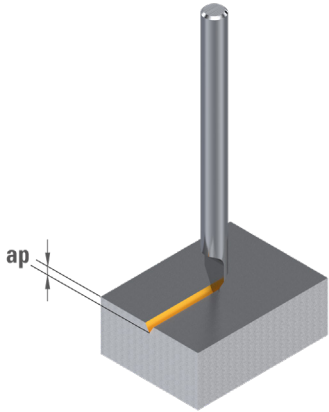




ENGRAVING

		VDI 3323	D ₁ Ø0.05-0.10 D ₁ Ø0.15-0.50				
			CARBIDE Vc [m/min]	DINAC Vc[m/min]	DLC Vc [m/min]	ap (mm)	ap (mm)
P	Unalloyed steel, leaded steel	1 - 5	20 - 35'000	20 - 35'000		0.05 - 0.30	0.10 - 0.42
	Low alloyed steel < 800 N/mm²	6 - 9		20 - 35'000		0.05 - 0.25	0.10 - 0.34
	High-alloy steel > 800 N/mm², stainless steel ferr.- marten.	10 - 13		20 - 35'000		0.05 - 0.20	0.10 - 0.26
M	Austenitic stainless steel < 700 N/mm²	14.1-14.2		20 - 35'000		0.05 - 0.20	0.10 - 0.34
	Nickel-free stainless steel/DUPLEX >700 N/mm²	14.3-14.4		20 - 35'000		0.05 - 0.25	0.10 - 0.30
K	Grey cast iron < 250 HB	15 - 16	20 - 35'000	20 - 35'000		0.05 - 0.45	0.10 - 0.45
	Ductile, malleable, nodular cast iron > 250 HB	17 - 20	20 - 35'000	20 - 35'000		0.05 - 0.40	0.10 - 0.45
N	Wrought aluminium alloy < 12% Si	21 - 22	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.60	0.10 - 0.45
	Cast aluminium alloy >12% Si	23 - 25	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.45	0.10 - 0.50
	Copper alloy good machinability with Pb	26	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.45	0.10 - 0.45
	Copper alloy with difficult machinability	27 - 28	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.40	0.10 - 0.45
	Plastic, wood	29 - 30	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.45	0.10 - 0.45
	Gold, silver	-	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.40	0.10 - 0.45
S	Refractory alloy, Fe, Ni, Co base	31- 35		15 - 25'000			0.04 - 0.10
	Titanium, titanium alloy	36 - 37	20 - 35'000	20 - 35'000	20 - 35'000	0.05 - 0.35	0.10 - 0.45
H	Hardened steel >45 HRC, hard cast iron	38 - 41		20 - 35'000			0.02 - 0.06



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

$$Vf \text{ [mm/min]} = n \text{ [rpm]} \times fz \text{ [mm]} \times Z$$

Feed rate Vf [mm/min]

Ø D ₁ 0.05 - 0.10	Ø D ₁ 0.15 - 0.50	
50 - 250	80 - 350	
50 - 200	60 - 275	
50 - 150	50 - 200	
50 - 200	60 - 275	
50 - 200	50 - 250	
50 - 400	110 - 450	
50 - 300	90 - 450	
50 - 400	110 - 450	
50 - 300	90 - 450	
50 - 500	150 - 450	
50 - 400	110 - 450	
50 - 400	110 - 450	
50 - 300	90 - 450	
	20 - 100	
50 - 300	80 - 375	
	10 - 50	