

WNMG 060408 NN LT 1000

FT001950

|                    | Material Group                                |  SAPPHIRE<br>CUTTING TOOLS | Material Example                        | Hardness | D.O.C   |         | Feed      |           | Amax   | Vc         |             | Advised D.O.C | Advised Feed | Advised Vc |
|--------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------|---------|---------|-----------|-----------|--------|------------|-------------|---------------|--------------|------------|
|                    |                                               |                                                                                                             |                                         |          | min[mm] | max[mm] | min[mm/t] | max[mm/t] | [mm^2] | min[m/min] | max [m/min] | [mm]          | [mm/t]       | [m/min]    |
| Steel              | Non Alloyed                                   | 1                                                                                                           | C35, Ck45, 1020, 1045, 1060, 28Mn6      | 125 HB   | 0.5     | 2.5     | 0.21      | 0.5       | 1.17   | 180        | 330         | 1.8           | 0.38         | 240        |
|                    |                                               |                                                                                                             |                                         | 190 HB   | 0.5     | 2.5     | 0.21      | 0.5       | 1.17   | 180        | 280         | 1.8           | 0.35         | 220        |
|                    |                                               |                                                                                                             |                                         | 250 HB   | 0.5     | 2.5     | 0.21      | 0.45      | 0.98   | 180        | 250         | 1.8           | 0.33         | 200        |
|                    | Low Alloyed                                   | 2                                                                                                           | 42CrMo4, St50, Ck60, 4140, 4340, 100Cr6 | 230 HB   | 0.5     | 2       | 0.21      | 0.45      | 0.78   | 120        | 250         | 1.8           | 0.32         | 180        |
|                    |                                               |                                                                                                             |                                         | 280 HB   | 0.5     | 2       | 0.18      | 0.4       | 0.78   | 120        | 210         | 1.8           | 0.3          | 150        |
|                    |                                               |                                                                                                             |                                         | 180 HB   | 0.5     | 2.5     | 0.21      | 0.45      | 0.78   | 120        | 280         | 1.8           | 0.32         | 200        |
|                    |                                               |                                                                                                             |                                         | 350 HB   | 0.5     | 1.8     | 0.18      | 0.4       | 0.65   | 120        | 180         | 1.6           | 0.3          | 130        |
|                    | High Alloyed                                  | 3                                                                                                           | X40CrMOV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB   | 0.5     | 2       | 0.18      | 0.4       | 0.78   | 70         | 190         | 1.5           | 0.3          | 140        |
|                    |                                               |                                                                                                             |                                         | 280 HB   | 0.5     | 2       | 0.18      | 0.4       | 0.78   | 70         | 150         | 1.5           | 0.3          | 120        |
|                    |                                               |                                                                                                             |                                         | 320 HB   | 0.5     | 1.5     | 0.18      | 0.35      | 0.52   | 70         | 130         | 1.3           | 0.28         | 100        |
|                    |                                               |                                                                                                             |                                         | 350 HB   | 0.5     | 1.5     | 0.18      | 0.35      | 0.52   | 70         | 110         | 1.3           | 0.28         | 90         |
| Stainless Steel    | Austentic                                     | 4                                                                                                           | 304, 316, X5CrNi18-9                    | 180 HB   | 0.5     | 2.5     | 0.2       | 0.4       | 0.78   | 170        | 270         | 1.8           | 0.25         | 190        |
|                    |                                               |                                                                                                             |                                         | 240 HB   | 0.5     | 2.5     | 0.2       | 0.4       | 0.65   | 160        | 220         | 1.8           | 0.22         | 170        |
|                    | Duplex                                        | 5                                                                                                           | X2CrNiN23-4, S31500                     | 290 HB   | 0.5     | 2       | 0.18      | 0.35      | 0.52   | 80         | 150         | 1.5           | 0.24         | 100        |
|                    |                                               |                                                                                                             |                                         | 310 HB   | 0.5     | 2       | 0.18      | 0.35      | 0.52   | 70         | 140         | 1.5           | 0.24         | 90         |
|                    | Ferritic & Martensitic                        | 6                                                                                                           | 410, X6Cr17, 17-4 PH, 430               | 200 HB   | 0.5     | 2.5     | 0.18      | 0.4       | 0.46   | 170        | 250         | 1.5           | 0.2          | 190        |
|                    |                                               |                                                                                                             |                                         | 42 HRc   | 0.5     | 2       | 0.18      | 0.4       | 0.46   | 120        | 190         | 1.3           | 0.2          | 130        |
| Cast Iron          | Grey                                          | 7                                                                                                           | GG20, GG40, EN-GJL-250, N030B           | 150 HB   | 0.5     | 2.5     | 0.15      | 0.6       | 1.3    | 170        | 250         | 1.8           | 0.35         | 200        |
|                    |                                               |                                                                                                             |                                         | 200 HB   | 0.5     | 2.5     | 0.15      | 0.6       | 1.17   | 160        | 230         | 1.8           | 0.35         | 180        |
|                    |                                               |                                                                                                             |                                         | 250 HB   | 0.5     | 2.5     | 0.15      | 0.55      | 1.17   | 150        | 210         | 1.8           | 0.35         | 160        |
|                    | Malleable & Nodular                           | 8                                                                                                           | GGG40, GGG70, 50005                     | 150 HB   | 0.5     | 2.5     | 0.15      | 0.5       | 0.98   | 120        | 250         | 1.8           | 0.3          | 180        |
|                    |                                               |                                                                                                             |                                         | 200 HB   | 0.5     | 2.5     | 0.15      | 0.5       | 0.85   | 120        | 230         | 1.8           | 0.3          | 160        |
|                    |                                               |                                                                                                             |                                         | 250 HB   | 0.5     | 2.5     | 0.15      | 0.5       | 0.78   | 120        | 190         | 1.8           | 0.3          | 140        |
| NTI Alloy          | Fe, Ni & Co Based                             | 9                                                                                                           | Incoloy 800                             | 240 HB   | 0.5     | 1.5     | 0.2       | 0.35      | 0.46   | 30         | 50          | 1.2           | 0.28         | 30         |
|                    |                                               |                                                                                                             | Inconel 700                             | 250 HB   | 0.5     | 1.5     | 0.2       | 0.35      | 0.46   | 30         | 50          | 1.2           | 0.28         | 30         |
|                    |                                               |                                                                                                             | Stellite 21                             | 350 HB   | 0.5     | 1.5     | 0.2       | 0.35      | 0.46   | 30         | 40          | 1.2           | 0.28         | 30         |
|                    | Ti Based                                      | 10                                                                                                          | T40                                     | -        | 0.5     | 1.5     | 0.2       | 0.35      | 0.46   | 40         | 60          | 1.2           | 0.3          | 45         |
|                    |                                               |                                                                                                             | TiAl6V4                                 | -        | 0.5     | 1.8     | 0.2       | 0.4       | 0.52   | 50         | 70          | 1.2           | 0.33         | 55         |
| Hardened Materials | Steel Chilled<br>Cast Iron<br>White Cast Iron | 11                                                                                                          | G-X300CrMo15                            | 55 HRc   | 0.5     | 0.8     | 0.11      | 0.2       | 0.2    | 30         | 50          | 0.6           | 0.15         | 40         |
|                    |                                               |                                                                                                             | Ni-Hard 2                               | 400 HB   | 0.5     | 1       | 0.11      | 0.25      | 0.26   | 40         | 60          | 0.9           | 0.18         | 50         |
|                    |                                               |                                                                                                             | X100CrMo13, 440C, G-X260NiCr42          | 45 HRc   | 0.5     | 1.3     | 0.11      | 0.3       | 0.39   | 50         | 100         | 1.2           | 0.25         | 80         |
|                    |                                               |                                                                                                             |                                         | 50 HRc   | 0.5     | 1       | 0.11      | 0.25      | 0.26   | 40         | 90          | 0.9           | 0.2          | 70         |
|                    |                                               |                                                                                                             |                                         | 55 HRc   | 0.5     | 0.8     | 0.11      | 0.2       | 0.2    | 40         | 80          | 0.6           | 0.18         | 60         |
| Aluminium          | Al (>8%Si)                                    | 12                                                                                                          | AlSi12                                  | 130 HB   | 0.5     | 3       | 0.2       | 0.6       | 1.17   | 200        | 400         | 1.8           | 0.4          | 280        |