

| Material group | Hardness | | SFM | Feed Rate - IPR | | | | | | | | | |
|---|----------------------|-------------------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|------------------------|------------------------|
| | HRC | BHN | | 1/16 in. 1.590 mm | 1/8 in. 3.170 mm | 1/4 in. 6.350 mm | 3/8 in. 9.520 mm | 1/2 in. 12.700 mm | 5/8 in. 15.870 mm | 3/4 in. 19.050 mm | 1 in. 25.400 mm | 1 1/4 in. 31.750 mm | 1 1/2 in. 38.100 mm |
| Common structural steels | - ≤ 32 | ≤ 150 ≤ 301 | | | | | | | | | | | |
| Free-cutting steels | ≤ 25 ≤ 32 | ≤ 255 ≤ 301 | 95 | 0.0015 | 0.0040 | 0.0065 | 0.0080 | 0.0100 | 0.0100 | 0.0110 | 0.0125 | | |
| Unalloyed heat-treatable steels | ≤ 20 ≤ 25 ≤ 32 | ≤ 220 ≤ 255 ≤ 301 | 70 95 70 | 0.0012 0.0015 0.0012 | 0.0030 0.0040 0.0030 | 0.0050 0.0065 0.0050 | 0.0065 0.0080 0.0065 | 0.0080 0.0100 0.0080 | 0.0080 0.0100 0.0090 | 0.0090 0.0110 0.0090 | 0.0100 0.0125 0.0100 | | |
| Alloyed heat-treatable steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 65 50 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | 0.0080 0.0065 | 0.0090 0.0070 | 0.0100 0.0080 | | |
| Unalloyed case hardened steels | ≤ 25 | ≤ 255 | | | | | | | | | | | |
| Alloyed case hardened steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 55 45 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | 0.0080 0.0065 | 0.0090 0.0070 | 0.0100 0.0080 | | |
| Nitriding steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 50 35 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | 0.0080 0.0065 | 0.0090 0.0070 | 0.0100 0.0080 | | |
| Tool steels | ≤ 25 ≤ 43 | ≤ 255 ≤ 402 | 65 35 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | 0.0080 0.0065 | 0.0090 0.0070 | 0.0100 0.0080 | | |
| High speed steels | ≤ 43 | ≤ 402 | 35 | 0.0010 | 0.0025 | 0.0040 | 0.0050 | 0.0065 | 0.0065 | 0.0070 | 0.0080 | | |
| Spring steels | ≤ 38 | ≤ 354 | 30 | 0.0007 | 0.0020 | 0.0030 | 0.0040 | 0.0050 | 0.0050 | 0.0055 | 0.0065 | | |
| Hardened steels | ≤ 48 ≤ 66 | ≤ 460 - | | | | | | | | | | | |
| Stainless steels, sulphured austenitic martensitic | ≤ 28 ≤ 36 ≤ 46 | ≤ 273 ≤ 337 ≤ 435 | 50 35 45 | 0.0012 0.0010 0.0010 | 0.0030 0.0025 0.0025 | 0.0050 0.0040 0.0050 | 0.0065 0.0050 0.0065 | 0.0080 0.0065 0.0065 | 0.0080 0.0065 0.0065 | 0.0090 0.0070 0.0070 | 0.0100 0.0080 0.0080 | | |
| Cast iron | ≤ 23 ≤ 38 | ≤ 242 ≤ 354 | 130 95 | 0.0017 0.0017 | 0.0050 0.0050 | 0.0080 0.0080 | 0.0100 0.0100 | 0.0125 0.0125 | 0.0125 0.0125 | 0.0140 0.0140 | 0.0160 0.0160 | | |
| Spheroidal graphite iron and malleable cast iron | ≤ 23 ≤ 38 | ≤ 242 ≤ 354 | 115 90 | 0.0017 0.0017 | 0.0050 0.0050 | 0.0080 0.0080 | 0.0100 0.0100 | 0.0125 0.0125 | 0.0125 0.0125 | 0.0140 0.0140 | 0.0160 0.0160 | | |
| Chilled cast iron | ≤ 38 | ≤ 354 | 30 | 0.0010 | 0.0025 | 0.0040 | 0.0050 | 0.0065 | 0.0065 | 0.0070 | 0.0080 | | |
| New cast materials GGV | ≤ 20 ≤ 32 | ≤ 220 ≤ 301 | | | | | | | | | | | |
| New cast materials ADI | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | | | | | | | | | | | |
| Special alloys | ≤ 54 | ≤ 549 | 25 | 0.0005 | 0.0015 | 0.0025 | 0.0030 | 0.0040 | 0.0040 | 0.0045 | 0.0050 | | |
| Ti and Ti-alloys | ≤ 25 ≤ 43 | ≤ 255 ≤ 402 | 35 25 | 0.0007 0.0007 | 0.0020 0.0020 | 0.0030 0.0030 | 0.0040 0.0040 | 0.0050 0.0050 | 0.0050 0.0050 | 0.0055 0.0055 | 0.0065 0.0065 | | |
| Aluminium and Al-alloys | - | ≤ 120 | | | | | | | | | | | |
| Al wrought alloys | - | ≤ 200 | | | | | | | | | | | |
| Al cast alloys ≤ 10 % Si ≤ 24 % Si | - | ≤ 180 ≤ 180 | | | | | | | | | | | |
| Magnesium alloys | - | ≤ 120 | | | | | | | | | | | |
| Copper, low-alloyed | - | ≤ 150 | | | | | | | | | | | |
| Brass, short-chipping long-chipping | - | ≤ 180 ≤ 180 | | | | | | | | | | | |
| Bronze, short-chipping | - | ≤ 180 ≤ 255 | 130 115 | 0.0012 0.0012 | 0.0030 0.0030 | 0.0050 0.0050 | 0.0065 0.0065 | 0.0080 0.0080 | 0.0080 0.0080 | 0.0090 0.0090 | 0.0100 0.0100 | 0.0125 0.0125 | |
| Bronze, long-chipping | ≤ 25 ≤ 32 | ≤ 255 ≤ 301 | 95 80 | 0.0012 0.0012 | 0.0030 0.0030 | 0.0050 0.0050 | 0.0065 0.0065 | 0.0080 0.0080 | 0.0080 0.0080 | 0.0090 0.0090 | 0.0100 0.0100 | 0.0125 0.0125 | |
| Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK | | | 65 | 0.0012 | 0.0030 | 0.0050 | 0.0065 | 0.0080 | 0.0080 | 0.0090 | 0.0100 | 0.0125 | |

| Material group | Hardness | | SFM | Feed Rate - IPR | | | | | | | | | |
|---|----------------------|-------------------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------|----------------------|--------------------|------------------------|------------------------|
| | HRC | BHN | | 1/16 in. 1.590 mm | 1/8 in. 3.170 mm | 1/4 in. 6.350 mm | 3/8 in. 9.520 mm | 1/2 in. 12.700 mm | 5/8 in. 15.870 mm | 3/4 in. 19.050 mm | 1 in. 25.400 mm | 1 1/4 in. 31.750 mm | 1 1/2 in. 38.100 mm |
| Common structural steels | - ≤ 32 | ≤ 150 ≤ 301 | | | | | | | | | | | |
| Free-cutting steels | ≤ 25 ≤ 32 | ≤ 255 ≤ 301 | 75 | 0.0015 | 0.0040 | 0.0065 | 0.0080 | 0.0100 | | | | | |
| Unalloyed heat-treatable steels | ≤ 20 ≤ 25 ≤ 32 | ≤ 220 ≤ 255 ≤ 301 | 75 75 50 | 0.0015 0.0015 0.0012 | 0.0040 0.0040 0.0030 | 0.0065 0.0065 0.0050 | 0.0080 0.0080 0.0065 | 0.0100 0.0080 | | | | | |
| Alloyed heat-treatable steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 50 35 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | | | | | |
| Unalloyed case hardened steels | ≤ 25 | ≤ 255 | | | | | | | | | | | |
| Alloyed case hardened steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 45 30 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | | | | | |
| Nitriding steels | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | 35 25 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | | | | | |
| Tool steels | ≤ 25 ≤ 43 | ≤ 255 ≤ 402 | 50 25 | 0.0012 0.0010 | 0.0030 0.0025 | 0.0050 0.0040 | 0.0065 0.0050 | 0.0080 0.0065 | | | | | |
| High speed steels | ≤ 43 | ≤ 402 | 25 | 0.0010 | 0.0025 | 0.0040 | 0.0050 | 0.0065 | | | | | |
| Spring steels | ≤ 38 | ≤ 354 | 15 | 0.0007 | 0.0020 | 0.0030 | 0.0040 | 0.0050 | | | | | |
| Hardened steels | ≤ 48 ≤ 66 | ≤ 460 - | | | | | | | | | | | |
| Stainless steels, sulphured austenitic martensitic | ≤ 28 ≤ 36 ≤ 46 | ≤ 273 ≤ 337 ≤ 435 | 35 25 30 | 0.0012 0.0005 0.0010 | 0.0030 0.0015 0.0025 | 0.0050 0.0025 0.0040 | 0.0065 0.0030 0.0050 | 0.0080 0.0040 0.0065 | | | | | |
| Cast iron | ≤ 23 ≤ 38 | ≤ 242 ≤ 354 | 95 75 | 0.0017 0.0017 | 0.0050 0.0050 | 0.0080 0.0080 | 0.0100 0.0100 | 0.0125 0.0125 | | | | | |
| Spheroidal graphite iron and malleable cast iron | ≤ 23 ≤ 38 | ≤ 242 ≤ 354 | 75 65 | 0.0017 0.0017 | 0.0050 0.0050 | 0.0080 0.0080 | 0.0100 0.0100 | 0.0125 0.0125 | | | | | |
| Chilled cast iron | ≤ 38 | ≤ 354 | | | | | | | | | | | |
| New cast materials GGV | ≤ 20 ≤ 32 | ≤ 220 ≤ 301 | | | | | | | | | | | |
| New cast materials ADI | ≤ 32 ≤ 43 | ≤ 301 ≤ 402 | | | | | | | | | | | |
| Special alloys | ≤ 54 | ≤ 549 | | | | | | | | | | | |
| Ti and Ti-alloys | ≤ 25 ≤ 43 | ≤ 255 ≤ 402 | | | | | | | | | | | |
| Aluminium and Al-alloys | - | ≤ 120 | | | | | | | | | | | |
| Al wrought alloys | - | ≤ 200 | | | | | | | | | | | |
| Al cast alloys ≤ 10 % Si ≤ 24 % Si | - | ≤ 180 ≤ 180 | 195 160 | 0.0020 0.0017 | 0.0065 0.0050 | 0.0100 0.0080 | 0.0125 0.0100 | 0.0160 0.0125 | | | | | |
| Magnesium alloys | - | ≤ 120 | | | | | | | | | | | |
| Copper, low-alloyed | - | ≤ 150 | 95 | 0.0015 | 0.0040 | 0.0065 | 0.0080 | 0.0100 | | | | | |
| Brass, short-chipping long-chipping | - | ≤ 180 ≤ 180 | | | | | | | | | | | |
| Bronze, short-chipping | - | ≤ 180 ≤ 255 | | | | | | | | | | | |
| Bronze, long-chipping | ≤ 25 ≤ 32 | ≤ 255 ≤ 301 | 75 65 | 0.0012 0.0012 | 0.0030 0.0030 | 0.0050 0.0050 | 0.0065 0.0065 | 0.0080 0.0080 | | | | | |
| Duroplastics Thermoplastics Reinforced plastics - Kevlar Reinforced plastics - GFK / CFK | | | 50 | 0.0012 | 0.0030 | 0.0050 | 0.0065 | 0.0080 | | | | | |