



MATERIAL GROUP	HARDNESS HRC		Size (mm)												
			1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	
<b>P</b>	13 14	< 35	$v_c$ (m/min)	45	48	51	54	54	65	62	72	72	77	75	85
			$n$	14400	10080	8160	6930	5720	5150	3960	3800	2880	2450	2000	1700
			$f_z$	0.002	0.003	0.004	0.005	0.008	0.012	0.015	0.02	0.033	0.033	0.033	0.031
			$f$ (mm/min)	55	60	70	75	90	120	120	155	190	160	130	105
<b>H</b>	15 16	35-45	$v_c$ (m/min)	36	38	41	44	44	52	49	57	57	63	63	64
			$n$	11520	8060	6530	5580	4640	4100	3130	3050	2280	2000	1670	1260
			$f_z$	0.002	0.003	0.005	0.006	0.008	0.012	0.016	0.021	0.033	0.031	0.034	0.031
			$f$ (mm/min)	50	50	60	65	75	100	100	130	150	125	115	1260
	16 15	45-55	$v_c$ (m/min)	23	24	26	27	27	32	32	37	38	38	38	40
			$n$	7200	5040	4090	3470	2850	2580	2050	1970	1510	1210	1010	800
			$f_z$	0.002	0.002	0.004	0.004	0.007	0.01	0.011	0.015	0.023	0.025	0.022	0.022
			$f$ (mm/min)	25	25	30	30	40	50	45	60	70	60	45	35
<b>K</b>	31 32 33 34		$v_c$ (m/min)	45	48	51	54	54	65	62	72	72	77	75	85
			$n$	14400	10080	8160	6930	5720	5150	3960	3800	2880	2450	2000	1700
			$f_z$	0.002	0.003	0.004	0.005	0.008	0.012	0.015	0.02	0.033	0.033	0.033	0.031
			$f$ (mm/min)	55	60	70	75	90	120	120	155	190	160	130	105
< HRc45			> HRc45												
$a_p$ : $\varnothing 1.0\text{mm} - \varnothing 3.0\text{mm} = 0.4\text{mm}$ $a_p$ : $\varnothing 4.0\text{mm} - \varnothing 12.0\text{mm} = 0.3 \times D$															

► The data shown is based on medial length tools. Please adjust machining conditions according to length.

$v_c$  - cutting speed (m/min)  
 $n$  - RPM (rev/min)  
 $f_z$  - feed rate (mm/tooth)  
 $f$  - feed rate (mm/rev)  
 $z$  - No. of teeth  
 $a_p$  - axial depth of cut  
 $a_e$  - radial depth of cut

To calculate RPM from cutting speed:  $n = \frac{v_c \times 1000}{\pi \times \varnothing}$

To calculate cutting speed from RPM:  $v_c = \frac{n \times \pi \times \varnothing}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.