

Material Groups

Recommended Machining Conditions

ISO	Material	Condition	Tensile Strength [ksi]	Hardness HB	Material No. ⁽¹⁾	V _c SFM	HCP/QCP										
							Feed vs. Drill Diameter										
							D= .157-.193	D= .197-.232	D=.236-.311	D=.315-.390	D=.394-.469	D=.472-.547	D=.551-.625	D=.630-.783	D=.787-1.020	D=1.024-1.295	
IPR																	
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	61	125	1	260- 360 -460	.0015 .0023	.0027 .0035	.0035 .0043	.005 .007	.006 .008	.007 .009	.008 .011	.010 .014	.010 .014	.012 .016
		≥ 0.25 %C	Annealed	94	190	2	260- 340 -430										
		< 0.55 %C	Quenched and tempered	123	250	3	260- 330 -390										
		≥ 0.55 %C	Annealed	109	220	4	230- 300 -360										
			Quenched and tempered	145	300	5	160- 230 -300										
	Low alloy and cast steel (less than 5% of alloying elements)	Annealed	87	200	6	230- 310 -390	.0015 .0023	.0027 .0039	.0035 .0047	.005 .007	.006 .008	.006 .009	.007 .010	.009 .012	.010 .014	.010 .018	.012 .016
		Quenched and tempered	135	275	7	230- 300 -360											
			145	300	8	160- 230 -300											
			174	350	9	130- 180 -230											
	High alloyed steel, cast steel and tool steel	Annealed	99	200	10	160- 230 -300	.0023 .0027	.0027 .0035	.0035 .0041	.005 .006	.005 .007	.006 .008	.007 .009	.008 .010	.009 .011	.010 .012	
Quenched and tempered		160	325	11	130- 200 -260												
Stainless steel and cast steel	Ferritic/martensitic	99	200	12	130- 180 -230	.0019 .0023	.0023 .0027	.0031 .0040	.0042 .0060	.0042 .0063	.0055 .0075	.0067 .0087	.0087 .0094	.0083 .0102	.0094 .0114		
	Martensitic	119	240	13													
K	Gray cast iron (GG)	Ferritic/pearlitic		180	15	300- 410 -520	.0015 .0023	.0040 .0051	.0047 .0059	.006 .009	.008 .011	.010 .013	.012 .015	.014 .018	.014 .022	.016 .024	
		Pearlitic/martensitic		260	16	260- 360 -460											
	Nodular cast iron (GGG)	Ferritic		160	17	300- 440 -590											
		Pearlitic		250	18	260- 360 -460											
	Malleable cast iron	Ferritic		130	19	300- 410 -520											
		Pearlitic		230	20	260- 360 -460											

■ Recommended cutting data
⁽¹⁾ For workpiece materials list, see pages 495-524 . As a starting value, the middle of the recommended machining range should be used.
 Then, according to the wear results, conditions can be changed to optimize performance.
 The data refers to IC908
 • When using external coolant supply only, reduce cutting speed by 10%
 • When using more than 5XD drill ratio, reduce cutting parameters by 10%
No need to reduce the cutting parameters while using 8XD and up holders