| Material Group | | Gr. N° | VDI Group | Material Examples* | Hardness | D.O.C. [mm] | | Feed [mm/tooth] | | $V_c$ [m/min] | | Suggested Starting Parameters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | min | max | min | max | min | max | D.O.C. | Feed | $V_c$ |
| Steel | Non-alloyed | 1 | 1 | C35, Ck45, 1020, 1045, 1060, 28Mn6 | 125 HB | 0.5 | 7.0 | 0.18 | 0.46 | 190 | 330 | 3.0 | 0.34 | 250 |
| | | | 2 | | 190 HB | 0.5 | 7.0 | 0.18 | 0.46 | 190 | 300 | 3.0 | 0.34 | 220 |
| | | | 3 | | 250 HB | 0.5 | 7.0 | 0.18 | 0.46 | 190 | 250 | 3.0 | 0.34 | 200 |
| | Low alloyed | 2 | 6 | 42CrMo4, St50, Ck60, 4140, 4340, 100Cr6 | 180 HB | 0.5 | 7.0 | 0.15 | 0.36 | 150 | 240 | 3.0 | 0.30 | 200 |
| | | | 4,6 | | 230 HB | 0.5 | 7.0 | 0.15 | 0.36 | 150 | 210 | 3.0 | 0.30 | 180 |
| | | | 5,7 | | 280 HB | 0.5 | 7.0 | 0.15 | 0.32 | 130 | 190 | 3.0 | 0.27 | 150 |
| | | | 8 | | 350 HB | 0.5 | 7.0 | 0.15 | 0.32 | 130 | 170 | 3.0 | 0.27 | 140 |
| | High alloyed | 3 | 10 | X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB | 0.5 | 5.0 | 0.12 | 0.32 | 90 | 150 | 2.3 | 0.27 | 130 |
| | | | 10 | | 280 HB | 0.5 | 5.0 | 0.12 | 0.32 | 90 | 130 | 2.3 | 0.27 | 120 |
| | | | 11 | | 320 HB | 0.5 | 5.0 | 0.12 | 0.26 | 60 | 110 | 2.3 | 0.24 | 100 |
| | | | 11 | | 350 HB | 0.5 | 5.0 | 0.12 | 0.26 | 60 | 90 | 2.3 | 0.24 | 80 |
| Stainless Steel | Austenitic | 4 | 14 | 304, 316, X5CrNi18-9 | 180 HB | 0.5 | 7.0 | 0.15 | 0.32 | 190 | 250 | 3.0 | 0.27 | 220 |
| | | | 14 | | 240 HB | 0.5 | 7.0 | 0.12 | 0.29 | 160 | 210 | 3.0 | 0.27 | 190 |
| | Duplex | 5 | 14 | X2CrNiN23-4, S31500 | 290 HB | 0.5 | 5.0 | 0.12 | 0.26 | 70 | 130 | 2.3 | 0.24 | 100 |
| | | | 14 | | 310 HB | 0.5 | 5.0 | 0.12 | 0.26 | 70 | 120 | 2.3 | 0.24 | 90 |
| | Ferritic & Martensitic | 6 | 12 | 410, X6Cr17, 17-4 PH, 430 | 200 HB | 0.5 | 7.0 | 0.15 | 0.32 | 150 | 210 | 3.0 | 0.27 | 190 |
| | | | 13 | | 42 HRc | 0.5 | 5.0 | 0.15 | 0.26 | 90 | 150 | 2.3 | 0.24 | 130 |
| Cast Iron | Grey | 7 | 15 | GG20, GG40, EN-GJL-250, No30B | 150 HB | 0.5 | 7.0 | 0.18 | 0.46 | 150 | 240 | 3.0 | 0.34 | 200 |
| | | | 15 | | 200 HB | 0.5 | 7.0 | 0.18 | 0.46 | 150 | 220 | 3.0 | 0.34 | 180 |
| | | | 16 | | 250 HB | 0.5 | 7.0 | 0.18 | 0.46 | 150 | 190 | 3.0 | 0.34 | 160 |
| | Malleable & Nodular | 8 | 17,19 | GGG40, GGG70, 50005 | 150 HB | 0.5 | 7.0 | 0.15 | 0.41 | 100 | 200 | 3.0 | 0.30 | 180 |
| | | | 17,19 | | 200 HB | 0.5 | 7.0 | 0.15 | 0.41 | 100 | 180 | 3.0 | 0.30 | 150 |
| | | | 18,20 | | 250 HB | 0.5 | 7.0 | 0.15 | 0.41 | 100 | 150 | 3.0 | 0.30 | 130 |
| High Temp.Alloys | Fe, Ni & Co based | 9 | 31,32 | Incoloy 800 | 240 HB | 0.5 | 5.0 | 0.12 | 0.26 | 25 | 45 | 2.3 | 0.24 | 32 |
| | | | 33 | Inconel 700 | 250 HB | 0.5 | 5.0 | 0.12 | 0.26 | 25 | 45 | 2.3 | 0.24 | 30 |
| | | | 34 | Stellite 21 | 350 HB | 0.5 | 5.0 | 0.12 | 0.26 | 25 | 45 | 2.3 | 0.24 | 30 |
| | Ti based | 10 | 36 | TiAl6V4 | - | 0.5 | 5.0 | 0.12 | 0.29 | 40 | 65 | 2.3 | 0.27 | 55 |
| | | | 37 | T40 | - | 0.5 | 5.0 | 0.12 | 0.26 | 30 | 55 | 2.3 | 0.24 | 40 |
| Hardened Mat. | Steel | 11 | 38 | X100CrMo13, 440C, G-X260NiCr42 | 45 HRc | 0.5 | 2.5 | 0.10 | 0.26 | 40 | 80 | 1.5 | 0.21 | 60 |
| | | | 38 | | 50 HRc | 0.5 | 1.8 | 0.10 | 0.23 | 40 | 70 | 1.1 | 0.19 | 55 |
| | | | 38 | | 55 HRc | 0.5 | 1.5 | 0.10 | 0.20 | 40 | 60 | 0.8 | 0.18 | 50 |
| | Chilled Cast Iron | | 40 | Ni-Hard 2 | 400 HB | 0.5 | 2.0 | 0.10 | 0.26 | 40 | 80 | 1.1 | 0.21 | 50 |
| | White Cast Iron | | 41 | G-X300CrMo15 | 55 HRc | 0.5 | 1.5 | 0.10 | 0.20 | 30 | 60 | 0.8 | 0.18 | 40 |
| NF | Al (>8%Si) | 12 | 25 | AlSi12 | 130 HB | 0.5 | 7.0 | 0.18 | 0.46 | 200 | 400 | 3.0 | 0.37 | 280 |