

Speeds and Feeds



Feed: mm/rev
RPM: rev/min

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC		SMM		Drill Diameter (mm)										
								1.0	Drill Ø (mm) METRIC 1	2.0 ~ 13.0	METRIC	2	3	4	6	8	10	13		
P	1	Non-alloy steel	About 0.15% C	Annealed	125		●	28	RPM	8,910	40	RPM	6,370	4,240	3,180	2,120	1,590	1,270	980	
									FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24	
			2	About 0.45% C	Annealed	190	13	●	25	RPM	7,960	35	RPM	5,570	3,710	2,790	1,860	1,390	1,110	860
										FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24
	3	About 0.45% C	Quenched & tempered	250	25	●	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
	4	About 0.75% C	Annealed	270	28	○	15	RPM	4,770	20	RPM	3,180	2,120	1,590	1,060	800	640	490		
								FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18		
	6	Low alloy steel	Annealed	180	10	●	25	RPM	7,960	35	RPM	5,570	3,710	2,790	1,860	1,390	1,110	860		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
7			Quenched & tempered	275	29	○	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
8	Quenched & tempered	300	32	○	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730				
						FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18				
10	High alloyed steel, and tool steel	Annealed	200	15	○	15	RPM	4,770	20	RPM	3,180	2,120	1,590	1,060	800	640	490			
							FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24			
M	Stainless steel	Ferritic / Martensitic	Annealed	200	15	●	18	RPM	5,730	25	RPM	3,980	2,650	1,990	1,330	990	800	610		
		Martensitic	Quenched & Tempered	240	23	○	15	RPM	4,770	20	RPM	3,180	2,120	1,590	1,060	800	640	490		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
14	Austenitic	180	10	○	10	RPM	3,180	15	RPM	2,390	1,590	1,190	800	600	480	370				
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	28	RPM	8,910	40	RPM	6,370	4,240	3,180	2,120	1,590	1,270	980		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
	16	Pearlitic (Martensitic)	260	26	○	25	RPM	7,960	35	RPM	5,570	3,710	2,790	1,860	1,390	1,110	860			
							FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18			
	17	Nodular cast iron	Ferritic	160	3	○	28	RPM	8,910	40	RPM	6,370	4,240	3,180	2,120	1,590	1,270	980		
								FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24		
18	Pearlitic	250	25	○	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730				
						FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18				
19	Malleable cast iron	Ferritic	130		○	25	RPM	7,960	35	RPM	5,570	3,710	2,790	1,860	1,390	1,110	860			
							FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24			
20	Pearlitic	230	21	○	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730				
						FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.04-0.10	0.06-0.12	0.08-0.14	0.12-0.18				
N	21	Aluminum-wrought alloy	Not Curable	60		○	45	RPM	14,320	65	RPM	10,350	6,900	5,170	3,450	2,590	2,070	1,590		
								FEED	0.02-0.05		FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28		
	22	Curable	Hardened	100		○	45	RPM	14,320	65	RPM	10,350	6,900	5,170	3,450	2,590	2,070	1,590		
								FEED	0.02-0.05		FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28		
23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	35	RPM	11,140	50	RPM	7,960	5,310	3,980	2,650	1,990	1,590	1,220			
							FEED	0.02-0.05		FEED	0.05-0.09	0.07-0.11	0.12-0.16	0.12-0.18	0.14-0.20	0.16-0.22	0.22-0.28			
29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic			○	20	RPM	6,370	30	RPM	4,770	3,180	2,390	1,590	1,190	950	730			
							FEED	0.01-0.03		FEED	0.04-0.08	0.06-0.10	0.08-0.12	0.12-0.16	0.12-0.18	0.16-0.22	0.18-0.24			
S	36	Titanium Alloys	Pure Titanium	400 Rm		○	15	RPM	4,770	20	RPM	3,180	2,120	1,590	1,060	800	640	490		
								FEED	0.01-0.02		FEED	0.02-0.05	0.02-0.06	0.04-0.08	0.05-0.09	0.06-0.10	0.07-0.13	0.08-0.14		



●	Primary
○	Secondary

RPM	SMM
$RPM = \frac{SMM \times 1,000}{\pi \times [\varnothing DC_{(millimeter)}]}$	$SMM = \frac{RPM \times \pi \times [\varnothing DC_{(millimeter)}]}{1,000}$