| Material Group | Group No | Material Examples* | Brinell hardness | d.o.c [mm] | | feed [mm/rev] | | A max [mm²] | $V_C$ [m/min] | | Optimal cutting conditions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | min | max | min | max | | min | max | d.o.c | feed |
| Low Carbon Steel | 1 | Ck15, Ck45 1020, 1045 | 150 | 0.50 | 5.0 | 0.39 | 0.97 | 3.1 | 180 | 330 | 3.0 | 0.70 |
| | | | 180 | | 5.0 | | 0.97 | 3.1 | | 280 | | |
| | | | 210 | | 5.0 | | 0.86 | 2.6 | | 250 | | |
| Alloy Steel | 2 | 42 CrMo 4<br>St 50-2<br>Ck60<br>1060<br>4140 | 180 | 0.50 | 5.0 | 0.39 | 0.86 | 2.6 | 120 | 280 | 2.5 | 0.64 |
| | | | 230 | | 5.0 | | 0.86 | 2.0 | | 250 | | |
| | | | 280 | | 5.0 | 0.33 | 0.76 | 2.0 | | 210 | | |
| | | | 320 | | 4.0 | | 0.76 | 1.7 | | 180 | | |
| High Alloy Steel | 3 | X40 CrMoV 5 1<br>H 13<br>40 NiCrMo 6<br>4340<br>S 2-10-1-8<br>HSS M42 | 220 | 0.50 | 5.0 | 0.33 | 0.86 | 2.0 | 70 | 190 | 2.5 | 0.57 |
| | | | 280 | | 5.0 | | 0.86 | 2.0 | | 150 | | |
| | | | 320 | | 4.0 | | 0.76 | 1.6 | | 130 | | |
| | | | 350 | | 4.0 | | 0.76 | 1.6 | | 100 | | |
| | | | 400 | 0.50 | 3.5 | 0.20 | 0.64 | 1.2 | 50 | 90 | 2.0 | 0.51 |
| | | | 480 | | 3.0 | | 0.50 | 0.9 | 40 | 80 | 1.8 | 0.43 |
| | | | 550 | | 2.5 | | 0.40 | 0.6 | 30 | 70 | 1.7 | 0.36 |
| Austenitic Stainless Steel | 4 | X5 CrNi 18 9<br>304 | 210 to 250 | 0.50 | 5.0 | 0.37 | 0.74 | 1.7 | 170 | 270 | 2.8 | 0.57 |
| | 5 | X2 CrNiMo 17 2 2<br>316 | 230 to 270 | | 5.0 | 0.33 | 0.66 | 1.4 | 160 | 210 | 2.8 | 0.51 |
| | 6 | X6 CrNiMoTi 17 12 2<br>316 Ti Duplex / Nitronic | ------- | | 5.0 | 0.33 | 0.66 | 1.0 | 70 | 150 | 2.8 | 0.46 |
| Ferritic Stainless Steel | 7 | X8 Cr 7<br>430 | Annealed | 0.50 | 5.0 | 0.41 | 0.66 | 1.5 | 170 | 250 | 2.8 | 0.50 |
| Martensitic Stainless Steel | 8 | X15 Cr 13<br>410 | Annealed | 0.50 | 5.0 | 0.41 | 0.66 | 1.5 | 170 | 250 | 2.8 | 0.50 |
| | | | Treated | | | | | | 120 | 190 | | |
| Grey Cast Iron | 9 | GG 20 | 140 to 230 | 0.50 | 5.0 | 0.29 | 1.29 | 3.0 | 170 | 250 | 2.8 | 0.86 |
| | | GG 25 | | | | | | 2.7 | | 230 | | |
| | | GG 30 | | | | | | 2.7 | | 210 | | |
| Nodular Cast Iron | 10 | GGG 40 | 210 | 0.50 | 5.0 | 0.29 | 1.00 | 2.3 | 120 | 230 | 2.8 | 0.71 |
| | | GGG 50 | 260 | | | | | 2.0 | | 190 | | |
| | | GGG 70 | 310 | | | | | 1.8 | | 150 | | |
| | | G-X260NiCr42 | 450 | 0.50 | 1.8 | 0.09 | 0.21 | 0.3 | 30 | 50 | 1.0 | 0.17 |
| Nickel Based Alloys | 11 | Inconel 625 | -------- | 0.50 | 5.0 | 0.37 | 0.66 | 1.4 | 25 | 35 | 2.1 | 0.54 |
| | | Inconel 718 | | | | | | 1.4 | 28 | 40 | | |
| | | Hastelloy C | | | | | | 1.6 | 40 | 65 | | |
| Titanium Based Alloys | 12 | TiAl 6 V4 | -------- | 0.50 | 5.0 | 0.33 | 0.66 | 1.6 | 35 | 60 | 2.1 | 0.54 |
| | | T40 | | | | | 0.56 | 1.2 | 28 | 40 | 2.1 | 0.46 |

| Insert designation | Super Finishing | Finishing | Semi Finishing | Roughing | Interrrupted Cut |
|---|---|---|---|---|---|
| SNMG 120412 NN | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 |