

| ISO                     | Material   |                       | Condition                   | Tensile strength(N/mm <sup>2</sup> ) | Hardness HB | Cutting speed Vc(m/min) | Ø15.60-Ø20.00 |           |
|-------------------------|--|-----------------------|-----------------------------|--------------------------------------|-------------|-------------------------|---------------|-----------|
| P                       | Non-alloy steel, cast steel, free cutting steel                    | <0.25%C               | Annealed                    | 420                                  | 125         | 70-120                  | 0.08-0.15     |           |
|                         |  | >=0.25%C              | Annealed                    | 650                                  | 190         | 70-120                  | 0.08-0.15     |           |
|                         |  | <0.55%C               | Quenched and tempered       | 850                                  | 250         | 40-70                   | 0.08-0.15     |           |
|                         |  | >=0.55%C              | Annealed                    | 750                                  | 220         | 70-120                  | 0.08-0.15     |           |
|                         |  |                       | Quenched and tempered       | 1000                                 | 300         | 55-100                  | 0.08-0.12     |           |
|                         | Low alloy steel and cast steel (Less than 5% of alloying elements) |                       |                             | Annealed                             | 600         | 200                     | 70-100        | 0.08-0.15 |
|                         |  |                       |                             | Quenched and tempered                | 930         | 275                     | 55-100        | 0.08-0.12 |
|                         |  |                       |                             |                                      | 1000        | 300                     | 55-100        | 0.08-0.12 |
|                         |  |                       |                             |                                      | 1200        | 350                     | 55-100        | 0.08-0.12 |
|                         | High alloy steel, cast steel and tool steel                        |                       |                             | Annealed                             | 680         | 200                     | 50-85         | 0.08-0.15 |
|                         |  | Quenched and tempered | 1100                        | 325                                  | 55-100      | 0.08-0.12               |               |           |
| M                       | Stainless steel and cast steel                                     |                       | Ferritic/martensitic        | 680                                  | 200         | 60-100                  | 0.08-0.15     |           |
|                         |  |                       | Martensitic                 | 820                                  | 240         | 60-100                  | 0.08-0.15     |           |
|                         |  |                       | Austenitic                  | 600                                  | 180         | 60-100                  | 0.05-0.12     |           |
| K                       | Grey cast iron (GG)  |                       | Ferritic                    |                                      | 160         | 60-100                  | 0.06-0.13     |           |
|                         |  |                       | Pearlitic                   |                                      | 250         | 60-100                  | 0.06-0.13     |           |
|                         | Cast iron nodular (GGG)  |                       | Ferritic                    |                                      | 180         | 80-100                  | 0.08-0.15     |           |
|                         |  |                       | Pearlitic                   |                                      | 260         | 80-100                  | 0.08-0.15     |           |
|                         | Malleable cast iron  |                       | Ferritic                    |                                      | 130         | 50-100                  | 0.06-0.13     |           |
|                         |  |                       | Pearlitic                   |                                      | 230         | 50-100                  | 0.06-0.13     |           |
| N                       | Alluminum- W   | rough alloy           | Not cureable                |                                      | 60          | 65-130                  | 0.08-0.15     |           |
|                         |  |                       | Cured                       |                                      | 100         | 65-100                  | 0.08-0.15     |           |
|                         | Aluminum-cast, alloyed   | <=0.12% Si            | Not cureable                |                                      | 75          | 65-130                  | 0.08-0.15     |           |
|                         |  |                       | Cured                       |                                      | 90          | 65-130                  | 0.08-0.15     |           |
|                         |  |                       | >12 Si                      | High temp.                           |             | 130                     | 65-130        | 0.08-0.15 |
|                         | Copper alloys  | >1% Pb                | Free cutting                |                                      | 110         | 65-130                  | 0.08-0.15     |           |
|                         |  |                       | Brass                       |                                      | 90          | 65-130                  | 0.08-0.15     |           |
|                         |  |                       | Electrolitic copper         |                                      | 100         | 65-130                  | 0.08-0.15     |           |
|                         | Non-metallic   |                       | Duroplastic, fiber plastics |                                      |             |                         |               |           |
|                         |  |                       | Hard rubber                 |                                      |             |                         |               |           |
| S                       | High temp. alloys  | Fe based              | Annealed                    |                                      | 200         | 10-50                   | 0.06-0.12     |           |
|                         |  |                       | Cured                       |                                      | 280         | 10-50                   | 0.06-0.12     |           |
|                         |  | Ni or Co based        | Annealed                    |                                      | 250         | 10-50                   | 0.06-0.12     |           |
|                         |  |                       | Cured                       |                                      | 350         | 10-50                   | 0.06-0.12     |           |
|                         |  |                       | Cast                        |                                      | 320         | 10-50                   | 0.06-0.12     |           |
|                         | Titanium, Ti alloys  |                       |                             |                                      | Rm 400      |                         | 30-50         | 0.05-0.10 |
| Alpha+beta alloys cured |  |                       | Rm 1050                     |                                      | 30-50       | 0.05-0.10               |               |           |
| H                       | Hardened steel   |                       | Hardened                    |                                      | 55HRC       |                         |               |           |
|                         |  |                       | Hardened                    |                                      | 60HRC       |                         |               |           |
|                         | Chilled cast iron  |                       | Cast                        |                                      | 400         |                         |               |           |
|                         | Cast iron nodular  |                       | Hardened                    |                                      | 55HRC       |                         |               |           |