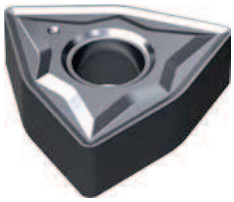
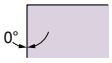
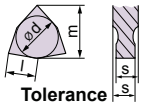


W N M G

Shape

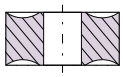


Clearance Angle



Tolerance

s ± 0.13
For l = 06, **d** ± 0.05 **m** ± 0.08
For l = 08, **d** ± 0.08 **m** ± 0.13



Fixing
Chip breaker

* Available from Q2-2013

Insert Designation	Grade	l	s	r	Catalog Nr.
WNMG 060404 NN	**LT 1000**	6	4.76	0.4	T0001949
WNMG 060408 NN	**LT 1000**	6	4.76	0.8	T0001950
WNMG 060408 NX*	**LT 1000**	6	4.76	0.8	T0003014
WNMG 080404 NN	**LT 1000**	8	4.76	0.4	T0001951
WNMG 080408 NN	**LT 1000**	8	4.76	0.8	T0001952
WNMG 080408 NM	**LT 1000**	8	4.76	0.8	T0001969
WNMG 080408 NX	**LT 1000**	8	4.76	0.8	T0002742
WNMG 080412 NN	**LT 1000**	8	4.76	1.2	T0001953

Application Guide

NN All purpose Chipbreaker **NX** All purpose Chipbreaker **NM** Steel and Cast Iron

	Finishing	Medium	Roughing / Interrupted cut
WNMG 060404 NN	☺	😐	☹
WNMG 060408 NN	😐	☺	😐
WNMG 060408 NX	☺	☺	😐
WNMG 080404 NN	☺	😐	☹
WNMG 080408 NN	😐	☺	☺
WNMG 080408 NM	☹	☺	☺
WNMG 080408 NX	😐	☺	☺
WNMG 080412 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

Stainless Steel
V_C

V_C ⇒
Productivity

80° Trigon shape inserts, with 6 cutting edges. Suitable for all-purpose Turning, Facing and Boring operations.

Machine Recommendations Guide. Details on page 10

WNMG 060404 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	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	6	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			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	10	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	14	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	14	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	12	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		0.12	180
Cast Iron	Grey	7	15	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	17,19	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	31,32	Incoloy 800	240 HB	0.2	2.0	0.09	0.15	0.26	25	50	2.0	0.12	40
			33	Inconel 700	250 HB		2.0		0.15	0.26	25	50			40
			34	Stellite 21	350 HB		2.0		0.15	0.26	23	45			35
	Ti based	10	36	TiAl6V4	-	0.2	2.0	0.09	0.16	0.32	45	65	2.0	0.15	60
			37	T40	-		2.0		0.14	0.26	35	60		0.12	50
Hardened Mat.	Steel	11	38	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	1.2	0.09	80
			38		55 HRc		1.4		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

WNMG 060408 NN/NX 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	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	2.5	0.21	0.50	1.17	180	330	2.2	0.35	240
			2		190 HB		2.5		0.50	1.17		280			220
			3		250 HB		2.5		0.45	0.98		250			200
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	2.5	0.21	0.45	0.78	120	280	2.2	0.32	200
			4,6		230 HB		2.0	0.21	0.45	0.78		250	1.8	0.32	180
			5,7		280 HB		2.0	0.18	0.40	0.78		210	1.8	0.30	150
			8		350 HB		1.8	0.18	0.40	0.65		180	1.6	0.30	130
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	2.0	0.18	0.40	0.78	70	190	1.8	0.30	140
			10		280 HB		2.0		0.40	0.78		150	1.8	0.30	120
			11		320 HB		1.5		0.35	0.52		130	1.5	0.28	100
			11		350 HB		1.5		0.35	0.52		110	1.5	0.28	90
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.5	2.5	0.20	0.40	0.78	170	270	2.2	0.25	190
			14		240 HB		2.5		0.40	0.65	160	220		0.22	170
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.5	2.0	0.18	0.35	0.52	80	150	1.8	0.28	100
			14		310 HB		2.0		0.35		70	140			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	2.5	0.22	0.40	0.65	170	250	2.2	0.32	190
			13		42 HRc		2.0		0.40		120	190	2.0		130
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	2.5	0.15	0.60	1.30	170	250	2.2	0.35	200
			15		200 HB		2.5		0.60	1.17	160	230			180
			16		250 HB		2.5		0.55	1.17	150	210			160
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.5	2.5	0.15	0.50	0.98	120	250	2.2	0.30	180
			17,19		200 HB		2.5		0.50	0.85		230			160
			18,20		250 HB		2.5		0.50	0.78		190			140
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.5	1.5	0.20	0.35	0.46	25	45	1.5	0.28	32
			33	Inconel 700	250 HB		1.5		0.35		25	45			30
			34	Stellite 21	350 HB		1.5		0.35		23	40			28
	Ti based	10	36	TiAl6V4	-	0.5	2.0	0.20	0.40	0.52	45	65	1.5	0.33	55
			37	T40	-		1.5		0.35	0.46	35	55		0.30	45
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	1.6	0.11	0.30	0.39	50	100	1.5	0.25	80
			38		50 HRc		1.3		0.25	0.26	40	90	1.0	0.20	70
			38		55 HRc		1.3		0.20	0.20	40	80	1.0	0.18	60
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.5	1.3	0.11	0.25	0.26	40	60	1.0	0.18	50
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.5	1.3	0.11	0.20	0.20	30	50	1.0	0.15	40
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.5	3.0	0.20	0.60	1.80	200	400	2.2	0.40	280

WNMG 080404 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	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	6	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			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	10	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	14	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	14	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	12	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		0.12	180
Cast Iron	Grey	7	15	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	17,19	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	31,32	Incoloy 800	240 HB	0.2	2.0	0.09	0.15	0.26	25	50	2.0	0.12	40
			33	Inconel 700	250 HB		2.0		0.15	0.26	25	50			40
			34	Stellite 21	350 HB		2.0		0.15	0.26	23	45			35
	Ti based	10	36	TiAl6V4	-	0.2	2.0	0.09	0.16	0.32	45	65	2.0	0.15	60
			37	T40	-		2.0		0.14	0.26	35	60		0.12	50
Hardened Mat.	Steel	11	38	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	1.2	0.09	80
			38		55 HRc		1.4		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

WNMG 080408 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	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	3.5	0.21	0.50	1.80	180	330	2.4	0.35	240
			2		190 HB		3.5		0.50	1.80		280			220
			3		250 HB		3.5		0.45	1.50		250			200
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	3.5	0.21	0.45	1.20	120	280	2.4	0.32	200
			4,6		230 HB		2.8	0.21	0.45	1.20		250		0.32	180
			5,7		280 HB		2.8	0.18	0.40	1.20		210		0.30	150
			8		350 HB		2.5	0.18	0.40	1.00		180		0.30	130
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	2.8	0.18	0.40	1.20	70	190	2.0	0.30	140
			10		280 HB		2.8		0.40	1.20		150		0.30	120
			11		320 HB		2.1		0.35	0.80		130		0.28	100
			11		350 HB		2.1		0.35	0.80		110		0.28	90
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.5	3.5	0.20	0.40	1.20	170	270	2.4	0.25	190
			14		240 HB		3.5		0.40	1.00	160	220		0.22	170
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.5	2.8	0.18	0.35	0.80	80	150	2.0	0.28	100
			14		310 HB		2.8		0.35		70	140			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	3.5	0.22	0.40	1.00	170	250	2.4	0.32	190
			13		42 HRc		2.8		0.40		120	190	2.0		130
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	3.5	0.15	0.60	2.00	170	250	2.4	0.35	200
			15		200 HB		3.5		0.60	1.80	160	230			180
			16		250 HB		3.5		0.55	1.80	150	210			160
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.5	3.5	0.15	0.50	1.50	120	250	2.4	0.30	180
			17,19		200 HB		3.5		0.50	1.30		230			160
			18,20		250 HB		3.5		0.50	1.20		190			140
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.5	2.1	0.20	0.35	0.70	25	45	1.6	0.28	32
			33	Inconel 700	250 HB		2.1		0.35		25	45			30
			34	Stellite 21	350 HB		2.1		0.35		23	40			28
	Ti based	10	36	TiAl6V4	-	0.5	2.8	0.20	0.40	0.80	45	65	1.6	0.33	55
			37	T40	-		2.1		0.35	0.70	35	55		0.30	45
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	1.8	0.11	0.30	0.60	50	100	1.6	0.25	80
			38		50 HRc		1.5		0.25	0.40	40	90	1.2	0.20	70
			38		55 HRc		1.5		0.20	0.30	40	80	0.8	0.18	60
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.5	1.5	0.11	0.25	0.40	40	60	1.2	0.18	50
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.5	1.5	0.11	0.20	0.30	30	50	0.8	0.15	40
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.5	4.2	0.20	0.60	1.80	200	400	2.4	0.40	280

WNMG 080408 NM 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	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	3.5	0.25	0.65	2.16	180	330	3.0	0.44	240
			2		190 HB		3.5		0.65	2.16		280			220
			3		250 HB		3.5		0.59	1.80		250			200
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	3.5	0.25	0.59	1.44	120	280	3.0	0.40	200
			4,6		230 HB		2.8	0.25	0.59	1.44		250		0.40	180
			5,7		280 HB		2.8	0.22	0.52	1.44		210		0.38	150
			8		350 HB		2.5	0.22	0.52	1.20		180		0.38	130
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	2.8	0.22	0.52	1.44	70	190	2.5	0.38	140
			10		280 HB		2.8		0.52	1.44		150		0.38	120
			11		320 HB		2.1		0.46	0.96		130		0.35	100
			11		350 HB		2.1		0.46	0.96		110		0.35	90
Stainless Steel	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	3.5	0.26	0.52	1.20	170	250	3.0	0.40	190
			13		42 HRc		2.8		0.52		120	190	2.5		130
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	3.5	0.18	0.78	2.40	170	250	3.0	0.44	200
			15		200 HB		3.5		0.78	2.16	160	230			180
			16		250 HB		3.5		0.72	2.16	150	210			160
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.5	3.5	0.18	0.65	1.80	120	250	3.0	0.38	180
			17,19		200 HB		3.5		0.65	1.56		230			160
			18,20		250 HB		3.5		0.65	1.44		190			140
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	1.8	0.13	0.39	0.72	50	100	2.0	0.31	80
			38		50 HRc		1.5		0.33	0.48	40	90	1.5	0.25	70
			38		55 HRc		1.5		0.26	0.36	40	80	1.0	0.23	60
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.5	1.5	0.13	0.33	0.48	40	60	1.5	0.23	50
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.5	1.5	0.13	0.26	0.36	30	50	1.0	0.19	40

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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	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.5	3.5	0.21	0.50	1.80	180	330	2.4	0.35	240
			2		190 HB		3.5		0.50	1.80		280			220
			3		250 HB		3.5		0.45	1.50		250			200
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.5	3.5	0.21	0.45	1.20	120	280	2.4	0.32	200
			4,6		230 HB		2.8	0.21	0.45	1.20		250		0.32	180
			5,7		280 HB		2.8	0.18	0.40	1.20		210		0.30	150
			8		350 HB		2.5	0.18	0.40	1.00		180		0.30	130
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.5	2.8	0.18	0.40	1.20	70	190	2.0	0.30	140
			10		280 HB		2.8		0.40	1.20		150		0.30	120
			11		320 HB		2.1		0.35	0.80		130		0.28	100
			11		350 HB		2.1		0.35	0.80		110		0.28	90
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.5	3.5	0.20	0.40	1.20	170	270	2.4	0.25	190
			14		240 HB		3.5		0.40	1.00	160	220		0.22	170
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.5	2.8	0.18	0.35	0.80	80	150	2.0	0.28	100
			14		310 HB		2.8		0.35		70	140			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.5	3.5	0.22	0.40	1.00	170	250	2.4	0.32	190
			13		42 HRc		2.8		0.40		120	190	2.0		130
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.5	3.5	0.15	0.60	2.00	170	250	2.4	0.35	200
			15		200 HB		3.5		0.60	1.80	160	230			180
			16		250 HB		3.5		0.55	1.80	150	210			160
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.5	3.5	0.15	0.50	1.50	120	250	2.4	0.30	180
			17,19		200 HB		3.5		0.50	1.30		230			160
			18,20		250 HB		3.5		0.50	1.20		190			140
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.5	2.1	0.20	0.35	0.70	25	45	1.6	0.28	32
			33	Inconel 700	250 HB		2.1		0.35		25	45			30
			34	Stellite 21	350 HB		2.1		0.35		23	40			28
	Ti based	10	36	TiAl6V4	-	0.5	2.8	0.20	0.40	0.80	45	65	1.6	0.33	55
			37	T40	-		2.1		0.35	0.70	35	55		0.30	45
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.5	1.8	0.11	0.30	0.60	50	100	1.6	0.25	80
			38		50 HRc		1.5		0.25	0.40	40	90	1.2	0.20	70
			38		55 HRc		1.5		0.20	0.30	40	80	0.8	0.18	60
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.5	1.5	0.11	0.25	0.40	40	60	1.2	0.18	50
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.5	1.5	0.11	0.20	0.30	30	50	0.8	0.15	40
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.5	4.2	0.20	0.60	1.80	200	400	2.4	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	1	C35, Ck45, 1020, 1045, 1060, 28Mn6	125 HB	0.7	3.5	0.25	0.65	2.16	180	330	3.0	0.44	240
			2		190 HB		3.5		0.65	2.16		280			220
			3		250 HB		3.5		0.59	1.80		250			200
	Low alloyed	2	6	42CrMo4, St50, Ck60, 4140, 4340, 100Cr6	180 HB	0.7	3.5	0.25	0.59	1.44	120	280	3.0	0.40	200
			4,6		230 HB		2.8	0.25	0.59	1.44		250		0.40	180
			5,7		280 HB		2.8	0.22	0.52	1.44		210		0.38	150
			8		350 HB		2.5	0.22	0.52	1.20		180		0.38	130
	High alloyed	3	10	X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19	220 HB	0.7	2.8	0.22	0.52	1.44	70	190	2.5	0.38	140
			10		280 HB		2.8		0.52	1.44		150		0.38	120
			11		320 HB		2.1		0.46	0.96		130		0.35	100
			11		350 HB		2.1		0.46	0.96		110		0.35	90
Stainless Steel	Austenitic	4	14	304, 316, X5CrNi18-9	180 HB	0.7	3.5	0.24	0.52	1.44	170	270	3.0	0.40	190
			14		240 HB		3.5		0.52	1.20	160	220		0.36	170
	Duplex	5	14	X2CrNiN23-4, S31500	290 HB	0.7	2.8	0.22	0.46	0.96	80	150	2.5	0.32	100
			14		310 HB		2.8		0.46		70	140			90
	Ferritic & Martensitic	6	12	410, X6Cr17, 17-4 PH, 430	200 HB	0.7	3.5	0.26	0.52	1.20	170	250	3.0	0.40	190
			13		42 HRc		2.8		0.52		120	190	2.5	0.36	130
Cast Iron	Grey	7	15	GG20, GG40, EN-GJL-250, No30B	150 HB	0.7	3.5	0.18	0.78	2.40	170	250	3.0	0.44	200
			15		200 HB		3.5		0.78	2.16	160	230			180
			16		250 HB		3.5		0.72	2.16	150	210			160
	Malleable & Nodular	8	17,19	GGG40, GGG70, 50005	150 HB	0.7	3.5	0.18	0.65	1.80	120	250	3.0	0.38	180
			17,19		200 HB		3.5		0.65	1.56		230			160
			18,20		250 HB		3.5		0.65	1.44		190			140
High Temp.Alloys	Fe, Ni & Co based	9	31,32	Incoloy 800	240 HB	0.7	2.1	0.24	0.46	0.84	25	45	2.0	0.35	32
			33	Inconel 700	250 HB		2.1		0.46		25	45			30
			34	Stellite 21	350 HB		2.1		0.46		23	40			28
	Ti based	10	36	TiAl6V4	-	0.7	2.8	0.24	0.52	0.96	45	65	2.0	0.40	55
			37	T40	-		2.1		0.46	0.84	35	55		0.36	45
Hardened Mat.	Steel	11	38	X100CrMo13, 440C, G-X260NiCr42	45 HRc	0.7	1.8	0.13	0.39	0.72	50	100	2.0	0.31	80
			38		50 HRc		1.5		0.33	0.48	40	90	1.5	0.25	70
			38		55 HRc		1.5		0.26	0.36	40	80	1.0	0.23	60
	Chilled Cast Iron		40	Ni-Hard 2	400 HB	0.7	1.5	0.13	0.33	0.48	40	60	1.5	0.23	50
	White Cast Iron		41	G-X300CrMo15	55 HRc	0.7	1.5	0.13	0.26	0.36	30	50	1.0	0.19	40
NF	Al (>8%Si)	12	25	AlSi12	130 HB	0.7	4.2	0.24	0.78	2.20	200	400	3.0	0.50	280