

| Material Group    |                        | Gr. N° | VDI Group | Material Examples*                      | Hardness | D.O.C. [inch] |       | Feed [inch/tooth] |       | V <sub>c</sub> [sfm] |      | Suggested Starting Parameters |       |                |
|-------------------|------------------------|--------|-----------|-----------------------------------------|----------|---------------|-------|-------------------|-------|----------------------|------|-------------------------------|-------|----------------|
|                   |                        |        |           |                                         |          | min           | max   | min               | max   | min                  | max  | D.O.C.                        | Feed  | V <sub>c</sub> |
| Steel             | Non-alloyed            | 1      | 1         | C35, Ck45, 1020, 1045, 1060, 28Mn6      | 125 HB   | 0.020         | 0.590 | 0.007             | 0.013 | 620                  | 1080 | 0.157                         | 0.009 | 820            |
|                   |                        |        | 2         |                                         | 190 HB   |               | 0.590 |                   | 0.013 |                      | 980  |                               |       | 720            |
|                   |                        |        | 3         |                                         | 250 HB   |               | 0.590 |                   | 0.013 |                      | 820  |                               |       | 650            |
|                   | Low alloyed            | 2      | 6         | 42CrMo4, St50, Ck60, 4140, 4340, 100Cr6 | 180 HB   | 0.020         | 0.590 | 0.006             | 0.010 | 490                  | 780  | 0.157                         | 0.008 | 650            |
|                   |                        |        | 4,6       |                                         | 230 HB   |               | 0.590 |                   | 0.010 | 490                  | 680  |                               | 0.008 | 590            |
|                   |                        |        | 5,7       |                                         | 280 HB   |               | 0.590 |                   | 0.009 | 420                  | 620  |                               | 0.007 | 490            |
|                   |                        |        | 8         |                                         | 350 HB   |               | 0.590 |                   | 0.009 | 420                  | 550  |                               | 0.007 | 450            |
|                   | High alloyed           | 3      | 10        | X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB   | 0.020         | 0.422 | 0.005             | 0.009 | 290                  | 490  | 0.118                         | 0.007 | 420            |
|                   |                        |        | 10        |                                         | 280 HB   |               | 0.422 |                   | 0.009 | 290                  | 420  |                               | 0.007 | 390            |
|                   |                        |        | 11        |                                         | 320 HB   |               | 0.422 |                   | 0.007 | 190                  | 360  |                               | 0.006 | 320            |
|                   |                        |        | 11        |                                         | 350 HB   |               | 0.422 |                   | 0.007 | 190                  | 290  |                               | 0.006 | 260            |
| Stainless Steel   | Austenitic             | 4      | 14        | 304, 316, X5CrNi18-9                    | 180 HB   | 0.020         | 0.590 | 0.006             | 0.010 | 620                  | 820  | 0.157                         | 0.008 | 720            |
|                   |                        |        | 14        |                                         | 240 HB   |               | 0.590 | 0.005             | 0.009 | 520                  | 680  |                               |       | 620            |
|                   | Duplex                 | 5      | 14        | X2CrNiN23-4, S31500                     | 290 HB   | 0.020         | 0.422 | 0.005             | 0.007 | 220                  | 420  | 0.118                         | 0.006 | 320            |
|                   |                        |        | 14        |                                         | 310 HB   |               | 0.422 |                   | 0.007 | 220                  | 390  |                               |       | 290            |
|                   | Ferritic & Martensitic | 6      | 12        | 410, X6Cr17, 17-4 PH, 430               | 200 HB   | 0.020         | 0.590 | 0.006             | 0.010 | 490                  | 680  | 0.157                         | 0.008 | 620            |
|                   |                        |        | 13        |                                         | 42 HRc   |               | 0.422 |                   | 0.008 | 290                  | 490  | 0.118                         | 0.006 | 420            |
| Cast Iron         | Grey                   | 7      | 15        | GG20, GG40, EN-GJL-250, No30B           | 150 HB   | 0.020         | 0.590 | 0.007             | 0.013 | 490                  | 780  | 0.157                         | 0.009 | 650            |
|                   |                        |        | 15        |                                         | 200 HB   |               | 0.590 |                   | 0.013 |                      | 720  |                               |       | 590            |
|                   |                        |        | 16        |                                         | 250 HB   |               | 0.590 |                   | 0.013 |                      | 620  |                               |       | 520            |
|                   | Malleable & Nodular    | 8      | 17,19     | GGG40, GGG70, 50005                     | 150 HB   | 0.020         | 0.590 | 0.006             | 0.011 | 320                  | 650  | 0.157                         | 0.008 | 590            |
|                   |                        |        | 17,19     |                                         | 200 HB   |               | 0.590 |                   | 0.011 |                      | 590  |                               |       | 490            |
|                   |                        |        | 18,20     |                                         | 250 HB   |               | 0.590 |                   | 0.011 |                      | 490  |                               |       | 420            |
| High Temp. Alloys | Fe, Ni & Co based      | 9      | 31,32     | Incoloy 800                             | 240 HB   | 0.020         | 0.422 | 0.005             | 0.007 | 80                   | 140  | 0.118                         | 0.006 | 100            |
|                   |                        |        | 33        | Inconel 700                             | 250 HB   |               | 0.422 |                   | 0.007 |                      | 140  |                               |       | 90             |
|                   |                        |        | 34        | Stellite 21                             | 350 HB   |               | 0.422 |                   | 0.007 |                      | 140  |                               |       | 90             |
|                   | Ti based               | 10     | 36        | TiAl6V4                                 | -        | 0.020         | 0.422 | 0.005             | 0.008 | 130                  | 210  | 0.118                         | 0.007 | 180            |
|                   |                        |        | 37        | T40                                     | -        |               | 0.422 |                   | 0.007 | 90                   | 180  |                               | 0.006 | 130            |
|                   |                        |        |           |                                         |          |               |       |                   |       |                      |      |                               |       |                |
| Hardened Mat.     | Steel                  | 11     | 38        | X100CrMo13, 440C, G-X260NiCr42          | 45 HRc   | 0.020         | 0.211 | 0.004             | 0.007 | 130                  | 260  | 0.079                         | 0.006 | 190            |
|                   |                        |        | 38        |                                         | 50 HRc   |               | 0.126 |                   | 0.006 |                      | 220  | 0.059                         | 0.005 | 180            |
|                   |                        |        | 38        |                                         | 55 HRc   |               | 0.063 |                   | 0.006 |                      | 190  | 0.039                         | 0.005 | 160            |
|                   |                        |        | 40        |                                         | 400 HB   | 0.020         | 0.169 | 0.004             | 0.007 | 130                  | 260  | 0.059                         | 0.006 | 160            |
|                   | Chilled Cast Iron      |        |           | Ni-Hard 2                               | 400 HB   | 0.020         | 0.169 | 0.004             | 0.007 | 130                  | 260  | 0.059                         | 0.006 | 160            |
|                   | White Cast Iron        |        | 41        | G-X300CrMo15                            | 55 HRc   | 0.020         | 0.063 | 0.004             | 0.006 | 90                   | 190  | 0.039                         | 0.005 | 130            |
| NF                | Al (>8%Si)             | 12     | 25        | AlSi12                                  | 130 HB   | 0.020         | 0.590 | 0.007             | 0.013 | 650                  | 1310 | 0.157                         | 0.010 | 910            |

