PATRIOT HIGH PERFORMANCE PM4 INDEXABLE MILL SPEEDS & FEEDS

ARCH Cutting Tools

PATRIOT HIGH PERFORMANCE by Ultra-Dex

Chipbreaker:
HCX : Medium to roughing applications in steels and cast irons
SCX : Medium to finishing application in steels, stainless steels, hardened steels, and super alloys
LCX : Sharp cutting edge. Light finishing to medium roughing applications in non ferrous materials

ISO	MATERIAL	HARDNESS	CHIPBREAKER	GRADE	Vc (SFM)*	Fz (INCH PER TOOTH)*
P	**CARBON STEELS** 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 BHN or ≤ 28 HRC	HCX	HP470	300-800	.005 - .018
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH	≤ 375 BHN or ≤ 40 HRC			220-720	.005 - .016
M	**STAINLESS STEELS** (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 BHN or ≤ 28 HRC	SCX	HM470	230-650	.003 - .012
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 BHN or ≤ 28 HRC			260-700	.003 - .014
K	**GRAY IRONS** Class 20, 30, 40, 50, 60, G3000, G3500	≤ 220 BHN or ≤ 19 HRC	HCX	HK430	400 - 950	.005 - .020
	DUCTILE IRONS D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12	≤ 260 BHN or ≤ 26 HRC			350 - 800	.005 - .016
N	**NON-FERROUS** Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic	≤ 271 BHN or ≤ 28 HRC	LCX	HK430	400 - 1100	.007 - .020
H	**TOOL STEELS** A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 BHN or ≤ 55 HRC	SCX	HS470	80-250	.004 - .011
S	**HR SUPER ALLOYS** Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41	≤ 275 BHN or ≤ 28 HRC	SCX	HS470	60 - 200	.003 - .008
	TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S	≤ 275 BHN or ≤ 28 HRC			90 - 350	.003 - .010

***LOWER Vc AND Fz = MED.- HEAVY Ap / Ae** ***HIGHER Vc AND Fz = LIGHT-MED. Ap / Ae**

Recommendations:

- Keep the cutter constantly engaged, when possible, to reduce enter and exit onto the machined component
- Utilize roll technique around all corners to avoid harsh directional changes
- The width of cut,a_e, should be 30% or 70% of DC to ensure maximum efficiency and process security
- Program tool paths around interruptions and holes when possible

Speeds & feeds are starting recommendations only. Factors such as machine type, fixture, tooling rigidity, available horsepower, coolant delivery method and others will affect the performance significantly.