

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

$f_z = f_{z0} \times K_{ef} \times K_s$ where

f_{z0} - Basic feed (Table 1),

K_{ef} - Engagement factor (Table 2),

K_s - Stability factor (Table 3)

ISO	Material	Condition	Tensile Strength [N/mm ²]	Kc1 ⁽¹⁾ [N/mm ²]	mc ⁽²⁾	Hardness HB	Material Group No.	Drilling-Zeff=1		Milling-Zeff=2	
								fr0(mm/t)		fz0(mm/t)	
								Insert size		Insert size	
								07-09-12	07	09-12	09-12
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1350	0.21	125	0.06	0.15	0.19	
		≥0.25% C	annealed	650	1525	0.22	190				
		<0.55% C	quenched and tempered	850	1675	0.24	250				
		≥0.55% C	annealed	750	1675	0.24	220				
			quenched and tempered	1000	1900	0.24	300				
	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	1775	0.24	200	0.06	0.15	0.19		
		quenched and tempered	930	1675	0.24	275					
			1000	1725	0.24	300					
			1200	1800	0.24	350					
	high alloyed steel, cast steel and tool steel	annealed	680	2450	0.23	200	0.05	0.11	0.15		
quenched and tempered		1100	2500	0.23	325						
stainless steel and cast steel	ferritic / martensitic	680	1875	0.21	200	12	0.06	0.11	0.15		
	martensitic	820	1875	0.21	240						
M	stainless steel and cast steel	austenitic, duplex	600	2150	0.20	180	14	0.06	0.11	0.15	
K	gray cast iron (GG)	ferritic / pearlitic		1150	0.20	180	15	0.08	0.19	0.23	
		pearlitic / martensitic		1350	0.28	260	16				
	nodular cast iron (GGG)	ferritic		1225	0.25	160	17	0.06	0.15	0.19	
		pearlitic		1350	0.28	250	18				
	malleable cast iron	ferritic		1225	0.25	130	19	0.06	0.11	0.15	
pearlitic			1420	0.3	230	20					
S	high temperature alloys	Fe based	annealed		2600	0.24	200	0.05	0.09	0.11	
			hardened		3100	0.24	280				
		Ni or Co based	annealed		3300	0.24	250				
			hardened		3300	0.24	350				
			cast		3300	0.24	320				
	titanium alloys	pure	400	1160	0.24	190	0.05	0.09	0.11		
		alpha+beta alloys, hardened	1050	1245	0.24	310					
H	hardened steel	hardened		4600	0.25	55 HRC	38	0.04	0.09	0.11	
		hardened		4700	0.25	60 HRC	39				
	chilled cast iron	cast		4600	0.27	400	40	0.04	0.09	0.11	
	cast iron	hardened		4500	0.27	55 HRC	41	0.04	0.09	0.11	

- Steel
- Stainless Steel
- Cast Iron
- Superalloys and Titanium
- Hard Materials

⁽¹⁾ Specific cutting force for 1 mm² chip section.

⁽²⁾ Chip thickness factor.

Table 2 - Engagement Factor Kef

a _e /D	0.5...1	0.25 up to 0.5	less than 0.25
Ke	1	1.1	1.3

a_e - Width of cut

D - cutting diameter

Table 3 - Stability Factor Ks

Stability	High	Moderate	Poor
Ks	1	0.9	0.7