

Cutting recommendations for the HELIDO 690-10 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:

$fz = fz0 \times Kef \times Ks$ 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/mm ²]	Hardness HB	Material No. ⁽¹⁾	$fz0$ for Insert Size/Geometry	
							H690 TNKX 1005...PNTR	H690 TNCX 1005...PDR
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	0.12	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	0.10	0.09
			Quenched and tempered	930	275	7		
				1000	300	8		
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10	0.10	0.08
			Quenched and tempered	1100	325	11		
	Stainless steel and cast steel		Ferritic/martensitic	680	200	12	0.10	0.09
			Martensitic	820	240	13		
	M	Stainless steel and cast steel		Austenitic	600	180	14	0.10
K	Grey cast iron (GG)		Ferritic/pearlitic		180	15	0.12	0.10
			Pearlitic		260	16		
	Cast iron nodular (GGG)		Ferritic		160	17	0.11	0.09
			Pearlitic		250	18		
			Ferritic		130	19		
Malleable cast iron		Pearlitic		230	20			
S	High temp. alloys	Fe based	Annealed		200	31	0.07	0.06
			Cured		280	32		
		Ni or Co based	Annealed		250	33		
			Cured		350	34		
	Titanium alloys		Cast		320	35		
			Pure	Rm = 400 ⁽²⁾		36	0.09	0.07
			Alpha+beta alloys cured	Rm = 1050		37		
H	Hardened steel		Hardened		55 HRC	38	0.05	0.06
					60 HRC	39	-	-
	Chilled cast iron		Cast		400	40	0.05	0.06
	Cast iron		Hardened		55 HRC	41	0.05	0.06

⁽¹⁾ in accordance with VDI3323 standard

⁽²⁾ Rm - ultimate tensile strength, MPa

Table 2 - Engagement factor Kef

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

ae - Width of cut

D - cutting diameter

Table 3 - Stability factor Ks

Stability	High	Moderate	
Ks	1	0.9	