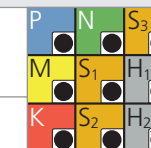


NEW

Type M - Finishing

v_c [m/min]
 f_z [mm]

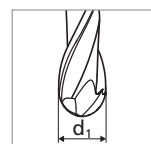
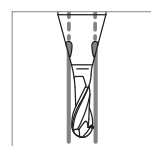
RECOMMENDATION FOR USE
● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

Inclination 15°

 $a_p = 0.1 \times d$
 $a_e = 0.05 - 0.1 \times d$
 $n_{max} = 60'000 \text{ rpm}$



| Materials group | Material | Mat. no. | DIN | AISI/ASTM/UNS | 1.0 mm | | 1.2 mm | | 1.5 mm 1/16" | | 1.8 mm | | Ød1 2.0 mm | | 2.5 mm 3/32" | | 3.0 mm 1/8" | | 4.0 mm 5/32" | | 5.0 mm 3/16" | | 6.0 mm–8.0 mm 7/32–1/4" | |
|--------------------------------------------|------------------------------------------|-----------------|----------------------|-------------------------|--------|-------|--------|-------|--------------|-------|--------|-------|------------|-------|--------------|-------|-------------|-------|--------------|-------|--------------|-------|-------------------------|-------|
| | | | | | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z | v_c | f_z |
| P | Unalloyed carbon steel Rm < 800 N/mm² | 1.0301 | C10 | AISI 1010 | 140 | 0.015 | 140 | 0.017 | 200 | 0.024 | 200 | 0.026 | 220 | 0.034 | 220 | 0.036 | 240 | 0.040 | 260 | 0.044 | 260 | 0.044 | 260 | 0.047 |
| | | 1.0401 | C15 | AISI 1015 | | | | | | | | | | | | | | | | | | | | |
| | | 1.1191 | C45E/CK45 | AISI 1045 | | | | | | | | | | | | | | | | | | | | |
| | | 1.0044 | S275JR | AISI 1020 | | | | | | | | | | | | | | | | | | | | |
| | | 1.0715 | 11SMn30 | AISI 1215 | | | | | | | | | | | | | | | | | | | | |
| | Low alloyed steel Rm > 900 N/mm² | 1.5752 | 15NiCr13 | ASTM 3415 / AISI 3310 | 140 | 0.014 | 140 | 0.016 | 200 | 0.022 | 200 | 0.024 | 220 | 0.032 | 220 | 0.034 | 240 | 0.039 | 260 | 0.042 | 260 | 0.042 | 260 | 0.045 |
| | | 1.7131 | 16MnCr5 | AISI 5115 | | | | | | | | | | | | | | | | | | | | |
| | | 1.3505 | 100Cr6 | AISI 52100 | | | | | | | | | | | | | | | | | | | | |
| | | 1.7225 | 42CrMo4 | AISI 4140 | | | | | | | | | | | | | | | | | | | | |
| | | 1.2842 | 90MnCrV8 | AISI O2 | | | | | | | | | | | | | | | | | | | | |
| High alloyed tool steel Rm < 1200 N/mm² | 1.2379 | X153CrMoV12 | AISI D2 | 140 | 0.011 | 140 | 0.013 | 200 | 0.020 | 200 | 0.022 | 220 | 0.030 | 220 | 0.032 | 240 | 0.035 | 260 | 0.037 | 260 | 0.037 | 260 | 0.039 | |
| | 1.2436 | X210CrW12 | AISI D4/D6 | | | | | | | | | | | | | | | | | | | | | |
| | 1.3343 | HS6-5-2C | AISI M2 / UNS T11302 | | | | | | | | | | | | | | | | | | | | | |
| | 1.3355 | HS18-0-1 | AISI T1 / UNS T12001 | | | | | | | | | | | | | | | | | | | | | |
| M | Stainless steel ferritic | 1.4016 | X6Cr17 | AISI 430 / UNS S43000 | 140 | 0.016 | 140 | 0.018 | 200 | 0.024 | 200 | 0.026 | 220 | 0.034 | 220 | 0.036 | 240 | 0.039 | 260 | 0.042 | 260 | 0.042 | 260 | 0.045 |
| | | 1.4105 | X6CrMoS17 | AISI 430F | | | | | | | | | | | | | | | | | | | | |
| | Stainless steel martensitic | 1.4034 | X46Cr13 | AISI 420C | 140 | 0.015 | 140 | 0.017 | 200 | 0.022 | 200 | 0.024 | 220 | 0.032 | 220 | 0.034 | 240 | 0.039 | 260 | 0.040 | 260 | 0.040 | 260 | 0.043 |
| | | 1.4112 | X90CrMoV18 | AISI 440B | | | | | | | | | | | | | | | | | | | | |
| | Stainless steel martensitic – PH | 1.4542 | X5CrNiCuNb16-4 | AISI 630 / ASTM 17-4 PH | 140 | 0.015 | 140 | 0.017 | 200 | 0.022 | 200 | 0.024 | 220 | 0.032 | 220 | 0.034 | 240 | 0.039 | 260 | 0.040 | 260 | 0.040 | 260 | 0.043 |
| | | 1.4545 | X5CrNiCuNb15-5 | ASTM 15-5 PH | | | | | | | | | | | | | | | | | | | | |
| | Stainless steel austenitic | 1.4301 | X5CrNi18-10 | AISI 304 | 140 | 0.012 | 140 | 0.014 | 200 | 0.016 | 200 | 0.018 | 220 | 0.030 | 220 | 0.032 | 240 | 0.035 | 260 | 0.039 | 260 | 0.039 | 260 | 0.041 |
| | | 1.4435 | X2CrNiMo18-14-3 | AISI 316L | | | | | | | | | | | | | | | | | | | | |
| 1.4441 | | X2CrNiMo18-15-3 | AISI 316LM | | | | | | | | | | | | | | | | | | | | | |
| 1.4539 | X1NiCrMoCu25-20-5 | AISI 904L | | | | | | | | | | | | | | | | | | | | | | |
| K | Cast iron | 0.6020 | GG20 | ASTM 30 | 120 | 0.011 | 120 | 0.022 | 140 | 0.024 | 140 | 0.026 | 160 | 0.028 | 160 | 0.036 | 180 | 0.038 | 200 | 0.044 | 200 | 0.046 | 200 | 0.049 |
| | | 0.6030 | GG30 | ASTM 40B | | | | | | | | | | | | | | | | | | | | |
| | | 0.7040 | GGG40 | ASTM 60-40-18 | | | | | | | | | | | | | | | | | | | | |
| | | 0.7060 | GGG60 | ASTM 80-60-03 | | | | | | | | | | | | | | | | | | | | |
| N | Aluminium alloy wrought | 3.2315 | AlMgSi1 | ASTM 6351 | 140 | 0.018 | 140 | 0.020 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 |
| | | 3.4365 | AlZnMgCu1.5 | ASTM 7075 | | | | | | | | | | | | | | | | | | | | |
| | Aluminium alloy cast | 3.2163 | GD-AlSi9Cu3 | ASTM A380 | 140 | 0.018 | 140 | 0.020 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 |
| | | 3.2381 | GD-AlSi10Mg | UNS A03590 | | | | | | | | | | | | | | | | | | | | |
| | Copper | 2.0040 | Cu-OF / CW008A | UNS C10100 | 140 | 0.020 | 140 | 0.022 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 |
| | | 2.0065 | Cu-ETP / CW004A | UNS C11000 | | | | | | | | | | | | | | | | | | | | |
| | Brass lead free | 2.0321 | CuZn37 CW508L | UNS C27400 | 140 | 0.020 | 140 | 0.022 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 |
| | | 2.0360 | CuZn40 CW509L | UNS C28000 | | | | | | | | | | | | | | | | | | | | |
| | Brass, Bronze Rm < 400 N/mm² | 2.0401 | CuZn39Pb3 / CW614N | UNS C38500 | 140 | 0.020 | 140 | 0.022 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 |
| | | 2.1020 | CuSn6 | UNS C51900 | | | | | | | | | | | | | | | | | | | | |
| Bronze Rm < 600 N/mm² | 2.0966 | CuAl10Ni5Fe4 | UNS C63000 | 140 | 0.018 | 140 | 0.020 | 200 | 0.026 | 200 | 0.028 | 220 | 0.036 | 220 | 0.040 | 240 | 0.051 | 260 | 0.053 | 260 | 0.053 | 260 | 0.056 | |
| | 2.0960 | CuAl9Mn2 | UNS C63200 | | | | | | | | | | | | | | | | | | | | | |
| S1 | Super alloys | 2.4856 | | Inconel 625 | 120 | 0.007 | 120 | 0.008 | 130 | 0.009 | 130 | 0.010 | 140 | 0.010 | 140 | 0.012 | 150 | 0.013 | 170 | 0.018 | 170 | 0.018 | 170 | 0.019 |
| | | 2.4668 | | Inconel 718 | | | | | | | | | | | | | | | | | | | | |
| | | 2.4617 | NiMo28 | Hastelloy B-2 | | | | | | | | | | | | | | | | | | | | |
| | | 2.4665 | NiCr22Fe18Mo | Hastelloy X | | | | | | | | | | | | | | | | | | | | |
| S2 | Titanium pure | 3.7035 | Gr.2 | ASTM B348 / F67 | 120 | 0.016 | 120 | 0.018 | 130 | 0.020 | 130 | 0.022 | 140 | 0.028 | 140 | 0.030 | 150 | 0.035 | 170 | 0.039 | 170 | 0.039 | 170 | 0.041 |
| | | 3.7065 | Gr.4 | ASTM B348 / F68 | | | | | | | | | | | | | | | | | | | | |
| S2 | Titanium alloys | 3.7165 | TiAl6V4 | ASTM B348 / F136 | 120 | 0.016 | 120 | 0.018 | 130 | 0.020 | 130 | 0.022 | 140 | 0.028 | 140 | 0.030 | 150 | 0.035 | 170 | 0.039 | 170 | 0.039 | 170 | 0.041 |
| | | 9.9367 | TiAl6Nb7 | ASTM F1295 | | | | | | | | | | | | | | | | | | | | |
| S3 | CrCo alloys | 2.4964 | CoCr20W15Ni | Haynes 25 | 140 | 0.007 | 140 | 0.008 | 180 | 0.009 | 180 | 0.010 | 200 | 0.010 | 200 | 0.012 | 220 | 0.013 | 240 | 0.018 | 240 | 0.018 | 240 | 0.019 |
| | | | CrCoMo28 | ASTM F1537 | | | | | | | | | | | | | | | | | | | | |
| H1 | Hardened steel < 55 HRC | 1.2510 | 100MnCrMoW4 | AISI O1 | 100 | 0.010 | 100 | 0.012 | 140 | 0.014 | 140 | 0.018 | 180 | 0.020 | 180 | 0.026 | 200 | 0.029 | 240 | 0.035 | 240 | 0.035 | 240 | 0.037 |
| | | 1.2379 | X153CrMoV12 | AISI D2 | | | | | | | | | | | | | | | | | | | | |