0.32		130			120		
		11		350 HB		2.0		0.14	0.26		110			110		
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.2	2.5	0.10	0.18	0.32	170	270	2.0	0.12	260		
		14		240 HB		2.5		0.18	0.26		160			220	210	
	Duplex	5	X2CrNi23-4, S31500	290 HB	0.2	2.0	0.09	0.14	0.20	80	150	2.0	0.12	140		
		14		310 HB		2.0		0.14	0.20		70			140	140	
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.2	2.5	0.10	0.18	0.32	170	250	2.0	0.15	240		
		13		42 HRc		2.0		0.16	0.26		120			190	180	
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.2	3.0	0.08	0.20	0.64	170	250	2.0	0.18	240		
		15		200 HB		3.0		0.20	0.60		160			230	220	
		16		250 HB		3.0		0.20	0.60		150			210	200	
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.2	2.5	0.08	0.18	0.48	120	250	2.0	0.15	240		
		17,19		200 HB		2.5		0.18	0.40		230			220		
		18,20		250 HB		2.5		0.18	0.40		190			180		
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.2	2.0	0.09	0.15	0.26	25	50	2.0	0.12	40		
		33		250 HB		2.0		0.15	0.26		25			50	40	
		34		350 HB		2.0		0.15	0.26		23			45	35	
	Ti based	10	TiAl6V4, T40	-	0.2	2.0	0.09	0.16	0.32	45	65	2.0	0.15	60		
		37		-		2.0		0.14	0.26		35			60	50	
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.2	0.05	0.12	0.20	50	100	1.5	0.11	90			
		38		50 HRc			0.10	0.17		40			90	1.2	0.09	80
		38		55 HRc			0.09	0.13		40			80	1.0	0.07	70
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.2	1.6	0.05	0.12	0.17	40	60	1.2	0.11	50		
White Cast Iron	41	G-X300CrMo15	55 HRc	0.2	1.4	0.05	0.09	0.13	30	50	1.0	0.07	40			
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.2	4.0	0.10	0.30	0.70	200	400	2.0	0.20	350	

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Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm ²]	V _c [m/min]		Optimal cutting conditions				
					min	max	min	max		min	max	D.O.C.	Feed	V _c		
Steel	Non-alloyed	1	C35, Ck45, 1020,	125 HB	0.5	5.0	0.21	0.50	1.80	180	280	3.0	0.35	240		
		2	1045, 1060,	190 HB		5.0		0.50						1.80	220	
		3	28Mn6	250 HB		5.0		0.45						1.50	200	
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	5.0	0.21	0.45	1.20	120	280	3.0	0.32	200		
		4,6		230 HB		4.0		0.21						0.45	1.20	180
		5,7		280 HB		4.0		0.18						0.40	1.20	150
		8		350 HB		3.5		0.18						0.40	1.00	130
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	4.0	0.18	0.40	1.20	70	190	2.5	0.30	140		
		10		280 HB		4.0		0.40						1.20	120	
		11		320 HB		3.0		0.35						0.80	100	
		11		350 HB		3.0		0.35						0.80	90	
Stainless Steel	Austenitic	4	304, 316,	180 HB	0.5	5.0	0.20	0.40	1.20	170	3.0	0.25	190			
		14	X5CrNi18-9	240 HB		5.0		0.40		1.00			160	220		
	Duplex	5	X2CrNiN23-4,	290 HB	0.5	4.0	0.18	0.35	0.80	80	2.5	0.28	100			
		14	S31500	310 HB		4.0		0.35		0.80			70	140		
	Ferritic & Martensitic	6	410, X6Cr17,	200 HB	0.5	5.0	0.22	0.40	1.00	170	3.0	0.32	190			
		13	17-4 PH, 430	42 HRC		4.0		0.40		1.00			120	190		
Cast Iron	Grey	7	GG20, GG40,	150 HB	0.5	5.0	0.15	0.60	2.00	170	3.0	0.35	200			
		15	EN-GJL-250,	200 HB		5.0		0.60		1.80			160	230		
		16	No30B	250 HB		5.0		0.55		1.80			150	210		
	Malleable & Nodular	8	GGG40, GGG70,	150 HB	0.5	5.0	0.15	0.50	1.50	120	3.0	0.30	180			
		17,19	50005	200 HB		5.0		0.50		1.30			230	160		
18,20	250 HB	5.0	0.50	1.20	190	140										
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800	240 HB	0.5	3.0	0.20	0.35	0.70	25	2.0	0.28	32			
		33	Inconel 700	250 HB		3.0		0.35		0.70			25	45		
		34	Stellite 21	350 HB		3.0		0.35		0.70			23	40		
	Ti based	10	TiAl6V4	-	0.5	3.5	0.20	0.40	0.80	45	2.0	0.33	55			
37	T40	-	3.0	0.35		0.70		35		55						
Hardened Mat.	Steel	11	X100CrMo13,	45 HRc	0.5	2.5	0.11	0.30	0.60	50	1.5	0.20	80			
		38	440C,	50 HRc		2.0		0.25		0.40			40	90		
		38	G-X260NiCr42	55 HRc		1.5		0.20		0.30			40	80		
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.5	2.0	0.11	0.25	0.40	40	60	1.5	0.18	50		
	White Cast Iron	41	G-X300CrMo15	55 HRc	0.5	1.5	0.11	0.20	0.30	30	50	1.0	0.15	40		
NF	Al (>8%Si)	12	AlSi12	130 HB	0.5	6.0	0.20	0.60	1.80	200	400	3.0	0.40	280		

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Material Group	Gr. N°	VDI Group	Material Examples*	Hardness	D.O.C. [mm]		Feed [mm/rev]		Amax [mm²]	V _c [m/min]		Optimal cutting conditions			
					min	max	min	max		min	max	D.O.C.	Feed	V _c	
Steel	Non-alloyed	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.7	6.0	0.26	0.68	3.06	180	330	4.0	0.46	240	
		2		190 HB		6.0		0.68	3.06		280		0.46	220	
		3		250 HB		6.0		0.61	2.55		250		0.46	200	
	Low alloyed	2	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.7	6.0	0.26	0.61	2.04	120	280	4.0	0.42	200	
		4,6		230 HB		4.8	0.26	0.61	2.04		250		0.42	180	
		5,7		280 HB		4.8	0.23	0.54	2.04		210		0.40	150	
		8		350 HB		4.2	0.23	0.54	1.70		180		0.40	130	
	High alloyed	3	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.7	4.8	0.23	0.54	2.04	70	190	3.4	0.40	140	
		10		280 HB		4.8		0.54	2.04		150		0.40	120	
		11		320 HB		3.6		0.47	1.36		130		0.37	100	
		11		350 HB		3.6		0.47	1.36		110		0.37	90	
Stainless Steel	Austenitic	4	304, 316, X5CrNi18-9	180 HB	0.7	6.0	0.25	0.54	2.04	170	270	4.0	0.40	190	
		14		240 HB		6.0		0.54	1.70	160	220		0.38	170	
	Duplex	5	X2CrNiN23-4, S31500	290 HB	0.7	4.8	0.23	0.47	1.36	80	150	3.4	0.32	100	
		14		310 HB		4.8		0.47	1.36	70	140		0.32	90	
	Ferritic & Martensitic	6	410, X6Cr17, 17-4 PH, 430	200 HB	0.7	6.0	0.28	0.54	1.70	170	250	4.0	0.40	190	
		13		42 HRc		4.8		0.54	1.70	120	190		3.0	0.35	130
Cast Iron	Grey	7	GG20, GG40, EN-GJL-250, No30B	150 HB	0.7	6.0	0.20	0.81	3.40	170	250	4.0	0.46	200	
		15		200 HB		6.0		0.81	3.06	160	230		0.46	180	
		16		250 HB		6.0		0.74	3.06	150	210		0.46	160	
	Malleable & Nodular	8	GGG40, GGG70, 50005	150 HB	0.7	6.0	0.20	0.68	2.55	120	250	4.0	0.40	180	
		17,19		200 HB		6.0		0.68	2.21	230	0.40		160		
		18,20		250 HB		6.0		0.68	2.04	190	0.40		140		
High Temp. Alloys	Fe, Ni & Co based	9	Incoloy 800, Inconel 700, Stellite 21	240 HB	0.7	3.6	0.25	0.47	1.19	25	45	2.7	0.37	32	
		33		250 HB		3.6		0.47	1.19	25	45		0.37	30	
		34		350 HB		3.6		0.47	1.19	23	40		0.37	28	
	Ti based	10	TiAl6V4, T40	-	0.7	4.8	0.25	0.54	1.36	45	65	2.7	0.44	55	
		37		-		3.6		0.47	1.19	35	55		0.40	45	
Hardened Mat.	Steel	11	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.7	3.0	0.14	0.41	1.02	50	100	2.7	0.33	80	
		38		50 HRc		2.4		0.34	0.68	40	90		2.0	0.26	70
		38		55 HRc		1.8		0.27	0.51	40	80		1.3	0.24	60
	Chilled Cast Iron	40	Ni-Hard 2	400 HB	0.7	2.4	0.14	0.34	0.68	40	60	2.0	0.24	50	
	White Cast Iron	41	G-X300CrMo15	55 HRc	0.7	1.8	0.14	0.27	0.51	30	50	1.3	0.20	40	
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.7	7.0	0.25	0.81	3.10	200	400	4.0	0.50	280