

Operating Guidelines

ISO	Material		Condition	Tensile Strength RM (N/mm²)	Hard- ness HB	Matl. Group No.	Cutting Speed Vc (SFM)	Feed vs. Drill Diameter - IPR (inches/rev)									
								SPGX 06 1.023-1.102 26.0-28.0mm	SPGX 07 1.142-1.260 29.0-32.0mm	SPGX 09 1.300-1.417 33.0-36.0mm	SPGX 11 1.457-1.693 37.0-43.0mm	SPGX 11/14 1.732-1.969 44.0-50.0mm					
P	Non-alloy steel and cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	400-660	.008-.014	.010-.014	.010-.016	.010-.016	.011-.018					
		≥0.25%C	Annealed	650	190	2											
		<0.55%C	Quenched/Tempered	850	250	3	430-630										
		≥0.55%C	Annealed	750	220	4											
			Quenched/Tempered	1000	300	5											
	Low alloy steel and cast steel (less than 5% alloying elements)		Annealed	600	200	6	330-660	.008-.013	.010-.013	.010-.014	.010-.014	.010-.016					
		Quenched/Tempered		930	275	7											
				1000	300	8											
				1200	350	9											
	High alloy steel, cast steel, and tool steel		Annealed	680	200	10	330-530	.008-.013	.010-.013	.010-.014	.010-.014	.010-.016					
		Quenched/Tempered	1100	325	11												
M	Stainless steel and cast stainless steel		Ferritic/Martensitic	680	200	12	265-460	.005-.009	.006-.009	.006-.010	.007-.011	.007-.012					
			Martensitic	820	240	13											
			Austenitic	600	180	14											
K	Grey cast iron (GG)		Ferritic	-	180	15	330-825	.010-.018	.006-.012	.012-.020	.012-.020	.014-.022					
			Pearlitic	-	260	16											
	Cast iron nodular (GGG)		Ferritic	-	160	17											
			Pearlitic	-	250	18											
	Malleable cast iron		Ferritic	-	130	19											
			Pearlitic	-	230	20											
N	Aluminum - wrought alloy		Not Cureable	-	60	21	530-860	.012-.020	.012-.020	.014-.022	.016-.024	.016-.024					
			Cured	-	100	22											
	Aluminum- cast, alloyed	≤12% Si	Not Cureable	-	75	23											
			Cured	-	90	24											
	>12% Si	High Temperature	-	130	25												
			Free Cutting	-	110	26											
	Copper alloys	>1% Pb	Brass	-	90	27											
			Electrolitic Copper	-	100	28											
	Non-metallic		Duro/Fiber Plastics	-	-	29							.	.	.	.	.
			Hard Rubber	-	-	30											
S	High temp alloys	Fe based	Annealed	-	200	31	100-200	.004-.006	.004-.007	.006-.008	.006-.009	.006-.009					
				Cured	-	280	32						100-265				
		Ni or Co based	Annealed	-	250	33											
			Cured	-	350	34											
			Cast	-	320	35											
	Titanium, Ti alloys		-	Rm 400	-	36											
			Alpha+Beta Alloys Cured	Rm 1050	-	37											
H	Hardened steel		Hardened	-	55 HRC	38	70-165	.004-.006	.005-.007	.006-.008	.006-.008	.006-.009					
			Hardened	-	60 HRC	39											
	Chilled cast iron		Cast	-	400	40	.						.	.	.	.	
	Cast iron nodular		Hardened	-	55 HRC	41											

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases.