

| Material Group              | Group No | Material Examples*                                                    | Brinell hardness | d.o.c [mm] |     | feed [mm/rev] |      | A max [mm <sup>2</sup> ] | V <sub>c</sub> [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 | 0.21          | 0.45 | 1.8                      | 180                    | 350 | 3.0                        | 0.35 |
|                             |          |                                                                       | 180              |            | 5.0 |               | 0.45 | 1.8                      |                        | 300 |                            |      |
|                             |          |                                                                       | 210              |            | 4.0 |               | 0.40 | 1.5                      |                        | 250 |                            |      |
| Alloy Steel                 | 2        | 42 CrMo 4<br>St 50-2<br>Ck60<br>1060<br>4140                          | 180              | 0.50       | 5.0 | 0.21          | 0.40 | 1.2                      | 120                    | 280 | 3.0                        | 0.30 |
|                             |          |                                                                       | 230              |            | 4.0 |               | 0.40 | 1.2                      |                        | 250 |                            |      |
|                             |          |                                                                       | 280              |            | 4.0 | 0.18          | 0.35 | 1.2                      |                        | 210 |                            |      |
|                             |          |                                                                       | 320              |            | 3.5 |               | 0.35 | 1.0                      |                        | 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       | 4.0 | 0.18          | 0.40 | 1.2                      | 70                     | 190 | 2.5                        | 0.28 |
|                             |          |                                                                       | 280              |            | 4.0 |               | 0.40 | 1.2                      |                        | 150 |                            |      |
|                             |          |                                                                       | 320              |            | 3.0 |               | 0.35 | 0.8                      |                        | 130 |                            |      |
|                             |          |                                                                       | 350              |            | 3.0 |               | 0.35 | 0.8                      |                        | 100 |                            |      |
|                             |          |                                                                       | 400              | 0.50       | 2.5 | 0.11          | 0.30 | 0.6                      | 50                     | 90  | 2.0                        | 0.25 |
|                             |          |                                                                       | 480              |            | 2.0 |               | 0.25 | 0.4                      | 40                     | 80  | 1.7                        | 0.20 |
|                             |          |                                                                       | 550              |            | 1.7 |               | 0.20 | 0.3                      | 30                     | 70  | 1.0                        | 0.18 |
| Austenitic Stainless Steel  | 4        | X5 CrNi 18 9 304                                                      | 210 to 250       | 0.50       | 5.0 | 0.20          | 0.40 | 1.0                      | 170                    | 270 | 3.0                        | 0.35 |
|                             | 5        | X2 CrNiMo 17 2 2 316                                                  | 230 to 270       |            | 4.0 | 0.18          | 0.35 | 0.8                      | 160                    | 210 | 3.0                        | 0.32 |
|                             | 6        | X6 CrNiMoTi 17 12 2 316 Ti Duplex / Nitronic                          | -----            |            | 4.0 | 0.18          | 0.35 | 0.6                      | 70                     | 150 | 2.5                        | 0.28 |
| Ferritic Stainless Steel    | 7        | X8 Cr 7 430                                                           | Annealed         | 0.50       | 4.0 | 0.22          | 0.35 | 0.9                      | 170                    | 250 | 3.0                        | 0.32 |
| Martensitic Stainless Steel | 8        | X15 Cr 13 410                                                         | Annealed         | 0.50       | 4.0 | 0.22          | 0.35 | 0.9                      | 170                    | 250 | 3.0                        | 0.32 |
|                             |          |                                                                       | Treated          |            |     |               |      |                          | 120                    | 190 |                            |      |
| Grey Cast Iron              | 9        | GG 20                                                                 | 140 to 230       | 0.50       | 5.0 | 0.15          | 0.60 | 2.0                      | 170                    | 250 | 3.0                        | 0.35 |
|                             |          | GG 25                                                                 |                  |            |     |               |      | 1.8                      |                        | 230 |                            |      |
|                             |          | GG 30                                                                 |                  |            |     |               |      | 1.8                      |                        | 210 |                            |      |
| Nodular Cast Iron           | 10       | GGG 40                                                                | 210              | 0.50       | 5.0 | 0.15          | 0.50 | 1.5                      | 120                    | 230 | 3.0                        | 0.30 |
|                             |          | GGG 50                                                                | 260              |            |     |               |      | 1.3                      |                        | 190 |                            |      |
|                             |          | GGG 70                                                                | 310              |            |     |               |      | 1.2                      |                        | 150 |                            |      |
|                             |          | G-X260NiCr42                                                          | 450              | 0.50       | 1.7 | 0.11          | 0.25 | 0.4                      | 30                     | 50  | 1.0                        | 0.18 |
| Nickel Based Alloys         | 11       | Inconel 625                                                           | -----            | 0.50       | 3.0 | 0.20          | 0.35 | 0.7                      | 25                     | 35  | 2.0                        | 0.28 |
|                             |          | Inconel 718                                                           |                  |            |     |               |      | 0.7                      | 28                     | 40  |                            |      |
|                             |          | Hastelloy C                                                           |                  |            |     |               |      | 0.8                      | 40                     | 65  |                            |      |
| Titanium Based Alloys       | 12       | TiAl 6 V4                                                             | -----            | 0.50       | 3.0 | 0.18          | 0.35 | 0.8                      | 35                     | 60  | 2.0                        | 0.30 |
|                             |          | T40                                                                   |                  |            |     |               | 0.30 | 0.6                      | 28                     | 40  | 2.0                        | 0.28 |

Insert designation    Super Finishing    Finishing    Semi Finishing    Roughing    Interrupted Cut

TPMR 160304 NN



1 2 3 4



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