

## Cutting recommendations for the HELIQUAD-12 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:

$$fz = fz0 \times K_{ef} \times K_s \text{ where}$$

fz0 - Basic feed (Table 1),

K<sub>ef</sub> - Engagement factor (Table 2),

K<sub>s</sub> - Stability factor (Table 3)

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

ISO	Material		Condition	Tensile Strength [N/mm <sup>2</sup> ]	Hardness HB	Material No. <sup>(1)</sup>	fz0 for Insert Size/Geometry									
							SDMT 1205... PDR...-MM	SDMT 1205PDR-HQ-M	SDMT 1205PDN-RM-M	SDMT 1205PDR-HQ-HS	SDMR 1205... HQ-M	QDMT 1205... PDTN-M	QDCT 1205... PDN/-F	SDMT 1205... R16T-FF		
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	0.2	0.15	-	0.15	0.12	0.2	0.12	1.10		
		>= 0.25 %C	Annealed	650	190	2										
		< 0.55 %C	Quenched and tempered	850	250	3										
		>= 0.55 %C	Annealed	750	220	4										
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	600	200	6	0.2	0.15	-	0.15	0.10	0.2	0.10	1.10			
			930	275	7											
		Quenched and tempered	1000	300	8											
	High alloyed steel, cast steel, and tool steel	Annealed	680	200	10	0.18	0.13	-	0.13	0.10	0.18	0.10	1.10			
			1100	325	11											
		Stainless steel and cast steel	Ferritic/martensitic	680	200									12		
Martensitic			820	240	13											
M	Stainless steel and cast steel	Austenitic	600	180	14	-	-	-	-	0.10	-	0.10	0.80			
K	Grey cast iron (GG)	Ferritic/pearlitic		180	15	-	0.15	0.15	-	-	0.2	-	1.10			
		Pearlitic		260	16											
	Cast iron nodular (GGG)	Ferritic		160	17											
		Pearlitic		250	18											
	Malleable cast iron	Ferritic		130	19											
N	Aluminum wrought alloys	Not cureable		60	21	-	-	-	-	0.15	-	0.15	-			
		Cured		100	22											
		Not cureable		75	23											
	Aluminum cast alloys	<=12% Si	Cured		90									24		
		>12% Si	High temperature		130									25		
	Copper alloys	>1% Pb	Free cutting		110									26		
			Brass		90									27		
		Electrolytic copper		100	28											
	Non metallic	Duroplastics, fiber plastics												29		
			Hard rubber												30	
S	High temp. alloys	Fe based	Annealed		200	31	-	-	-	-	0.07	-	0.07	0.4		
			Cured		280	32										
		Ni or Co based	Annealed		250	33										
			Cured		350	34										
			Cast		320	35										
	Titanium alloys	Pure	Rm = 400 <sup>(2)</sup>		36	0.09					-	0.09	0.5			
Alpha+beta alloys cured		Rm = 1050		37												
H	Hardened steel	Hardened		55 HRC	38	0.07	-	-	-	-	0.07	-	0.4			
				60 HRC	39	0.04					0.04		0.2			
	Chilled cast iron	Cast		400	40	0.07					-		-	0.07	-	0.4
	Cast iron	Hardened		55 HRC	41	0.07					-		-	-	-	0.07

<sup>(1)</sup> in accordance with VDI3323 standard

<sup>(2)</sup> Rm - ultimate tensile strength, MPa

**Table 2 - Engagement factor K<sub>ef</sub>**

a <sub>e</sub> /D	0.5...1	0.25 up to 0.5	less than 0.25
K <sub>ef</sub>	1	1.1	1.3

a<sub>e</sub> - Width of cut

D - cutting diameter

\* For using SDMT 1205R16T-FF insert, K<sub>ef</sub>=1

**Table 3 - Stability factor K<sub>s</sub>**

Stability	High	Moderate
K <sub>s</sub>	1	0.9