Cutting Recommendations for the Complete Line

- The table below defines initial feed rates
- For initial cutting speeds refer to **ISCAR**'s recommendations for carbide grades

Calculating Cutting Feed Rate

$f_z = f z0 \times Kef \times Ks$ where
f_{z0} - Basic feed (Table 1),
K_{ef} - Engagement factor (Table 2),
K_s - Stability factor (Table 3)

Material Groups

Based on ISO 513 and **VDI** 3323 standards (Table 1)

ISO	Material		Condition	Tensile Strength [N/mm²]	Kc1(1) [N/mm²]	mc(2)	Hardness HB	Material Group No.	f_{z0} (mm/t)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1350	0.21	125	1	0.20
		≥0.25% C	annealed	650	1525	0.22	190	2	
		<0.55% C	quenched and tempered	850	1675	0.24	250	3	
		≥0.55% C	annealed	750	1675	0.24	220	4	
			quenched and tempered	1000	1900	0.24	300	5	
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	1775	0.24	200	6	0.18
			quenched and tempered	930	1675	0.24	275	7	
				1000	1725	0.24	300	8	
				1200	1800	0.24	350	9	0.16
	high alloyed steel, cast steel and tool steel		annealed	680	2450	0.23	200	10	0.15
			quenched and tempered	1100	2500	0.23	325	11	
	stainless steel and cast steel		ferritic / martensitic	680	1875	0.21	200	12	0.14
			martensitic	820	1875	0.21	240	13	
M	stainless steel and cast steel		austenitic, duplex	600	2150	0.20	180	14	0.18
S	high temperature alloys	Fe based	annealed		2600	0.24	200	31	0.18
			hardened		3100	0.24	280	32	0.17
		Ni or Co based	annealed		3300	0.24	250	33	0.18
			hardened		3300	0.24	350	34	0.16
			cast		3300	0.24	320	35	0.16
	titanium alloys		pure	400	1160	0.24	190	36	0.20
			alpha+beta alloys, hardened	1050	1245	0.24	310	37	0.18

Steel
Stainless Steel
Superalloys and Titanium

(1) Specific cutting force for 1 mm^2 chip section.
(2) Chip thickness factor.

Table 2 - Engagement Factor Kef

$\frac{a_e}{D}$	$\frac{a_e}{D} = \leq 0.20$	$0.20 < \frac{a_e}{D} \leq 0.25$	$0.25 < \frac{a_e}{D} \leq 0.40$
K_e	1.1	1	0.8

a_e - Width of cut
D - cutting diameter

Table 3 - Stability Factor Ks

Stability	High	Moderate	Poor
K_s	1	0.9	0.7