

CUTTING CONDITIONS

Materials to be machined			CARBIDE		DICUT		TiN		DLC	
			Vc [m/min]		Vc [m/min]		Vc [m/min]		Vc [m/min]	
<b>P</b>	Unalloyed steel / Low alloyed steel	< 600 N/mm <sup>2</sup>	<b>40</b>	60	<b>50</b>	70	<b>50</b>	70		
<b>P</b>	Unalloyed steel / Low alloyed steel	600 – 1500 N/mm <sup>2</sup>			<b>30</b>	40	<b>30</b>	40		
<b>P</b>	Lead alloyed cutting steel		<b>60</b>	90						
<b>K</b>	Grey cast iron / Nodular pearlitic iron	< 250 HB	<b>50</b>	80	<b>60</b>	90	<b>60</b>	90		
<b>K</b>	Alloyed cast iron / Nodular pearlitic iron	> 250 HB			<b>30</b>	50	<b>30</b>	50		
<b>K</b>	Nodular ferritic cast iron / Malleable cast iron				<b>40</b>	60	<b>40</b>	60		
<b>S</b>	Titanium, titanium alloys		<b>30</b>	50						
<b>N</b>	Copper alloys - easy to machine (brass - bronze)		<b>80</b>	100					<b>90</b>	110
<b>N</b>	Copper alloys - difficult to machine / Aluminium bronze	(CuAlFe) (Ampco)	<b>40</b>	70	<b>50</b>	80	<b>50</b>	80	<b>50</b>	80
<b>N</b>	Aluminium alloys	Si < 8%	<b>80</b>	130					<b>100</b>	150
<b>N</b>	Cast aluminium	Si > 8%	<b>70</b>	110					<b>90</b>	130
<b>N</b>	Plastic		<b>30</b>	60	<b>50</b>	80	<b>50</b>	80	<b>50</b>	80
<b>N</b>	Gold, silver		<b>50</b>	80	<b>70</b>	100	<b>70</b>	100	<b>70</b>	100

$$n \text{ [tr/min]} = \frac{Vc \text{ [m/min]} \times 1000}{\pi \times D_1 \text{ [mm]}}$$

$$Vf \text{ [mm/min]} = n \text{ [tr/min]} \times f \text{ [mm]}$$

Feed per revolution **f [mm]**

Ø D <sub>1</sub> 0.10 - 0.30		Ø D <sub>1</sub> 0.30 - 1.00		Ø D <sub>1</sub> 1.00 - 1.50		Ø D <sub>1</sub> 1.50 - 2.00		Ø D <sub>1</sub> 2.00 - 3.00		Ø D <sub>1</sub> 3.00 - 5.00		Ø D <sub>1</sub> 5.00 - 7.00		Ø D <sub>1</sub> 7.00 - 10.00		Ø D <sub>1</sub> 10.00 - 14.00		Ø D <sub>1</sub> 14.00 - 16.00	
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.028	<b>0.021</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.11	<b>0.08</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.28	<b>0.21</b>	- 0.32
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.021	<b>0.018</b>	- 0.03	<b>0.03</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.08	<b>0.07</b>	- 0.11	<b>0.09</b>	- 0.15	<b>0.13</b>	- 0.21	<b>0.18</b>	- 0.24
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.028	<b>0.021</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.11	<b>0.08</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.28	<b>0.21</b>	- 0.32
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.021	<b>0.018</b>	- 0.03	<b>0.03</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.08	<b>0.07</b>	- 0.11	<b>0.09</b>	- 0.15	<b>0.13</b>	- 0.21	<b>0.18</b>	- 0.24
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.021	<b>0.015</b>	- 0.03	<b>0.02</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.06</b>	- 0.10	<b>0.09</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.22
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.020	<b>0.015</b>	- 0.03	<b>0.02</b>	- 0.03	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.06</b>	- 0.10	<b>0.08</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.22
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.021	<b>0.018</b>	- 0.03	<b>0.03</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.08	<b>0.07</b>	- 0.11	<b>0.09</b>	- 0.15	<b>0.13</b>	- 0.21	<b>0.18</b>	- 0.24
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.020	<b>0.015</b>	- 0.03	<b>0.02</b>	- 0.03	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.06</b>	- 0.10	<b>0.08</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.22
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.028	<b>0.021</b>	- 0.04	<b>0.03</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.11	<b>0.08</b>	- 0.14	<b>0.11</b>	- 0.20	<b>0.15</b>	- 0.28	<b>0.21</b>	- 0.32
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.042	<b>0.27</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.10	<b>0.06</b>	- 0.16	<b>0.10</b>	- 0.21	<b>0.13</b>	- 0.30	<b>0.19</b>	- 0.42	<b>0.27</b>	- 0.48
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.042	<b>0.027</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.10	<b>0.06</b>	- 0.16	<b>0.10</b>	- 0.21	<b>0.13</b>	- 0.30	<b>0.19</b>	- 0.42	<b>0.27</b>	- 0.48
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.059	<b>0.036</b>	- 0.08	<b>0.05</b>	- 0.10	<b>0.06</b>	- 0.14	<b>0.09</b>	- 0.22	<b>0.13</b>	- 0.29	<b>0.18</b>	- 0.42	<b>0.26</b>	- 0.59	<b>0.36</b>	- 0.67
<b>0.002</b>	- 0.004	<b>0.003</b>	- 0.042	<b>0.027</b>	- 0.05	<b>0.04</b>	- 0.07	<b>0.05</b>	- 0.10	<b>0.06</b>	- 0.16	<b>0.10</b>	- 0.21	<b>0.13</b>	- 0.30	<b>0.19</b>	- 0.42	<b>0.27</b>	- 0.48

**D<sub>1</sub> < 1mm ⇒ Vc - 30 %**