



# MACHINING CONDITIONS

TPMR 160304 LT 10

T0001638

| Material Group         | Lamina Group                            | 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                             | C35, Ck45, 1020, 1045, 1060, 28Mn6 | 125 HB                                  | 0.3                  | 3       | 0.11      | 0.23       | 0.6    | 180         | 330         | 2             | 0.18         | 300        |      |
|                        |   |                                    | 190 HB                                  | 0.3                  | 2.5     | 0.11      | 0.22       | 0.52   | 180         | 280         | 2             | 0.18         | 260        |      |
|                        |   |                                    | 250 HB                                  | 0.3                  | 2.5     | 0.11      | 0.2        | 0.48   | 180         | 250         | 2             | 0.18         | 240        |      |
|                        | Low Alloyed                             | 2                                  | 42CrMo4, St50, Ck60, 4140, 4340, 100Cr6 | 230 HB               | 0.3     | 2.5       | 0.1        | 0.2    | 0.48        | 120         | 250           | 2            | 0.14       | 240  |
|                        |   |                                    |   | 280 HB               | 0.3     | 2         | 0.1        | 0.18   | 0.4         | 120         | 210           | 2            | 0.13       | 200  |
|                        |   |                                    |   | 180 HB               | 0.3     | 2.5       | 0.1        | 0.2    | 0.5         | 120         | 280           | 2            | 0.14       | 260  |
|                        |   |                                    |   | 350 HB               | 0.3     | 2         | 0.1        | 0.18   | 0.36        | 120         | 180           | 2            | 0.13       | 180  |
|                        | High Alloyed                            | 3                                  | X40CrMoV5, H13, M42, D3, S6-5-2, 12Ni19 | 220 HB               | 0.3     | 2.5       | 0.09       | 0.18   | 0.4         | 70          | 190           | 1.7          | 0.1        | 180  |
|                        |   |                                    |   | 280 HB               | 0.3     | 2.5       | 0.09       | 0.16   | 0.4         | 70          | 150           | 1.7          | 0.1        | 140  |
|                        |   |                                    |   | 320 HB               | 0.3     | 2         | 0.09       | 0.14   | 0.32        | 70          | 130           | 1.7          | 0.1        | 120  |
|                        |   |                                    |   | 350 HB               | 0.3     | 2         | 0.09       | 0.14   | 0.26        | 70          | 110           | 1.7          | 0.1        | 110  |
|                        | Stainless Steel                         | Austenitic                         | 4                                       | 304, 316, X5CrNi18-9 | 180 HB  | 0.3       | 2.5        | 0.08   | 0.18        | 0.32        | 170           | 270          | 2          | 0.09 |
| 240 HB                 |   |                                    |   |                      | 0.3     | 2.5       | 0.08       | 0.18   | 0.26        | 160         | 220           | 2            | 0.08       | 210  |
| Duplex                 |   | 5                                  | X2CrNiN23-4, S31500                     | 290 HB               | 0.3     | 2         | 0.08       | 0.14   | 0.2         | 80          | 150           | 1.7          | 0.08       | 140  |
|                        |   |                                    |   | 310 HB               | 0.3     | 2         | 0.08       | 0.14   | 0.2         | 70          | 140           | 1.7          | 0.08       | 140  |
| Ferritic & Martensitic |   | 6                                  | 410, X6Cr17, 17-4 PH, 430               | 200 HB               | 0.3     | 2.5       | 0.08       | 0.18   | 0.32        | 170         | 250           | 1.7          | 0.09       | 240  |
|                        |   |                                    |   | 42 HRc               | 0.3     | 2         | 0.08       | 0.16   | 0.26        | 120         | 190           | 1.5          | 0.08       | 180  |
| Cast Iron              | Grey                                    | 7                                  | GG20, GG40, EN-GJL-250, N030B           | 150 HB               | 0.3     | 3         | 0.08       | 0.2    | 0.64        | 170         | 250           | 2            | 0.18       | 240  |
|                        |   |                                    |   | 200 HB               | 0.3     | 3         | 0.08       | 0.2    | 0.6         | 160         | 230           | 2            | 0.18       | 220  |
|                        |   |                                    |   | 250 HB               | 0.3     | 3         | 0.08       | 0.2    | 0.6         | 150         | 210           | 2            | 0.18       | 200  |
|                        | Malleable & Nodular                     | 8                                  | GGG40, GGG70, 50005                     | 150 HB               | 0.3     | 2.5       | 0.08       | 0.18   | 0.48        | 120         | 250           | 2            | 0.13       | 240  |
|                        |   |                                    |   | 200 HB               | 0.3     | 2.5       | 0.08       | 0.18   | 0.4         | 120         | 230           | 2            | 0.13       | 220  |
|                        |   |                                    |   | 250 HB               | 0.3     | 2.5       | 0.08       | 0.18   | 0.4         | 120         | 190           | 2            | 0.13       | 180  |
| NITTI Alloy            | Fe, Ni & Co Based                       | 9                                  | Incoloy 800                             | 240 HB               | 0.3     | 2         | 0.09       | 0.15   | 0.26        | 30          | 50            | 1.3          | 0.1        | 40   |
|                        |   |                                    | Inconel 700                             | 250 HB               | 0.3     | 2         | 0.09       | 0.15   | 0.26        | 30          | 50            | 1.3          | 0.1        | 40   |
|                        |   |                                    | Stellite 21                             | 350 HB               | 0.3     | 2         | 0.09       | 0.15   | 0.26        | 20          | 50            | 1.3          | 0.1        | 35   |
|                        | Ti Based                                | 10                                 | T40                                     | -                    | 0.3     | 2         | 0.09       | 0.14   | 0.26        | 40          | 60            | 1.3          | 0.1        | 50   |
|                        |   |                                    | TiAl6V4                                 | -                    | 0.3     | 2         | 0.09       | 0.16   | 0.32        | 50          | 70            | 1.3          | 0.14       | 60   |
| Hardened Materials     | Steel Chilled Cast Iron White Cast Iron | 11                                 | G-X300CrMo15                            | 55 HRc               | 0.3     | 1.4       | 0.05       | 0.09   | 0.13        | 30          | 50            | 0.9          | 0.06       | 40   |
|                        |   |                                    | Ni-Hard 2                               | 400 HB               | 0.3     | 1.6       | 0.05       | 0.12   | 0.17        | 40          | 60            | 1.1          | 0.1        | 50   |
|                        |   |                                    | X100CrMo13, 440C, G-X260NiCr42          | 45 HRc               | 0.3     | 1.8       | 0.05       | 0.12   | 0.2         | 50          | 100           | 1.4          | 0.1        | 90   |
|                        |   |                                    |   | 50 HRc               | 0.3     | 1.5       | 0.05       | 0.1    | 0.17        | 40          | 90            | 1.1          | 0.08       | 80   |
|                        |   |                                    |   | 55 HRc               | 0.3     | 1.4       | 0.05       | 0.09   | 0.13        | 40          | 80            | 0.9          | 0.06       | 70   |
| Aluminium              | Al (>8%Si)                              | 12                                 | AISI12                                  | 130 HB               | 0.3     | 4         | 0.1        | 0.3    | 0.7         | 200         | 400           | 2            | 0.23       | 350  |

