

VNMG 160404 NN

Machining Conditions

Material Group	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm ²]	V _c [m/min]		Optimal cutting conditions		
				min	max	min	max		min	max	d.o.c	feed	
Low Carbon Steel	1	Ck15 9SMnPb28	150	0.20	4.0	0.11	0.23	0.42	180	330	1 to 3	0.18	
			180		4.0		0.20	0.40		280			
			210		3.0		0.20	0.38		250			
Alloy Steel	2	42 CrMo 4 100 Cr 6 32 NiCrMo 14.5	180	0.20	4.0	0.11	0.20	0.40	120	280	1 to 3	0.15	
			230		3.0		0.20	0.35		250			
			280		3.0	0.09	0.18	0.30		210			
			320		3.0		0.18	0.20		180			
High Alloy Steel	3	X38 CrMoV 5 X210 CrW 12 X90 CrMoV 8	220	0.20	3.0	0.09	0.18	0.30	70	190	1 to 2.5	0.12	
			280		3.0		0.18	0.27		150			
			320		3.0		0.15	0.20		130			
			350		3.0		0.15	0.18		100			
Austenitic Stainless Steel	4	303 / 304 304 L	210 to 250	0.20	4.0	0.10	0.20	0.21	170	270	1 to 3	0.15	
	5	316 / 316 L	230 to 270		3.0		0.09	0.18	0.18	160	210	1 to 2.5	0.12
	6	316 Ti 630 (F16PH)	-----		3.0		0.09	0.14	0.15	70	150	1 to 2.5	0.12
Ferritic Stainless Steel	7	430 / 439 / 444	Annealed	0.50	3.0	0.11	0.18	0.21	170	250	1 to 3	0.15	
Martensitic Stainless Steel	8	410 / 420	Annealed Treated	0.50	3.0	0.11	0.18	0.21	170 120	250 190	1 to 3	0.15	
Grey Cast Iron	9	EN - GJL 200 EN - GJL 250 EN - GJL 300	140 to 230	0.20	5.0	0.08	0.25	0.48 0.45 0.40	170	250 230 210	1 to 3	0.18	
Nodular Cast Iron	10	EN - GJS 400 EN - GJS 600 EN - GJS 800	210 260 310	0.20	4.0	0.08	0.25	0.40 0.36 0.30	120	230 190 150	1 to 2.5	0.15	
Nickel Based Alloys	11	Inconel 625 Inconel 718 Hastello y C	-----	0.25	3.0	0.10	0.18	0.15 0.15 0.18	25 28 40	35 40 65	1 to 2.5	0.12	
Titanium Based Alloys	12	TiAl 6 V4	-----	0.25	3.0	0.09	0.18	0.18	35	60	1 to 2.5	0.14	
		T40	-----				0.15	0.15	28	40	1 to 2.5	0.12	

*For all material types and standards, see pages 240 to 245.

Insert designation	Super Finishing	Finishing	Semi Finishing	Roughing	Interrupted Cut
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Machining Conditions

Material Group	Group No	Material Examples*	Brinell hardness HB	d.o.c [mm]		feed [mm/rev]		A max [mm ²]	V _c [m/min]		Optimal cutting conditions			
				min	max	min	max		min	max	d.o.c	feed		
Low Carbon Steel	1	Ck15 9SMnPb28	150	0.50	5.0	0.21	0.45	1.2	180	330	1 to 3	0.32		
			180		5.0		0.40			1.0			280	
			210		4.0		0.40			0.8			250	
Alloy Steel	2	42 CrMo 4 100 Cr 6 32 NiCrMo 14.5	180	0.50	5.0	0.21	0.40	0.8	120	280	1 to 3	0.30		
			230		4.0		0.40			0.7			250	
			280		4.0	0.18	0.35	0.6		210				
			320		3.5	0.35	0.6	180						
High Alloy Steel	3	X38 CrMoV 5 X210 CrW 12 X90 CrMoV 8	220	0.50	4.0	0.18	0.35	0.7	70	190	1 to 2.5	0.28		
			280		4.0		0.35			0.6			150	
			320		3.0		0.30			0.6			130	
			350		3.0		0.30			0.5			100	
Austenitic Stainless Steel	4	303 / 304 304 L	210 to 250	0.50	4.0	0.20	0.40	0.7	170	270	1 to 3	0.32		
			230 to 270		3.0		0.18		0.35	0.6	160	210	1 to 2.5	0.28
			-----		3.0		0.18		0.28	0.5	70	150	1 to 2.5	0.25
Ferritic Stainless Steel	7	430 / 439 / 444	Annealed	0.50	4.0	0.22	0.35	0.7	170	250	1 to 3	0.28		
Martensitic Stainless Steel	8	410 / 420	Annealed Treated	0.50	4.0	0.22	0.35	0.7	170 120	250 190	1 to 3	0.28		
Grey Cast Iron	9	EN - GJL 200 EN - GJL 250 EN - GJL 300	140 to 230	0.50	5.0	0.15	0.50	1.2	170	250	1 to 3	0.32		
			230							1.0			230	
			210							0.8			210	
Nodular Cast Iron	10	EN - GJS 400 EN - GJS 600 EN - GJS 800	210	0.50	5.0	0.15	0.40	1.0	120	230	1 to 2.5	0.28		
			260							0.8			190	
			310							0.7			150	
Nickel Based Alloys	11	Inconel 625 Inconel 718 Hastello y C	-----	0.50	3.0	0.20	0.35	0.5	25	35	1 to 2.5	0.25		
			-----					0.5	28	40				
			-----					0.6	40	65				
Titanium Based Alloys	12	TiAl 6 V4 T40	-----	0.50	3.0	0.18	0.35	35	60	1 to 2.5	0.25			
			-----				0.30	0.5	28	40	1 to 2.5	0.22		

*For all material types and standards, see pages 240 to 245.

