

Cutting recommendations for the HELIDO 690-04 complete line

- The table below defines initial feed rates
- F 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
fz0 - Basic feed (Table 1),
Kef - Engagement factor (Table 2),
Ks - Stability factor (Table 3)

Table 1 - Basic feed, *fz0*, mm/tooth

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No. ⁽¹⁾	fz0 for Insert Size/Geometry	
							H690 WNMU 0403...PNR-MM	H690 WNMU 0403...PNTR
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	0.11	0.11
		≥0.25 %C	Annealed	650	190	2		
		< 0.55 %C	Quenched and tempered	850	250	3		
		≥ 0.55 %C	Annealed	750	220	4		
			Quenched and tempered	1000	300	5		
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6	0.12	0.11
			Quenched and tempered	930	275	7		
				1000	300	8		
				1200	350	9		
	High alloyed steel, cast steel and tool steel		Annealed	680	200	10	0.09	0.09
			Quenched and tempered	1100	325	11		
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12	0.10	0.10
			Martensitic	820	240	13		
M	Stainless steel and cast steel		Austenitic, duplex	600	180	14	0.10	-
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15	-	0.12
			Pearlitic/ martensitic		260	16		0.11
	Cast iron nodular (GGG)		Ferritic		160	17		
			Pearlitic		250	18		
	Malleable cast iron		Ferritic		130	19		
			Pearlitic		230	20		
S	High temperature alloys	Fe based	Annealed		200	31	0.07	-
			Hardened		280	32		
		Ni or Co based	Annealed		250	33		
			Hardened		350	34		
			Cast		320	35		
	Titanium alloys		Pure	400		36	0.09	-
			Alpha+beta alloys, hardened	1500		37		
H	Hardened steel		Hardened		55 HRC	38	0.05	-
						39	-	-
	Chilled cast iron		Cast		400	40	0.05	-
	Cast iron		Hardened		55 HRC	41	0.05	-

⁽¹⁾ Based on ISO 513 and VDI 3323 standards

Table 2 - Engagement factor Kef

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

ae - Width of cut
D - cutting diameter

Table 3 - Stability factor Ks

Stability	High	Moderate
K _s	1	0.9