



Chipbreaker:

HCX : Medium to roughing applications in steel and cast iron

SCX : Medium to finishing application in steels, stainless steels, hardened steels, and super alloys

| 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 - .020 |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH | ≤ 375 BHN or ≤ 40 HRC | | | 220-720 | .003 - .018 |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F | ≤ 275 BHN or ≤ 28 HRC | SCX | HM470 | 230-650 | .003 - .015 |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L | ≤ 275 BHN or ≤ 28 HRC | | | 260-700 | .003 - .015 |
| K | GRAY IRONS Class 20, 30, 40, 50, 60, G3000, G3500 | ≤ 220 BHN or ≤ 19 HRC | HCX | HK430 | 400 - 1100 | .005 - .022 |
| | DUCTILE IRONS D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12 | ≤ 260 BHN or ≤ 26 HRC | | | 350 - 850 | .005 - .016 |
| H | TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 | ≤ 375 BHN or ≤ 55 HRC | SCX | HS470 | 80-280 | .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 - 250 | .003 - .009 |
| | TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S | ≤ 275 BHN or ≤ 28 HRC | | | 90 - 300 | .004 - .012 |
| *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_p , 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.