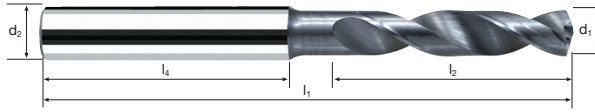
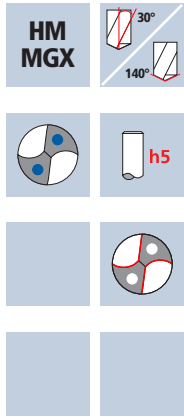


Spiral flute drills XDrill®

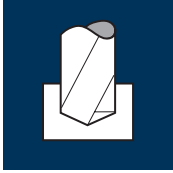
3xd



| | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | | Inox Stainless | Ti Titanium | GG(G) |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|

| Example: Order-N°. | | | | | | | DURO-X | |
|-----------------------|----------|----------|----|----|----|------------------|--------|---|
| | | | | | | | B72011 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Article-N°. | α-Code | | | | | | | |
| B72011 | .0300 | | | | | | | |
| Ø Code | d1 m7 | d2 h5 | l1 | l2 | l4 | L _{max} | | |
| .0300 | 3.0 | 6 | 62 | 20 | 36 | 16.2 | | ● |
| .0310 | 3.1 | 6 | 62 | 20 | 36 | 16.2 | | ● |
| .0320 | 3.2 | 6 | 62 | 20 | 36 | 16.0 | | ● |
| .0330 | 3.3 | 6 | 62 | 20 | 36 | 16.0 | | ● |
| .0340 | 3.4 | 6 | 62 | 20 | 36 | 15.8 | | ● |
| .0350 | 3.5 | 6 | 62 | 20 | 36 | 15.8 | | ● |
| .0360 | 3.6 | 6 | 62 | 20 | 36 | 15.6 | | ● |
| .0370 | 3.7 | 6 | 62 | 20 | 36 | 15.6 | | ● |
| .0380 | 3.8 | 6 | 66 | 24 | 36 | 19.4 | | ● |
| .0390 | 3.9 | 6 | 66 | 24 | 36 | 19.4 | | ● |
| .0400 | 4.0 | 6 | 66 | 24 | 36 | 18.9 | | ● |
| .0410 | 4.1 | 6 | 66 | 24 | 36 | 18.9 | | ● |
| .0420 | 4.2 | 6 | 66 | 24 | 36 | 18.8 | | ● |
| .0430 | 4.3 | 6 | 66 | 24 | 36 | 18.7 | | ● |
| .0440 | 4.4 | 6 | 66 | 24 | 36 | 18.6 | | ● |
| .0450 | 4.5 | 6 | 66 | 24 | 36 | 18.6 | | ● |
| .0460 | 4.6 | 6 | 66 | 24 | 36 | 18.5 | | ● |
| .0470 | 4.7 | 6 | 66 | 24 | 36 | 18.5 | | ● |
| .0480 | 4.8 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0490 | 4.9 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0500 | 5.0 | 6 | 66 | 28 | 36 | 18.7 | | ● |
| .0510 | 5.1 | 6 | 66 | 28 | 36 | 18.7 | | ● |
| .0520 | 5.2 | 6 | 66 | 28 | 36 | 18.6 | | ● |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 5.50 | 180 | 0.295 | 10415 | 3070 | 73.0 | 0.4 |
| 5.80 | 180 | 0.310 | 9880 | 3065 | 81.0 | 0.4 |
| 6.00 | 180 | 0.330 | 9550 | 3150 | 89.0 | 0.4 |
| 6.20 | 180 | 0.350 | 9240 | 3235 | 97.5 | 0.5 |
| 6.50 | 180 | 0.370 | 8815 | 3260 | 108.0 | 0.5 |
| 6.80 | 180 | 0.385 | 8425 | 3245 | 118.0 | 0.5 |
| 7.00 | 180 | 0.395 | 8185 | 3235 | 124.5 | 0.5 |
| 7.20 | 180 | 0.410 | 7960 | 3265 | 133.0 | 0.5 |
| 7.50 | 180 | 0.425 | 7640 | 3245 | 143.5 | 0.5 |

Steel
500 - 850 N/mm²

| | | | | | | |
|------|-----|-------|------|------|-------|-----|
| 5.50 | 160 | 0.250 | 9260 | 2315 | 55.0 | 0.5 |
| 5.80 | 160 | 0.265 | 8780 | 2325 | 61.5 | 0.5 |
| 6.00 | 160 | 0.285 | 8490 | 2420 | 68.5 | 0.5 |
| 6.20 | 160 | 0.300 | 8215 | 2465 | 74.5 | 0.7 |
| 6.50 | 160 | 0.315 | 7835 | 2470 | 82.0 | 0.7 |
| 6.80 | 160 | 0.330 | 7490 | 2470 | 89.5 | 0.7 |
| 7.00 | 160 | 0.340 | 7275 | 2475 | 95.0 | 0.7 |
| 7.20 | 160 | 0.350 | 7075 | 2475 | 101.0 | 0.7 |
| 7.50 | 160 | 0.365 | 6790 | 2480 | 109.5 | 0.7 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|------|-----|-------|------|------|------|-----|
| 5.50 | 140 | 0.230 | 8100 | 1865 | 44.5 | 0.6 |
| 5.80 | 140 | 0.245 | 7685 | 1885 | 50.0 | 0.6 |
| 6.00 | 140 | 0.260 | 7425 | 1930 | 54.5 | 0.6 |
| 6.20 | 140 | 0.275 | 7190 | 1975 | 59.5 | 0.9 |
| 6.50 | 140 | 0.290 | 6855 | 1990 | 66.0 | 0.9 |
| 6.80 | 140 | 0.305 | 6555 | 2000 | 72.5 | 0.9 |
| 7.00 | 140 | 0.315 | 6365 | 2005 | 77.0 | 0.9 |
| 7.20 | 140 | 0.320 | 6190 | 1980 | 80.5 | 0.9 |
| 7.50 | 140 | 0.335 | 5940 | 1990 | 88.0 | 0.9 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|------|-----|-------|------|------|------|-----|
| 5.50 | 100 | 0.175 | 5785 | 1010 | 24.0 | 1.1 |
| 5.80 | 100 | 0.185 | 5490 | 1015 | 27.0 | 1.1 |
| 6.00 | 100 | 0.200 | 5305 | 1060 | 30.0 | 1.0 |
| 6.20 | 100 | 0.210 | 5135 | 1080 | 32.5 | 1.6 |
| 6.50 | 100 | 0.220 | 4895 | 1075 | 35.5 | 1.6 |
| 6.80 | 100 | 0.230 | 4680 | 1075 | 39.0 | 1.6 |
| 7.00 | 100 | 0.240 | 4545 | 1090 | 42.0 | 1.6 |
| 7.20 | 100 | 0.245 | 4420 | 1085 | 44.0 | 1.6 |
| 7.50 | 100 | 0.255 | 4245 | 1080 | 47.5 | 1.6 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 5.50 | 55 | 0.135 | 3185 | 430 | 10.0 | 2.6 |
| 5.80 | 55 | 0.145 | 3020 | 440 | 11.5 | 2.5 |
| 6.00 | 55 | 0.150 | 2920 | 440 | 12.5 | 2.5 |
| 6.20 | 55 | 0.160 | 2825 | 450 | 13.5 | 3.9 |
| 6.50 | 55 | 0.170 | 2695 | 460 | 15.5 | 3.8 |
| 6.80 | 55 | 0.180 | 2575 | 465 | 17.0 | 3.7 |
| 7.00 | 55 | 0.185 | 2500 | 465 | 18.0 | 3.7 |
| 7.20 | 55 | 0.190 | 2430 | 460 | 18.5 | 3.7 |
| 7.50 | 55 | 0.195 | 2335 | 455 | 20.0 | 3.8 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 5.50 | 70 | 0.135 | 4050 | 545 | 13.0 | 2.0 |
| 5.80 | 70 | 0.145 | 3840 | 555 | 14.5 | 2.0 |
| 6.00 | 70 | 0.150 | 3715 | 555 | 15.5 | 2.0 |
| 6.20 | 70 | 0.160 | 3595 | 575 | 17.5 | 3.0 |
| 6.50 | 70 | 0.170 | 3430 | 585 | 19.5 | 3.0 |
| 6.80 | 70 | 0.180 | 3275 | 590 | 21.5 | 2.9 |
| 7.00 | 70 | 0.185 | 3185 | 590 | 22.5 | 2.9 |
| 7.20 | 70 | 0.190 | 3095 | 590 | 24.0 | 2.9 |
| 7.50 | 70 | 0.195 | 2970 | 580 | 25.5 | 2.9 |

Titanium alloys
>300 HB
[Ti6Al4V]

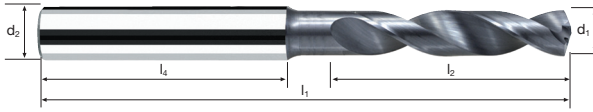
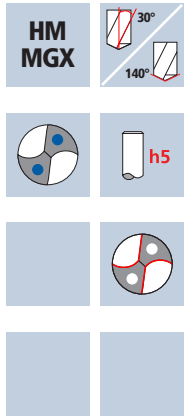
| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 5.50 | 40 | 0.135 | 2315 | 315 | 7.5 | 3.5 |
| 5.80 | 40 | 0.145 | 2195 | 320 | 8.5 | 3.5 |
| 6.00 | 40 | 0.150 | 2120 | 320 | 9.0 | 3.5 |
| 6.20 | 40 | 0.160 | 2055 | 330 | 10.0 | 5.3 |
| 6.50 | 40 | 0.170 | 1960 | 335 | 11.0 | 5.2 |
| 6.80 | 40 | 0.180 | 1870 | 335 | 12.0 | 5.2 |
| 7.00 | 40 | 0.185 | 1820 | 335 | 13.0 | 5.1 |
| 7.20 | 40 | 0.190 | 1770 | 335 | 13.5 | 5.1 |
| 7.50 | 40 | 0.195 | 1700 | 330 | 14.5 | 5.2 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|------|-----|-------|-------|------|-------|-----|
| 5.50 | 240 | 0.265 | 13890 | 3680 | 87.5 | 0.3 |
| 5.80 | 240 | 0.280 | 13170 | 3690 | 97.5 | 0.3 |
| 6.00 | 240 | 0.300 | 12730 | 3820 | 108.0 | 0.3 |
| 6.20 | 240 | 0.320 | 12320 | 3940 | 119.0 | 0.4 |
| 6.50 | 240 | 0.335 | 11755 | 3940 | 130.5 | 0.4 |
| 6.80 | 240 | 0.350 | 11235 | 3930 | 142.5 | 0.4 |
| 7.00 | 240 | 0.360 | 10915 | 3930 | 151.0 | 0.4 |
| 7.20 | 240 | 0.370 | 10610 | 3925 | 160.0 | 0.4 |
| 7.50 | 240 | 0.385 | 10185 | 3920 | 173.0 | 0.4 |

Spiral flute drills XDrill®

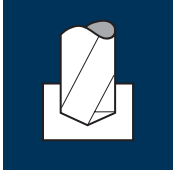
3xd



| | | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--|--------------------------|-----------------------|--------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | | | Inox Stainless | Ti Titanium | GG(G) |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--|--------------------------|-----------------------|--------------|

| Example: Order-N°. | | | | | | | | DURO-X |
|-----------------------|----------|---------------|----|--------------|----|------------------|--|---------------|
| | | Article-N°. | | ø-Code | | | | B72011 |
| | | B72011 | | .0530 | | | | |
| ø Code | d1 m7 | d2 h5 | l1 | l2 | l4 | L _{max} | | |
| .0530 | 5.3 | 6 | 66 | 28 | 36 | 18.6 | | ● |
| .0540 | 5.4 | 6 | 66 | 28 | 36 | 18.5 | | ● |
| .0550 | 5.5 | 6 | 66 | 28 | 36 | 18.5 | | ● |
| .0560 | 5.6 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0570 | 5.7 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0580 | 5.8 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0590 | 5.9 | 6 | 66 | 28 | 36 | 18.4 | | ● |
| .0600 | 6.0 | 6 | 66 | 28 | 36 | 18.5 | | ● |
| .0610 | 6.1 | 8 | 79 | 34 | 36 | 29.3 | | ● |
| .0620 | 6.2 | 8 | 79 | 34 | 36 | 29.2 | | ● |
| .0630 | 6.3 | 8 | 79 | 34 | 36 | 29.2 | | ● |
| .0640 | 6.4 | 8 | 79 | 34 | 36 | 29.1 | | ● |
| .0650 | 6.5 | 8 | 79 | 34 | 36 | 29.1 | | ● |
| .0660 | 6.6 | 8 | 79 | 34 | 36 | 29.0 | | ● |
| .0670 | 6.7 | 8 | 79 | 34 | 36 | 29.0 | | ● |
| .0680 | 6.8 | 8 | 79 | 34 | 36 | 28.8 | | ● |
| .0690 | 6.9 | 8 | 79 | 34 | 36 | 28.8 | | ● |
| .0700 | 7.0 | 8 | 79 | 34 | 36 | 28.7 | | ● |
| .0710 | 7.1 | 8 | 79 | 41 | 36 | 28.7 | | ● |
| .0720 | 7.2 | 8 | 79 | 41 | 36 | 28.6 | | ● |
| .0730 | 7.3 | 8 | 79 | 41 | 36 | 28.6 | | ● |
| .0740 | 7.4 | 8 | 79 | 41 | 36 | 28.5 | | ● |
| .0750 | 7.5 | 8 | 79 | 41 | 36 | 28.5 | | ● |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 7.60 | 180 | 0.430 | 7540 | 3240 | 147.0 | 0.5 |
| 8.00 | 180 | 0.455 | 7160 | 3260 | 164.0 | 0.5 |
| 8.20 | 180 | 0.465 | 6985 | 3250 | 171.5 | 0.6 |
| 8.50 | 180 | 0.480 | 6740 | 3235 | 183.5 | 0.6 |
| 8.80 | 180 | 0.500 | 6510 | 3255 | 198.0 | 0.6 |
| 9.00 | 180 | 0.510 | 6365 | 3245 | 206.5 | 0.6 |
| 9.20 | 180 | 0.520 | 6230 | 3240 | 215.5 | 0.6 |
| 9.50 | 180 | 0.540 | 6030 | 3255 | 230.5 | 0.6 |
| 9.80 | 180 | 0.555 | 5845 | 3245 | 245.0 | 0.6 |

Steel
500 - 850 N/mm²

| | | | | | | |
|------|-----|-------|------|------|-------|-----|
| 7.60 | 160 | 0.370 | 6700 | 2480 | 112.5 | 0.7 |
| 8.00 | 160 | 0.390 | 6365 | 2480 | 124.5 | 0.7 |
| 8.20 | 160 | 0.400 | 6210 | 2485 | 131.0 | 0.8 |
| 8.50 | 160 | 0.415 | 5990 | 2485 | 141.0 | 0.8 |
| 8.80 | 160 | 0.425 | 5785 | 2460 | 149.5 | 0.8 |
| 9.00 | 160 | 0.435 | 5660 | 2460 | 156.5 | 0.8 |
| 9.20 | 160 | 0.445 | 5535 | 2465 | 164.0 | 0.8 |
| 9.50 | 160 | 0.460 | 5360 | 2465 | 174.5 | 0.8 |
| 9.80 | 160 | 0.475 | 5195 | 2470 | 186.5 | 0.8 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|------|-----|-------|------|------|-------|-----|
| 7.60 | 140 | 0.340 | 5865 | 1995 | 90.5 | 0.9 |
| 8.00 | 140 | 0.360 | 5570 | 2005 | 101.0 | 0.8 |
| 8.20 | 140 | 0.365 | 5435 | 1985 | 105.0 | 1.0 |
| 8.50 | 140 | 0.380 | 5245 | 1995 | 113.0 | 1.0 |
| 8.80 | 140 | 0.395 | 5065 | 2000 | 121.5 | 1.0 |
| 9.00 | 140 | 0.405 | 4950 | 2005 | 127.5 | 0.9 |
| 9.20 | 140 | 0.410 | 4845 | 1985 | 132.0 | 1.0 |
| 9.50 | 140 | 0.425 | 4690 | 1995 | 141.5 | 0.9 |
| 9.80 | 140 | 0.440 | 4545 | 2000 | 151.0 | 0.9 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|------|-----|-------|------|------|------|-----|
| 7.60 | 100 | 0.260 | 4190 | 1090 | 49.5 | 1.6 |
| 8.00 | 100 | 0.270 | 3980 | 1075 | 54.0 | 1.6 |
| 8.20 | 100 | 0.280 | 3880 | 1085 | 57.5 | 1.8 |
| 8.50 | 100 | 0.290 | 3745 | 1085 | 61.5 | 1.8 |
| 8.80 | 100 | 0.300 | 3615 | 1085 | 66.0 | 1.8 |
| 9.00 | 100 | 0.305 | 3535 | 1080 | 68.5 | 1.8 |
| 9.20 | 100 | 0.315 | 3460 | 1090 | 72.5 | 1.7 |
| 9.50 | 100 | 0.325 | 3350 | 1090 | 77.5 | 1.7 |
| 9.80 | 100 | 0.335 | 3250 | 1090 | 82.0 | 1.7 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 7.60 | 55 | 0.200 | 2305 | 460 | 21.0 | 3.7 |
| 8.00 | 55 | 0.210 | 2190 | 460 | 23.0 | 3.7 |
| 8.20 | 55 | 0.215 | 2135 | 460 | 24.5 | 4.2 |
| 8.50 | 55 | 0.220 | 2060 | 455 | 26.0 | 4.2 |
| 8.80 | 55 | 0.230 | 1990 | 460 | 28.0 | 4.1 |
| 9.00 | 55 | 0.235 | 1945 | 455 | 29.0 | 4.2 |
| 9.20 | 55 | 0.240 | 1905 | 455 | 30.0 | 4.2 |
| 9.50 | 55 | 0.250 | 1845 | 460 | 32.5 | 4.1 |
| 9.80 | 55 | 0.255 | 1785 | 455 | 34.5 | 4.1 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 7.60 | 70 | 0.200 | 2930 | 585 | 26.5 | 2.9 |
| 8.00 | 70 | 0.210 | 2785 | 585 | 29.5 | 2.9 |
| 8.20 | 70 | 0.215 | 2715 | 585 | 31.0 | 3.3 |
| 8.50 | 70 | 0.220 | 2620 | 575 | 32.5 | 3.3 |
| 8.80 | 70 | 0.230 | 2530 | 580 | 35.5 | 3.3 |
| 9.00 | 70 | 0.235 | 2475 | 580 | 37.0 | 3.3 |
| 9.20 | 70 | 0.240 | 2420 | 580 | 38.5 | 3.3 |
| 9.50 | 70 | 0.250 | 2345 | 585 | 41.5 | 3.2 |
| 9.80 | 70 | 0.255 | 2275 | 580 | 43.5 | 3.2 |

Titanium alloys
>300 HB
[Ti6Al4V]

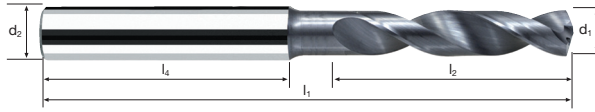
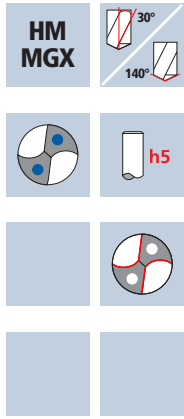
| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 7.60 | 40 | 0.200 | 1675 | 335 | 15.0 | 5.1 |
| 8.00 | 40 | 0.210 | 1590 | 335 | 17.0 | 5.1 |
| 8.20 | 40 | 0.215 | 1555 | 335 | 17.5 | 5.8 |
| 8.50 | 40 | 0.220 | 1500 | 330 | 18.5 | 5.8 |
| 8.80 | 40 | 0.230 | 1445 | 330 | 20.0 | 5.8 |
| 9.00 | 40 | 0.235 | 1415 | 335 | 21.5 | 5.7 |
| 9.20 | 40 | 0.240 | 1385 | 330 | 22.0 | 5.7 |
| 9.50 | 40 | 0.250 | 1340 | 335 | 23.5 | 5.6 |
| 9.80 | 40 | 0.255 | 1300 | 330 | 25.0 | 5.7 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|------|-----|-------|-------|------|-------|-----|
| 7.60 | 240 | 0.390 | 10050 | 3920 | 178.0 | 0.4 |
| 8.00 | 240 | 0.410 | 9550 | 3915 | 197.0 | 0.4 |
| 8.20 | 240 | 0.420 | 9315 | 3910 | 206.5 | 0.5 |
| 8.50 | 240 | 0.440 | 8990 | 3955 | 224.5 | 0.5 |
| 8.80 | 240 | 0.455 | 8680 | 3950 | 240.0 | 0.5 |
| 9.00 | 240 | 0.465 | 8490 | 3950 | 251.5 | 0.5 |
| 9.20 | 240 | 0.475 | 8305 | 3945 | 262.0 | 0.5 |
| 9.50 | 240 | 0.490 | 8040 | 3940 | 279.5 | 0.5 |
| 9.80 | 240 | 0.505 | 7795 | 3935 | 297.0 | 0.5 |

Spiral flute drills XDrill®

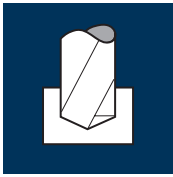
3xd



| | | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--|--------------------------|-----------------------|--------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | | | Inox Stainless | Ti Titanium | GG(G) |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--|--------------------------|-----------------------|--------------|

| Example: Order-N°. | | | | | | | DURO-X | |
|-----------------------|----------|----------|----|----|----|------------------|--------|--|
| Article-N°. | | ø-Code | | | | | B72011 | |
| ø Code | d1 m7 | d2 h5 | l1 | l2 | l4 | L _{max} | | |
| .0760 | 7.6 | 8 | 79 | 41 | 36 | 28.4 | ● | |
| .0770 | 7.7 | 8 | 79 | 41 | 36 | 28.4 | ● | |
| .0780 | 7.8 | 8 | 79 | 41 | 36 | 28.3 | ● | |
| .0790 | 7.9 | 8 | 79 | 41 | 36 | 28.4 | ● | |
| .0800 | 8.0 | 8 | 79 | 41 | 36 | 28.4 | ● | |
| .0810 | 8.1 | 10 | 89 | 47 | 40 | 32.3 | ● | |
| .0820 | 8.2 | 10 | 89 | 47 | 40 | 32.2 | ● | |
| .0830 | 8.3 | 10 | 89 | 47 | 40 | 32.2 | ● | |
| .0840 | 8.4 | 10 | 89 | 47 | 40 | 32.1 | ● | |
| .0850 | 8.5 | 10 | 89 | 47 | 40 | 32.1 | ● | |
| .0860 | 8.6 | 10 | 89 | 47 | 40 | 31.9 | ● | |
| .0870 | 8.7 | 10 | 89 | 47 | 40 | 31.9 | ● | |
| .0880 | 8.8 | 10 | 89 | 47 | 40 | 31.8 | ● | |
| .0890 | 8.9 | 10 | 89 | 47 | 40 | 31.8 | ● | |
| .0900 | 9.0 | 10 | 89 | 47 | 40 | 31.7 | ● | |
| .0910 | 9.1 | 10 | 89 | 47 | 40 | 31.7 | ● | |
| .0920 | 9.2 | 10 | 89 | 47 | 40 | 31.6 | ● | |
| .0930 | 9.3 | 10 | 89 | 47 | 40 | 31.6 | ● | |
| .0940 | 9.4 | 10 | 89 | 47 | 40 | 31.4 | ● | |
| .0950 | 9.5 | 10 | 89 | 47 | 40 | 31.4 | ● | |
| .0960 | 9.6 | 10 | 89 | 47 | 40 | 31.3 | ● | |
| .0970 | 9.7 | 10 | 89 | 47 | 40 | 31.3 | ● | |
| .0980 | 9.8 | 10 | 89 | 47 | 40 | 31.3 | ● | |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 10.00 | 180 | 0.565 | 5730 | 3235 | 254.0 | 0.6 |
| 10.20 | 180 | 0.575 | 5615 | 3230 | 264.0 | 0.7 |
| 10.50 | 180 | 0.590 | 5455 | 3220 | 279.0 | 0.7 |
| 10.80 | 180 | 0.605 | 5305 | 3210 | 294.0 | 0.7 |
| 11.00 | 180 | 0.610 | 5210 | 3180 | 302.0 | 0.7 |
| 11.20 | 180 | 0.615 | 5115 | 3145 | 310.0 | 0.7 |
| 11.50 | 180 | 0.620 | 4980 | 3090 | 321.0 | 0.7 |
| 11.80 | 180 | 0.630 | 4855 | 3060 | 334.5 | 0.7 |
| 12.00 | 180 | 0.640 | 4775 | 3055 | 345.5 | 0.7 |

Steel
500 - 850 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 160 | 0.485 | 5095 | 2470 | 194.0 | 0.8 |
| 10.20 | 160 | 0.495 | 4995 | 2475 | 202.0 | 0.9 |
| 10.50 | 160 | 0.505 | 4850 | 2450 | 212.0 | 0.9 |
| 10.80 | 160 | 0.520 | 4715 | 2450 | 224.5 | 0.9 |
| 11.00 | 160 | 0.525 | 4630 | 2430 | 231.0 | 0.9 |
| 11.20 | 160 | 0.530 | 4545 | 2410 | 237.5 | 0.9 |
| 11.50 | 160 | 0.530 | 4430 | 2350 | 244.0 | 0.9 |
| 11.80 | 160 | 0.540 | 4315 | 2330 | 255.0 | 0.9 |
| 12.00 | 160 | 0.550 | 4245 | 2335 | 264.0 | 0.9 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 140 | 0.445 | 4455 | 1980 | 155.5 | 0.9 |
| 10.20 | 140 | 0.455 | 4370 | 1990 | 162.5 | 1.1 |
| 10.50 | 140 | 0.465 | 4245 | 1975 | 171.0 | 1.1 |
| 10.80 | 140 | 0.475 | 4125 | 1960 | 179.5 | 1.1 |
| 11.00 | 140 | 0.485 | 4050 | 1965 | 186.5 | 1.1 |
| 11.20 | 140 | 0.485 | 3980 | 1930 | 190.0 | 1.1 |
| 11.50 | 140 | 0.490 | 3875 | 1900 | 197.5 | 1.1 |
| 11.80 | 140 | 0.495 | 3775 | 1870 | 204.5 | 1.2 |
| 12.00 | 140 | 0.505 | 3715 | 1875 | 212.0 | 1.2 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 100 | 0.340 | 3185 | 1085 | 85.0 | 1.7 |
| 10.20 | 100 | 0.345 | 3120 | 1075 | 88.0 | 2.1 |
| 10.50 | 100 | 0.355 | 3030 | 1075 | 93.0 | 2.1 |
| 10.80 | 100 | 0.365 | 2945 | 1075 | 98.5 | 2.1 |
| 11.00 | 100 | 0.365 | 2895 | 1055 | 100.5 | 2.1 |
| 11.20 | 100 | 0.370 | 2840 | 1050 | 103.5 | 2.1 |
| 11.50 | 100 | 0.375 | 2770 | 1040 | 108.0 | 2.1 |
| 11.80 | 100 | 0.380 | 2700 | 1025 | 112.0 | 2.1 |
| 12.00 | 100 | 0.385 | 2655 | 1020 | 115.5 | 2.1 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 10.00 | 55 | 0.260 | 1750 | 455 | 35.5 | 4.1 |
| 10.20 | 55 | 0.265 | 1715 | 455 | 37.0 | 4.9 |
| 10.50 | 55 | 0.275 | 1665 | 460 | 40.0 | 4.8 |
| 10.80 | 55 | 0.280 | 1620 | 455 | 41.5 | 4.9 |
| 11.00 | 55 | 0.285 | 1590 | 455 | 43.0 | 4.8 |
| 11.20 | 55 | 0.285 | 1565 | 445 | 44.0 | 4.9 |
| 11.50 | 55 | 0.285 | 1520 | 435 | 45.0 | 5.0 |
| 11.80 | 55 | 0.290 | 1485 | 430 | 47.0 | 5.1 |
| 12.00 | 55 | 0.295 | 1460 | 430 | 48.5 | 5.1 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 10.00 | 70 | 0.260 | 2230 | 580 | 45.5 | 3.2 |
| 10.20 | 70 | 0.265 | 2185 | 580 | 47.5 | 3.8 |
| 10.50 | 70 | 0.275 | 2120 | 585 | 50.5 | 3.8 |
| 10.80 | 70 | 0.280 | 2065 | 580 | 53.0 | 3.8 |
| 11.00 | 70 | 0.285 | 2025 | 575 | 54.5 | 3.8 |
| 11.20 | 70 | 0.285 | 1990 | 565 | 55.5 | 3.9 |
| 11.50 | 70 | 0.285 | 1940 | 555 | 57.5 | 3.9 |
| 11.80 | 70 | 0.290 | 1890 | 550 | 60.0 | 3.9 |
| 12.00 | 70 | 0.295 | 1855 | 545 | 61.5 | 4.0 |

Titanium alloys
>300 HB
[Ti6Al4V]

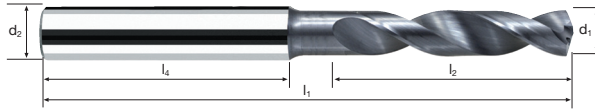
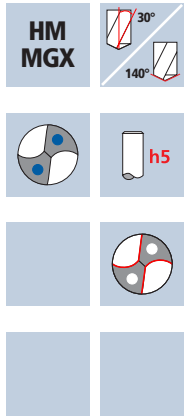
| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 10.00 | 40 | 0.260 | 1275 | 330 | 26.0 | 5.7 |
| 10.20 | 40 | 0.265 | 1250 | 330 | 27.0 | 6.8 |
| 10.50 | 40 | 0.275 | 1215 | 335 | 29.0 | 6.6 |
| 10.80 | 40 | 0.280 | 1180 | 330 | 30.0 | 6.7 |
| 11.00 | 40 | 0.285 | 1155 | 330 | 31.5 | 6.7 |
| 11.20 | 40 | 0.285 | 1135 | 325 | 32.0 | 6.7 |
| 11.50 | 40 | 0.285 | 1105 | 315 | 32.5 | 6.9 |
| 11.80 | 40 | 0.290 | 1080 | 315 | 34.5 | 6.9 |
| 12.00 | 40 | 0.295 | 1060 | 315 | 35.5 | 6.9 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 240 | 0.515 | 7640 | 3935 | 309.0 | 0.5 |
| 10.20 | 240 | 0.520 | 7490 | 3895 | 318.5 | 0.6 |
| 10.50 | 240 | 0.540 | 7275 | 3930 | 340.5 | 0.6 |
| 10.80 | 240 | 0.550 | 7075 | 3890 | 356.5 | 0.6 |
| 11.00 | 240 | 0.555 | 6945 | 3855 | 366.5 | 0.6 |
| 11.20 | 240 | 0.560 | 6820 | 3820 | 376.5 | 0.6 |
| 11.50 | 240 | 0.565 | 6645 | 3755 | 390.0 | 0.6 |
| 11.80 | 240 | 0.570 | 6475 | 3690 | 403.5 | 0.6 |
| 12.00 | 240 | 0.580 | 6365 | 3690 | 417.5 | 0.6 |

Spiral flute drills XDrill®

3xd



| | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | | Inox Stainless | Ti Titanium | GG(G) |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|

| Example: Order-N°. | | | | | | | DURO-X | |
|-----------------------|----------|----------|-----|----|----|------------------|--------|--|
| | | | | | | | B72011 | |
| | | | | | | | | |
| Ø Code | d1 m7 | d2 h5 | l1 | l2 | l4 | L _{max} | | |
| .0990 | 9.9 | 10 | 89 | 47 | 40 | 31.3 | ● | |
| .1000 | 10.0 | 10 | 89 | 47 | 40 | 31.3 | ● | |
| .1010 | 10.1 | 12 | 102 | 55 | 45 | 37.3 | ● | |
| .1020 | 10.2 | 12 | 102 | 55 | 45 | 37.2 | ● | |
| .1030 | 10.3 | 12 | 102 | 55 | 45 | 37.2 | ● | |
| .1040 | 10.4 | 12 | 102 | 55 | 45 | 37.1 | ● | |
| .1050 | 10.5 | 12 | 102 | 55 | 45 | 37.0 | ● | |
| .1060 | 10.6 | 12 | 102 | 55 | 45 | 36.9 | ● | |
| .1070 | 10.7 | 12 | 102 | 55 | 45 | 36.9 | ● | |
| .1080 | 10.8 | 12 | 102 | 55 | 45 | 36.8 | ● | |
| .1090 | 10.9 | 12 | 102 | 55 | 45 | 36.8 | ● | |
| .1100 | 11.0 | 12 | 102 | 55 | 45 | 36.7 | ● | |
| .1110 | 11.1 | 12 | 102 | 55 | 45 | 36.7 | ● | |
| .1120 | 11.2 | 12 | 102 | 55 | 45 | 36.5 | ● | |
| .1130 | 11.3 | 12 | 102 | 55 | 45 | 36.5 | ● | |
| .1140 | 11.4 | 12 | 102 | 55 | 45 | 36.4 | ● | |
| .1150 | 11.5 | 12 | 102 | 55 | 45 | 36.4 | ● | |
| .1160 | 11.6 | 12 | 102 | 55 | 45 | 36.3 | ● | |
| .1170 | 11.7 | 12 | 102 | 55 | 45 | 36.3 | ● | |
| .1180 | 11.8 | 12 | 102 | 55 | 45 | 36.2 | ● | |
| .1190 | 11.9 | 12 | 102 | 55 | 45 | 36.3 | ● | |
| .1200 | 12.0 | 12 | 102 | 55 | 45 | 36.3 | ● | |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 12.50 | 180 | 0.665 | 4585 | 3050 | 374.5 | 0.8 |
| 13.00 | 180 | 0.695 | 4405 | 3060 | 406.0 | 0.8 |
| 13.50 | 180 | 0.705 | 4340 | 3060 | 419.0 | 0.8 |
| 14.00 | 180 | 0.715 | 4095 | 2930 | 451.0 | 0.8 |
| 14.50 | 180 | 0.725 | 3950 | 2865 | 473.0 | 0.9 |
| 15.00 | 180 | 0.745 | 3820 | 2845 | 503.0 | 0.9 |
| 15.50 | 180 | 0.760 | 3695 | 2810 | 530.0 | 0.9 |
| 15.80 | 180 | 0.770 | 3625 | 2790 | 547.0 | 0.9 |
| 16.00 | 180 | 0.775 | 3580 | 2775 | 558.0 | 0.9 |

Steel
500 - 850 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 12.50 | 160 | 0.570 | 4075 | 2325 | 285.5 | 1.0 |
| 13.00 | 160 | 0.595 | 3920 | 2330 | 309.5 | 1.0 |
| 13.50 | 160 | 0.605 | 3860 | 2335 | 319.5 | 1.0 |
| 14.00 | 160 | 0.610 | 3640 | 2220 | 341.5 | 1.0 |
| 14.50 | 160 | 0.620 | 3510 | 2175 | 359.0 | 1.1 |
| 15.00 | 160 | 0.640 | 3395 | 2175 | 384.5 | 1.1 |
| 15.50 | 160 | 0.650 | 3285 | 2135 | 403.0 | 1.1 |
| 15.80 | 160 | 0.660 | 3225 | 2130 | 417.5 | 1.1 |
| 16.00 | 160 | 0.665 | 3185 | 2120 | 426.5 | 1.1 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 12.50 | 140 | 0.525 | 3565 | 1870 | 229.5 | 1.2 |
| 13.00 | 140 | 0.545 | 3430 | 1870 | 248.0 | 1.2 |
| 13.50 | 140 | 0.555 | 3375 | 1875 | 256.5 | 1.2 |
| 14.00 | 140 | 0.565 | 3185 | 1800 | 277.0 | 1.3 |
| 14.50 | 140 | 0.570 | 3075 | 1755 | 290.0 | 1.4 |
| 15.00 | 140 | 0.590 | 2970 | 1750 | 309.5 | 1.4 |
| 15.50 | 140 | 0.600 | 2875 | 1725 | 325.5 | 1.4 |
| 15.80 | 140 | 0.605 | 2820 | 1705 | 334.5 | 1.4 |
| 16.00 | 140 | 0.610 | 2785 | 1700 | 342.0 | 1.4 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 12.50 | 100 | 0.400 | 2545 | 1020 | 125.0 | 2.3 |
| 13.00 | 100 | 0.415 | 2450 | 1015 | 134.5 | 2.3 |
| 13.50 | 100 | 0.420 | 2410 | 1010 | 138.0 | 2.3 |
| 14.00 | 100 | 0.430 | 2275 | 980 | 151.0 | 2.3 |
| 14.50 | 100 | 0.435 | 2195 | 955 | 157.5 | 2.6 |
| 15.00 | 100 | 0.445 | 2120 | 945 | 167.0 | 2.6 |
| 15.50 | 100 | 0.455 | 2055 | 935 | 176.5 | 2.6 |
| 15.80 | 100 | 0.460 | 2015 | 925 | 181.5 | 2.6 |
| 16.00 | 100 | 0.465 | 1990 | 925 | 186.0 | 2.6 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 12.50 | 55 | 0.310 | 1400 | 435 | 53.5 | 5.4 |
| 13.00 | 55 | 0.320 | 1345 | 430 | 57.0 | 5.4 |
| 13.50 | 55 | 0.325 | 1325 | 430 | 59.0 | 5.4 |
| 14.00 | 55 | 0.330 | 1250 | 415 | 64.0 | 5.5 |
| 14.50 | 55 | 0.335 | 1205 | 405 | 67.0 | 6.1 |
| 15.00 | 55 | 0.345 | 1165 | 400 | 70.5 | 6.1 |
| 15.50 | 55 | 0.350 | 1130 | 395 | 74.5 | 6.1 |
| 15.80 | 55 | 0.355 | 1110 | 395 | 77.5 | 6.1 |
| 16.00 | 55 | 0.355 | 1095 | 390 | 78.5 | 6.2 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 12.50 | 70 | 0.310 | 1785 | 555 | 68.0 | 4.2 |
| 13.00 | 70 | 0.320 | 1715 | 550 | 73.0 | 4.2 |
| 13.50 | 70 | 0.325 | 1690 | 550 | 75.5 | 4.2 |
| 14.00 | 70 | 0.330 | 1590 | 525 | 81.0 | 4.4 |
| 14.50 | 70 | 0.335 | 1535 | 515 | 85.0 | 4.8 |
| 15.00 | 70 | 0.345 | 1485 | 510 | 90.0 | 4.8 |
| 15.50 | 70 | 0.350 | 1440 | 505 | 95.5 | 4.8 |
| 15.80 | 70 | 0.355 | 1410 | 500 | 98.0 | 4.8 |
| 16.00 | 70 | 0.355 | 1395 | 495 | 99.5 | 4.9 |

Titanium alloys
>300 HB
[Ti6Al4V]

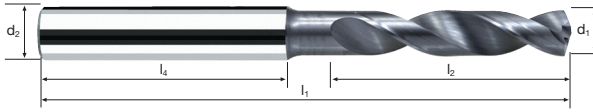
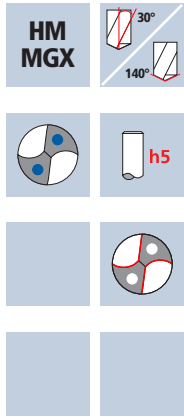
| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 12.50 | 40 | 0.310 | 1020 | 315 | 38.5 | 7.4 |
| 13.00 | 40 | 0.320 | 980 | 315 | 42.0 | 7.4 |
| 13.50 | 40 | 0.325 | 965 | 315 | 43.0 | 7.3 |
| 14.00 | 40 | 0.330 | 910 | 300 | 46.0 | 7.6 |
| 14.50 | 40 | 0.335 | 880 | 295 | 48.5 | 8.3 |
| 15.00 | 40 | 0.345 | 850 | 295 | 52.0 | 8.3 |
| 15.50 | 40 | 0.350 | 820 | 285 | 54.0 | 8.5 |
| 15.80 | 40 | 0.355 | 805 | 285 | 56.0 | 8.5 |
| 16.00 | 40 | 0.355 | 795 | 280 | 56.5 | 8.6 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 12.50 | 240 | 0.605 | 6110 | 3695 | 453.5 | 0.6 |
| 13.00 | 240 | 0.630 | 5875 | 3700 | 491.0 | 0.6 |
| 13.50 | 240 | 0.640 | 5785 | 3700 | 506.5 | 0.6 |
| 14.00 | 240 | 0.650 | 5455 | 3545 | 545.5 | 0.6 |
| 14.50 | 240 | 0.660 | 5270 | 3480 | 574.5 | 0.7 |
| 15.00 | 240 | 0.675 | 5095 | 3440 | 608.0 | 0.7 |
| 15.50 | 240 | 0.690 | 4930 | 3400 | 641.5 | 0.7 |
| 15.80 | 240 | 0.700 | 4835 | 3385 | 663.5 | 0.7 |
| 16.00 | 240 | 0.705 | 4775 | 3365 | 676.5 | 0.7 |

Spiral flute drills XDrill®

3xd



| | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | | Inox Stainless | Ti Titanium | GG(G) |
|--------------------|-----------------------|------------------------|------------------------|---------------------|--|--------------------------|-----------------------|--------------|

| | | Article-N° | | ø-Code | | | | | DURO-X |
|-----------------------|----------|---------------|-----|--------------|----|------------------|--|--|---------------|
| Example: Order-N°. | | B72011 | | .1250 | | | | | B72011 |
| ø Code | d1 m7 | d2 h5 | l1 | l2 | l4 | L _{max} | | | |
| .1250 | 12.5 | 14 | 107 | 60 | 45 | 39.0 | | | |
| .1280 | 12.8 | 14 | 107 | 60 | 45 | 38.8 | | | |
| .1300 | 13.0 | 14 | 107 | 60 | 45 | 38.7 | | | |
| .1350 | 13.5 | 14 | 107 | 60 | 45 | 38.4 | | | |
| .1380 | 13.8 | 14 | 107 | 60 | 45 | 38.2 | | | |
| .1400 | 14.0 | 14 | 107 | 60 | 45 | 38.2 | | | |
| .1450 | 14.5 | 16 | 115 | 65 | 48 | 41.0 | | | |
| .1480 | 14.8 | 16 | 115 | 65 | 48 | 40.8 | | | |
| .1500 | 15.0 | 16 | 115 | 65 | 48 | 40.6 | | | |
| .1550 | 15.5 | 16 | 115 | 65 | 48 | 40.4 | | | |
| .1580 | 15.8 | 16 | 115 | 65 | 48 | 40.2 | | | |
| .1600 | 16.0 | 16 | 115 | 65 | 48 | 40.2 | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Application



Material

Hardened tool steel
42 - 48 HRC

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 35 | 0.060 | 3715 | 225 | 1.5 | 4.3 |
| 4.00 | 35 | 0.080 | 2785 | 225 | 3.0 | 5.0 |
| 4.30 | 35 | 0.085 | 2590 | 220 | 3.0 | 5.1 |
| 5.00 | 35 | 0.100 | 2230 | 225 | 4.5 | 5.0 |
| 5.50 | 35 | 0.110 | 2025 | 225 | 5.5 | 4.9 |
| 6.00 | 35 | 0.120 | 1855 | 225 | 6.5 | 5.0 |
| 6.50 | 35 | 0.130 | 1715 | 225 | 7.5 | 7.7 |
| 6.90 | 35 | 0.135 | 1615 | 220 | 8.0 | 7.9 |
| 8.00 | 35 | 0.155 | 1395 | 215 | 11.0 | 8.0 |

Hardened tool steel
48 - 52 HRC

| | | | | | | |
|------|----|-------|------|-----|-----|------|
| 3.00 | 30 | 0.050 | 3185 | 160 | 1.0 | 6.1 |
| 4.00 | 30 | 0.065 | 2385 | 155 | 2.0 | 7.3 |
| 4.30 | 30 | 0.070 | 2220 | 155 | 2.5 | 7.3 |
| 5.00 | 30 | 0.085 | 1910 | 160 | 3.0 | 7.1 |
| 5.50 | 30 | 0.090 | 1735 | 155 | 3.5 | 7.1 |
| 6.00 | 30 | 0.100 | 1590 | 160 | 4.5 | 7.0 |
| 6.50 | 30 | 0.110 | 1470 | 160 | 5.5 | 10.9 |
| 6.90 | 30 | 0.115 | 1385 | 160 | 6.0 | 10.8 |
| 8.00 | 30 | 0.130 | 1195 | 155 | 8.0 | 11.0 |

Hardened tool steel
52 - 56 HRC

| | | | | | | |
|------|----|-------|------|----|-----|------|
| 3.00 | 20 | 0.045 | 2120 | 95 | 0.5 | 10.2 |
| 4.00 | 20 | 0.055 | 1590 | 85 | 1.0 | 13.3 |
| 4.30 | 20 | 0.060 | 1480 | 90 | 1.5 | 12.5 |
| 5.00 | 20 | 0.070 | 1275 | 90 | 2.0 | 12.5 |
| 5.50 | 20 | 0.080 | 1155 | 90 | 2.0 | 12.3 |
| 6.00 | 20 | 0.085 | 1060 | 90 | 2.5 | 12.4 |
| 6.50 | 20 | 0.095 | 980 | 95 | 3.0 | 18.3 |
| 6.90 | 20 | 0.080 | 925 | 75 | 3.0 | 23.1 |
| 8.00 | 20 | 0.085 | 795 | 70 | 3.5 | 24.4 |

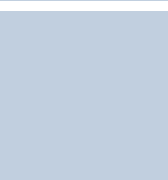
Hardened tool steel
56 - 60 HRC

| | | | | | | |
|------|----|-------|------|----|-----|------|
| 3.00 | 15 | 0.020 | 1590 | 30 | 0.0 | 32.4 |
| 4.00 | 15 | 0.025 | 1195 | 30 | 0.5 | 37.8 |
| 4.30 | 15 | 0.025 | 1110 | 30 | 0.5 | 37.5 |
| 5.00 | 15 | 0.030 | 955 | 30 | 0.5 | 37.6 |
| 5.50 | 15 | 0.035 | 870 | 30 | 0.5 | 36.9 |
| 6.00 | 15 | 0.040 | 795 | 30 | 1.0 | 37.2 |
| 6.50 | 15 | 0.040 | 735 | 30 | 1.0 | 58.1 |
| 6.90 | 15 | 0.040 | 690 | 30 | 1.0 | 57.7 |
| 8.00 | 15 | 0.050 | 595 | 30 | 1.5 | 57.0 |

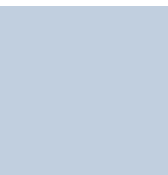
Material

Hardened tool steel
> 60 HRC

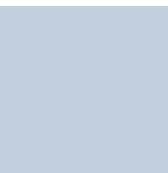
| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 10 | 0.015 | 1060 | 15 | 0.0 | 64.8 |
| 4.00 | 10 | 0.020 | 795 | 15 | 0.0 | 75.6 |
| 4.30 | 10 | 0.025 | 740 | 20 | 0.5 | 56.3 |
| 5.00 | 10 | 0.030 | 635 | 20 | 0.5 | 56.4 |
| 5.50 | 10 | 0.030 | 580 | 15 | 0.5 | 73.8 |
| 6.00 | 10 | 0.035 | 530 | 20 | 0.5 | 55.8 |
| 6.50 | 10 | 0.035 | 490 | 15 | 0.5 | 116.2 |
| 6.90 | 10 | 0.040 | 460 | 20 | 0.5 | 86.6 |
| 8.00 | 10 | 0.045 | 400 | 20 | 1.0 | 85.5 |



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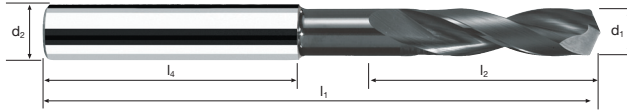
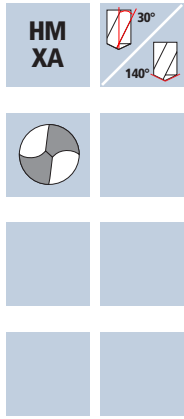
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Spiral flute drills Supradrill® HX

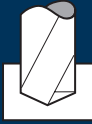
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|--|--|--|------------------------|---------------------|---------------------|--------------------|--|---------------------|
| | | | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60 | | HSS GG(G) |
|--|--|--|------------------------|---------------------|---------------------|--------------------|--|---------------------|

| Example: Order-N°. | | | | | | | DURO-SD | |
|-----------------------|----------|---------------|----|--------------|----|------------------|---------|---|
| | | Article-N°. | | ø-Code | | | | |
| | | B52111 | | .0260 | | | | |
| ø Code | d1 m7 | d2 h6 | l1 | l2 | l4 | L _{max} | | |
| .0260 | 2.60 | 6 | 62 | 20 | 36 | 14.8 | | ● |
| .0300 | 3.00 | 6 | 62 | 20 | 36 | 16.2 | | ● |
| .0340 | 3.40 | 6 | 62 | 20 | 36 | 15.8 | | ● |
| .0350 | 3.50 | 6 | 62 | 20 | 36 | 15.8 | | ● |
| .0400 | 4.00 | 6 | 66 | 24 | 36 | 18.9 | | ● |
| .0420 | 4.20 | 6 | 66 | 24 | 36 | 18.8 | | ● |
| .0430 | 4.30 | 6 | 66 | 24 | 36 | 18.8 | | ● |
| .0450 | 4.50 | 6 | 66 | 24 | 36 | 18.6 | | ● |
| .0500 | 5.00 | 6 | 66 | 28 | 36 | 18.8 | | ● |
| .0510 | 5.10 | 6 | 66 | 28 | 36 | 18.8 | | ● |
| .0520 | 5.20 | 6 | 66 | 28 | 36 | 18.7 | | ● |
| .0550 | 5.50 | 6 | 66 | 28 | 36 | 18.5 | | ● |
| .0560 | 5.60 | 6 | 66 | 28 | 36 | 18.5 | | ● |
| .0600 | 6.00 | 6 | 66 | 28 | 36 | 18.6 | | ● |
| .0650 | 6.50 | 8 | 79 | 34 | 36 | 29.1 | | ● |
| .0670 | 6.70 | 8 | 79 | 34 | 36 | 29.0 | | ● |
| .0690 | 6.90 | 8 | 79 | 34 | 36 | 28.9 | | ● |
| .0700 | 7.00 | 8 | 79 | 34 | 36 | 28.8 | | ● |
| .0710 | 7.10 | 8 | 79 | 41 | 36 | 28.7 | | ● |
| .0750 | 7.50 | 8 | 79 | 41 | 36 | 28.5 | | ● |
| .0800 | 8.00 | 8 | 79 | 41 | 36 | 28.5 | | ● |

Application



Material

Hardened tool steel
42 - 48 HRC

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 8.60 | 35 | 0.160 | 1295 | 205 | 12.0 | 9.4 |
| 9.00 | 35 | 0.170 | 1240 | 210 | 13.5 | 9.1 |
| 10.00 | 35 | 0.185 | 1115 | 205 | 16.0 | 9.2 |
| 10.40 | 35 | 0.190 | 1070 | 205 | 17.5 | 10.9 |
| 11.00 | 35 | 0.195 | 1015 | 200 | 19.0 | 11.0 |
| 12.00 | 35 | 0.210 | 930 | 195 | 22.0 | 11.2 |
| 12.20 | 35 | 0.210 | 915 | 190 | 22.0 | 12.4 |
| 13.00 | 35 | 0.220 | 855 | 190 | 25.0 | 12.2 |
| 14.00 | 35 | 0.235 | 795 | 185 | 28.5 | 12.5 |

Hardened tool steel
48 - 52 HRC

| | | | | | | |
|-------|----|-------|------|-----|------|------|
| 8.60 | 30 | 0.135 | 1110 | 150 | 8.5 | 12.8 |
| 9.00 | 30 | 0.140 | 1060 | 150 | 9.5 | 12.7 |
| 10.00 | 30 | 0.155 | 955 | 150 | 12.0 | 12.6 |
| 10.40 | 30 | 0.155 | 920 | 145 | 12.5 | 15.4 |
| 11.00 | 30 | 0.165 | 870 | 145 | 14.0 | 15.2 |
| 12.00 | 30 | 0.175 | 795 | 140 | 16.0 | 15.6 |
| 12.20 | 30 | 0.175 | 785 | 135 | 16.0 | 17.4 |
| 13.00 | 30 | 0.185 | 735 | 135 | 18.0 | 17.2 |
| 14.00 | 30 | 0.195 | 680 | 135 | 21.0 | 17.1 |

Hardened tool steel
52 - 56 HRC

| | | | | | | |
|-------|----|-------|-----|----|-----|------|
| 8.60 | 20 | 0.090 | 740 | 65 | 4.0 | 29.5 |
| 9.00 | 20 | 0.095 | 705 | 65 | 4.0 | 29.3 |
| 10.00 | 20 | 0.100 | 635 | 65 | 5.0 | 29.1 |
| 10.40 | 20 | 0.100 | 610 | 60 | 5.0 | 37.1 |
| 11.00 | 20 | 0.105 | 580 | 60 | 5.5 | 36.7 |
| 12.00 | 20 | 0.110 | 530 | 60 | 7.0 | 36.4 |
| 12.20 | 20 | 0.110 | 520 | 55 | 6.5 | 42.8 |
| 13.00 | 20 | 0.115 | 490 | 55 | 7.5 | 42.2 |
| 14.00 | 20 | 0.125 | 455 | 55 | 8.5 | 41.9 |

Hardened tool steel
56 - 60 HRC

| | | | | | | |
|-------|----|-------|-----|----|-----|------|
| 8.60 | 15 | 0.050 | 555 | 30 | 1.5 | 64.0 |
| 9.00 | 15 | 0.050 | 530 | 25 | 1.5 | 76.1 |
| 10.00 | 15 | 0.055 | 475 | 25 | 2.0 | 75.6 |
| 10.40 | 15 | 0.060 | 460 | 30 | 2.5 | 74.2 |
| 11.00 | 15 | 0.060 | 435 | 25 | 2.5 | 88.1 |
| 12.00 | 15 | 0.065 | 400 | 25 | 3.0 | 87.4 |
| 12.20 | 15 | 0.065 | 390 | 25 | 3.0 | 94.1 |
| 13.00 | 15 | 0.070 | 365 | 25 | 3.5 | 92.9 |
| 14.00 | 15 | 0.075 | 340 | 25 | 4.0 | 92.2 |

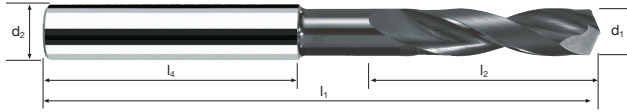
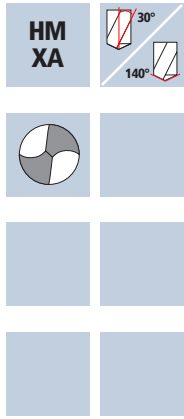
Material

Hardened tool steel
> 60 HRC

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 8.60 | 10 | 0.045 | 370 | 15 | 1.0 | 128.0 |
| 9.00 | 10 | 0.045 | 355 | 15 | 1.0 | 126.8 |
| 10.00 | 10 | 0.050 | 320 | 15 | 1.0 | 126.0 |
| 10.40 | 10 | 0.050 | 305 | 15 | 1.5 | 148.4 |
| 11.00 | 10 | 0.055 | 290 | 15 | 1.5 | 146.8 |
| 12.00 | 10 | 0.060 | 265 | 15 | 1.5 | 145.6 |
| 12.20 | 10 | 0.060 | 260 | 15 | 2.0 | 156.8 |
| 13.00 | 10 | 0.060 | 245 | 15 | 2.0 | 154.8 |
| 14.00 | 10 | 0.065 | 225 | 15 | 2.5 | 153.6 |

Spiral flute drills Supradrill® HX

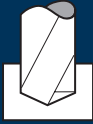
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| | | | | | | | | | |
|--|--|--|------------------------|---------------------|---------------------|--------------------|--|--|----------------------------|
| | | | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60 | | | HSS GG(G) |
|--|--|--|------------------------|---------------------|---------------------|--------------------|--|--|----------------------------|

| Example: Order-N°. | | | | | | | DURO-SD | |
|-----------------------|----------|--------------|-----|----|----|------------------|---------------|---|
| Article-N°. | | ø-Code | | | | | | |
| B52111 | | .0810 | | | | | B52111 | |
| | | | | | | | B53111 | |
| ø Code | d1 m7 | d2 h6 | l1 | l2 | l4 | L _{max} | | |
| .0810 | 8.10 | 10 | 89 | 47 | 40 | 32.4 | | ● |
| .0850 | 8.50 | 10 | 89 | 47 | 40 | 32.1 | | ● |
| .0860 | 8.60 | 10 | 89 | 47 | 40 | 32.0 | | ● |
| .0885 | 8.85 | 10 | 89 | 47 | 40 | 31.8 | | ● |
| .0900 | 9.00 | 10 | 89 | 47 | 40 | 31.7 | | ● |
| .0910 | 9.10 | 10 | 89 | 47 | 40 | 31.7 | | ● |
| .0950 | 9.50 | 10 | 89 | 47 | 40 | 31.5 | | ● |
| .1000 | 10.00 | 10 | 89 | 47 | 40 | 31.5 | | ● |
| .1030 | 10.30 | 12 | 102 | 55 | 45 | 37.2 | | ● |
| .1040 | 10.40 | 12 | 102 | 55 | 45 | 37.1 | | ● |
| .1050 | 10.50 | 12 | 102 | 55 | 45 | 37.1 | | ● |
| .1070 | 10.70 | 12 | 102 | 55 | 45 | 37.0 | | ● |
| .1100 | 11.00 | 12 | 102 | 55 | 45 | 36.7 | | ● |
| .1150 | 11.50 | 12 | 102 | 55 | 45 | 36.5 | | ● |
| .1160 | 11.60 | 12 | 102 | 55 | 45 | 36.4 | | ● |
| .1190 | 11.90 | 12 | 102 | 55 | 45 | 36.4 | | ● |
| .1200 | 12.00 | 12 | 102 | 55 | 45 | 36.4 | | ● |
| .1210 | 12.10 | 14 | 107 | 60 | 45 | 39.3 | | ● |
| .1220 | 12.20 | 14 | 107 | 60 | 45 | 39.2 | | ● |
| .1250 | 12.50 | 14 | 107 | 60 | 45 | 39.1 | | ● |
| .1270 | 12.70 | 14 | 107 | 60 | 45 | 39.0 | | ● |
| .1300 | 13.00 | 14 | 107 | 60 | 45 | 38.7 | | ● |
| .1400 | 14.00 | 14 | 107 | 60 | 45 | 38.4 | | ● |

Application



Material

Hardened tool steel
42 - 48 HRC

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 14.10 | 35 | 0.235 | 790 | 185 | 29.0 | 13.4 |
| 14.20 | 35 | 0.235 | 785 | 185 | 29.5 | 13.4 |
| 14.70 | 35 | 0.245 | 760 | 185 | 31.5 | 13.3 |
| 15.00 | 35 | 0.245 | 745 | 185 | 32.5 | 13.2 |
| 15.40 | 35 | 0.250 | 725 | 180 | 33.5 | 13.5 |
| 16.00 | 35 | 0.260 | 695 | 180 | 36.0 | 13.5 |
| 19.20 | 35 | 0.310 | 580 | 180 | 52.0 | 16.2 |

Hardened tool steel
48 - 52 HRC

| | | | | | | |
|-------|----|-------|-----|-----|------|------|
| 14.10 | 30 | 0.195 | 675 | 130 | 20.5 | 19.0 |
| 14.20 | 30 | 0.195 | 670 | 130 | 20.5 | 19.0 |
| 14.70 | 30 | 0.205 | 650 | 135 | 23.0 | 18.2 |
| 15.00 | 30 | 0.205 | 635 | 130 | 23.0 | 18.8 |
| 15.40 | 30 | 0.210 | 620 | 130 | 24.0 | 18.7 |
| 16.00 | 30 | 0.215 | 595 | 130 | 26.0 | 18.6 |
| 19.20 | 30 | 0.260 | 495 | 130 | 37.5 | 22.4 |

Hardened tool steel
52 - 56 HRC

| | | | | | | |
|-------|----|-------|-----|----|------|------|
| 14.10 | 20 | 0.125 | 450 | 55 | 8.5 | 45.0 |
| 14.20 | 20 | 0.125 | 450 | 55 | 8.5 | 44.9 |
| 14.70 | 20 | 0.130 | 435 | 55 | 9.5 | 44.7 |
| 15.00 | 20 | 0.130 | 425 | 55 | 9.5 | 44.4 |
| 15.40 | 20 | 0.135 | 415 | 55 | 10.0 | 44.2 |
| 16.00 | 20 | 0.135 | 400 | 55 | 11.0 | 44.1 |
| 19.20 | 20 | 0.165 | 330 | 55 | 16.0 | 53.0 |

Hardened tool steel
56 - 60 HRC

| | | | | | | |
|-------|----|-------|-----|----|-----|-------|
| 14.10 | 15 | 0.075 | 340 | 25 | 4.0 | 99.0 |
| 14.20 | 15 | 0.075 | 335 | 25 | 4.0 | 98.9 |
| 14.70 | 15 | 0.075 | 325 | 25 | 4.0 | 98.3 |
| 15.00 | 15 | 0.075 | 320 | 25 | 4.5 | 97.7 |
| 15.40 | 15 | 0.080 | 310 | 25 | 4.5 | 97.2 |
| 16.00 | 15 | 0.080 | 300 | 25 | 5.0 | 97.0 |
| 19.20 | 15 | 0.095 | 250 | 25 | 7.0 | 116.6 |

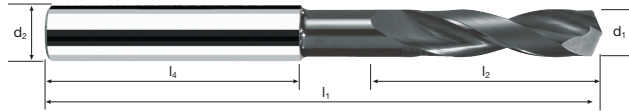
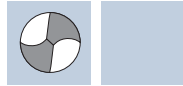
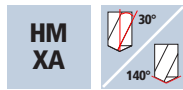
Material

Hardened tool steel
> 60 HRC

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 14.10 | 10 | 0.065 | 225 | 15 | 2.5 | 165.0 |
| 14.20 | 10 | 0.065 | 225 | 15 | 2.5 | 164.8 |
| 14.70 | 10 | 0.070 | 215 | 15 | 2.5 | 163.8 |
| 15.00 | 10 | 0.070 | 210 | 15 | 2.5 | 162.8 |
| 15.40 | 10 | 0.070 | 205 | 15 | 3.0 | 162.0 |
| 16.00 | 10 | 0.070 | 200 | 15 | 3.0 | 161.6 |
| 19.20 | 10 | 0.085 | 165 | 15 | 4.5 | 194.4 |

Spiral flute drills Supradrill® HX

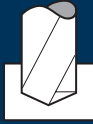
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|--|--|-----------------|--------------|--------------|-------------|--|--------------|
| | | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | HRC > 60 | | HSS GG(G) |
|--|--|-----------------|--------------|--------------|-------------|--|--------------|

| Example: Order-N°. | | Article-N°. | | Ø-Code | | | | DURO-SD | |
|-----------------------|----------|---------------|--------------|--------|----|------------------|--|---------------|---------------|
| | | B52111 | .1410 | | | | | B52111 | |
| | | | | | | | | | B53111 |
| Ø Code | d1 m7 | d2 h6 | l1 | l2 | l4 | L _{max} | | | |
| .1410 | 14.10 | 16 | 115 | 65 | 48 | 41.3 | | ● | |
| .1420 | 14.20 | 16 | 115 | 65 | 48 | 41.2 | | ● | |
| .1470 | 14.70 | 16 | 115 | 65 | 48 | 41.0 | | ● | |
| .1500 | 15.00 | 16 | 115 | 65 | 48 | 40.7 | | ● | |
| .1540 | 15.40 | 16 | 115 | 65 | 48 | 40.5 | | ● | |
| .1600 | 16.00 | 16 | 115 | 65 | 48 | 40.4 | | ● | |
| .1920 | 19.20 | 20 | 131 | 79 | 50 | 48.6 | | ● | |
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Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 170 | 0.085 | 18040 | 1535 | 11.0 | 0.6 |
| 3.30 | 170 | 0.095 | 16400 | 1560 | 13.5 | 0.6 |
| 3.50 | 170 | 0.100 | 15460 | 1545 | 15.0 | 0.6 |
| 4.00 | 170 | 0.115 | 13530 | 1555 | 19.5 | 0.7 |
| 4.20 | 170 | 0.120 | 12885 | 1545 | 21.5 | 0.7 |
| 5.00 | 170 | 0.145 | 10825 | 1570 | 31.0 | 0.7 |
| 6.00 | 170 | 0.170 | 9020 | 1535 | 43.5 | 0.7 |
| 6.80 | 170 | 0.195 | 7960 | 1550 | 56.5 | 1.1 |
| 8.50 | 170 | 0.245 | 6365 | 1560 | 88.5 | 1.2 |

Steel
500 - 850 N/mm²

| | | | | | | |
|------|-----|-------|-------|------|------|-----|
| 3.00 | 130 | 0.085 | 13795 | 1175 | 8.5 | 0.8 |
| 3.30 | 130 | 0.095 | 12540 | 1190 | 10.0 | 0.8 |
| 3.50 | 130 | 0.100 | 11825 | 1185 | 11.5 | 0.8 |
| 4.00 | 130 | 0.115 | 10345 | 1190 | 15.0 | 1.0 |
| 4.20 | 130 | 0.120 | 9850 | 1180 | 16.5 | 1.0 |
| 5.00 | 130 | 0.145 | 8275 | 1200 | 23.5 | 0.9 |
| 6.00 | 130 | 0.170 | 6895 | 1170 | 33.0 | 1.0 |
| 6.80 | 130 | 0.195 | 6085 | 1185 | 43.0 | 1.5 |
| 8.50 | 130 | 0.245 | 4870 | 1195 | 68.0 | 1.6 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|------|-----|-------|-------|-----|------|-----|
| 3.00 | 110 | 0.065 | 11670 | 760 | 5.5 | 1.3 |
| 3.30 | 110 | 0.075 | 10610 | 795 | 7.0 | 1.2 |
| 3.50 | 110 | 0.080 | 10005 | 800 | 7.5 | 1.2 |
| 4.00 | 110 | 0.090 | 8755 | 790 | 10.0 | 1.4 |
| 4.20 | 110 | 0.095 | 8335 | 790 | 11.0 | 1.4 |
| 5.00 | 110 | 0.110 | 7005 | 770 | 15.0 | 1.5 |
| 6.00 | 110 | 0.135 | 5835 | 790 | 22.5 | 1.4 |
| 6.80 | 110 | 0.150 | 5150 | 775 | 28.0 | 2.2 |
| 8.50 | 110 | 0.190 | 4120 | 785 | 44.5 | 2.4 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 3.00 | 70 | 0.055 | 7425 | 410 | 3.0 | 2.4 |
| 3.30 | 70 | 0.060 | 6750 | 405 | 3.5 | 2.4 |
| 3.50 | 70 | 0.060 | 6365 | 380 | 3.5 | 2.5 |
| 4.00 | 70 | 0.070 | 5570 | 390 | 5.0 | 2.9 |
| 4.20 | 70 | 0.075 | 5305 | 400 | 5.5 | 2.8 |
| 5.00 | 70 | 0.090 | 4455 | 400 | 8.0 | 2.8 |
| 6.00 | 70 | 0.105 | 3715 | 390 | 11.0 | 2.9 |
| 6.80 | 70 | 0.120 | 3275 | 395 | 14.5 | 4.4 |
| 8.50 | 70 | 0.150 | 2620 | 395 | 22.5 | 4.9 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 40 | 0.045 | 4245 | 190 | 1.5 | 5.1 |
| 3.30 | 40 | 0.045 | 3860 | 175 | 1.5 | 5.5 |
| 3.50 | 40 | 0.050 | 3640 | 180 | 1.5 | 5.3 |
| 4.00 | 40 | 0.055 | 3185 | 175 | 2.0 | 6.5 |
| 4.20 | 40 | 0.060 | 3030 | 180 | 2.5 | 6.3 |
| 5.00 | 40 | 0.070 | 2545 | 180 | 3.5 | 6.3 |
| 6.00 | 40 | 0.085 | 2120 | 180 | 5.0 | 6.2 |
| 6.80 | 40 | 0.095 | 1870 | 180 | 6.5 | 9.6 |
| 8.50 | 40 | 0.120 | 1500 | 180 | 10.0 | 10.7 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|------|----|-------|------|-----|------|-----|
| 3.00 | 60 | 0.045 | 6365 | 285 | 2.0 | 3.4 |
| 3.30 | 60 | 0.050 | 5785 | 290 | 2.5 | 3.3 |
| 3.50 | 60 | 0.050 | 5455 | 275 | 2.5 | 3.4 |
| 4.00 | 60 | 0.060 | 4775 | 285 | 3.5 | 4.0 |
| 4.20 | 60 | 0.065 | 4545 | 295 | 4.0 | 3.8 |
| 5.00 | 60 | 0.075 | 3820 | 285 | 5.5 | 4.0 |
| 6.00 | 60 | 0.090 | 3185 | 285 | 8.0 | 3.9 |
| 6.80 | 60 | 0.100 | 2810 | 280 | 10.0 | 6.2 |
| 8.50 | 60 | 0.125 | 2245 | 280 | 16.0 | 6.9 |

Cast iron
(lamellar / spheroidal)

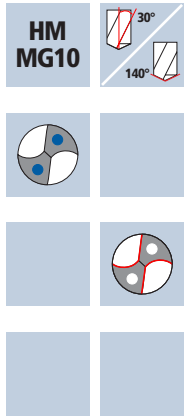
| | | | | | | |
|------|-----|-------|-------|------|-------|-----|
| 3.00 | 220 | 0.095 | 23345 | 2220 | 15.5 | 0.4 |
| 3.30 | 220 | 0.105 | 21220 | 2230 | 19.0 | 0.4 |
| 3.50 | 220 | 0.110 | 20010 | 2200 | 21.0 | 0.4 |
| 4.00 | 220 | 0.125 | 17505 | 2190 | 27.5 | 0.5 |
| 4.20 | 220 | 0.130 | 16675 | 2170 | 30.0 | 0.5 |
| 5.00 | 220 | 0.155 | 14005 | 2170 | 42.5 | 0.5 |
| 6.00 | 220 | 0.190 | 11670 | 2215 | 62.5 | 0.5 |
| 6.80 | 220 | 0.215 | 10300 | 2215 | 80.5 | 0.8 |
| 8.50 | 220 | 0.265 | 8240 | 2185 | 124.0 | 0.9 |

Wrought aluminium
alloys Si < 6%

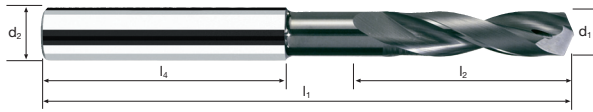
| | | | | | | |
|------|-----|-------|-------|------|-------|-----|
| 3.00 | 250 | 0.085 | 26525 | 2255 | 16.0 | 0.4 |
| 3.30 | 250 | 0.095 | 24115 | 2290 | 19.5 | 0.4 |
| 3.50 | 250 | 0.100 | 22735 | 2275 | 22.0 | 0.4 |
| 4.00 | 250 | 0.115 | 19895 | 2290 | 29.0 | 0.5 |
| 4.20 | 250 | 0.120 | 18945 | 2275 | 31.5 | 0.5 |
| 5.00 | 250 | 0.145 | 15915 | 2310 | 45.5 | 0.5 |
| 6.00 | 250 | 0.170 | 13265 | 2255 | 64.0 | 0.5 |
| 6.80 | 250 | 0.195 | 11705 | 2280 | 83.0 | 0.8 |
| 8.50 | 250 | 0.245 | 9360 | 2295 | 130.0 | 0.8 |

Spiral flute drills Supradrill® U

3xd



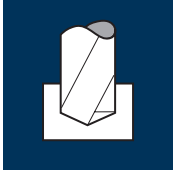
new!



| | | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|--|--|--|--------------------------|--|---------------------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | | | | Inox Stainless | | GG(G) Aluminium |
|--------------------|-----------------------|------------------------|------------------------|--|--|--|--------------------------|--|---------------------------|

| Example: Order-N°. | | | | | | | Article-N°. | | ø-Code | | | NANO-U ² |
|-----------------------|----------|----------|----|----|----|------------------|---------------|--|--------------|--|---|---------------------|
| | | | | | | | B62011 | | .0300 | | | B62011 |
| | | | | | | | | | | | | B63011 |
| ø Code | d1 m7 | d2 h6 | l1 | l2 | l4 | L _{max} | | | | | | |
| .0300 | 3.0 | 6 | 62 | 20 | 36 | 16.2 | | | | | ● | |
| .0330 | 3.3 | 6 | 62 | 20 | 36 | 16.0 | | | | | ● | |
| .0340 | 3.4 | 6 | 62 | 20 | 36 | 15.8 | | | | | ● | |
| .0350 | 3.5 | 6 | 62 | 20 | 36 | 15.8 | | | | | ● | |
| .0370 | 3.7 | 6 | 62 | 20 | 36 | 15.6 | | | | | ● | |
| .0380 | 3.8 | 6 | 66 | 24 | 36 | 19.4 | | | | | ● | |
| .0400 | 4.0 | 6 | 66 | 24 | 36 | 18.9 | | | | | ● | |
| .0420 | 4.2 | 6 | 66 | 24 | 36 | 18.8 | | | | | ● | |
| .0450 | 4.5 | 6 | 66 | 24 | 36 | 18.6 | | | | | ● | |
| .0480 | 4.8 | 6 | 66 | 28 | 36 | 18.4 | | | | | ● | |
| .0500 | 5.0 | 6 | 66 | 28 | 36 | 18.8 | | | | | ● | |
| .0550 | 5.5 | 6 | 66 | 28 | 36 | 18.5 | | | | | ● | |
| .0580 | 5.8 | 6 | 66 | 28 | 36 | 18.4 | | | | | ● | |
| .0600 | 6.0 | 6 | 66 | 28 | 36 | 18.6 | | | | | ● | |
| .0650 | 6.5 | 8 | 79 | 34 | 36 | 29.1 | | | | | ● | |
| .0680 | 6.8 | 8 | 79 | 34 | 36 | 28.9 | | | | | ● | |
| .0700 | 7.0 | 8 | 79 | 34 | 36 | 28.8 | | | | | ● | |
| .0750 | 7.5 | 8 | 79 | 41 | 36 | 28.5 | | | | | ● | |
| .0780 | 7.8 | 8 | 79 | 41 | 36 | 28.4 | | | | | ● | |
| .0800 | 8.0 | 8 | 79 | 41 | 36 | 28.5 | | | | | ● | |
| .0850 | 8.5 | 10 | 89 | 47 | 40 | 32.1 | | | | | ● | |
| .0880 | 8.8 | 10 | 89 | 47 | 40 | 31.9 | | | | | ● | |
| .0900 | 9.0 | 10 | 89 | 47 | 40 | 31.7 | | | | | ● | |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 10.00 | 170 | 0.285 | 5410 | 1540 | 121.0 | 1.2 |
| 10.20 | 170 | 0.290 | 5305 | 1540 | 126.0 | 1.4 |
| 11.00 | 170 | 0.315 | 4920 | 1550 | 147.5 | 1.4 |
| 12.00 | 170 | 0.345 | 4510 | 1555 | 176.0 | 1.4 |
| 13.00 | 170 | 0.370 | 4165 | 1540 | 204.5 | 1.5 |
| 14.00 | 170 | 0.400 | 3865 | 1545 | 238.0 | 1.5 |
| 15.00 | 170 | 0.430 | 3610 | 1550 | 274.0 | 1.6 |
| 15.50 | 170 | 0.445 | 3490 | 1555 | 293.5 | 1.6 |
| 16.00 | 170 | 0.455 | 3380 | 1540 | 309.5 | 1.6 |

Steel
500 - 850 N/mm²

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 130 | 0.285 | 4140 | 1180 | 92.5 | 1.6 |
| 10.20 | 130 | 0.290 | 4055 | 1175 | 96.0 | 1.9 |
| 11.00 | 130 | 0.315 | 3760 | 1185 | 112.5 | 1.9 |
| 12.00 | 130 | 0.345 | 3450 | 1190 | 134.5 | 1.8 |
| 13.00 | 130 | 0.370 | 3185 | 1180 | 156.5 | 2.0 |
| 14.00 | 130 | 0.400 | 2955 | 1180 | 181.5 | 2.0 |
| 15.00 | 130 | 0.430 | 2760 | 1185 | 209.5 | 2.1 |
| 15.50 | 130 | 0.445 | 2670 | 1190 | 224.5 | 2.0 |
| 16.00 | 130 | 0.455 | 2585 | 1175 | 236.0 | 2.1 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|-------|-----|-------|------|-----|-------|-----|
| 10.00 | 110 | 0.220 | 3500 | 770 | 60.5 | 2.5 |
| 10.20 | 110 | 0.225 | 3435 | 775 | 63.5 | 2.9 |
| 11.00 | 110 | 0.245 | 3185 | 780 | 74.0 | 2.8 |
| 12.00 | 110 | 0.265 | 2920 | 775 | 87.5 | 2.8 |
| 13.00 | 110 | 0.290 | 2695 | 780 | 103.5 | 3.0 |
| 14.00 | 110 | 0.310 | 2500 | 775 | 119.5 | 3.0 |
| 15.00 | 110 | 0.335 | 2335 | 780 | 138.0 | 3.1 |
| 15.50 | 110 | 0.345 | 2260 | 780 | 147.0 | 3.1 |
| 16.00 | 110 | 0.355 | 2190 | 775 | 156.0 | 3.1 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 10.00 | 70 | 0.175 | 2230 | 390 | 30.5 | 4.8 |
| 10.20 | 70 | 0.180 | 2185 | 395 | 32.5 | 5.7 |
| 11.00 | 70 | 0.195 | 2025 | 395 | 37.5 | 5.6 |
| 12.00 | 70 | 0.210 | 1855 | 390 | 44.0 | 5.6 |
| 13.00 | 70 | 0.230 | 1715 | 395 | 52.5 | 5.9 |
| 14.00 | 70 | 0.245 | 1590 | 390 | 60.0 | 5.9 |
| 15.00 | 70 | 0.265 | 1485 | 395 | 70.0 | 6.2 |
| 15.50 | 70 | 0.270 | 1440 | 390 | 73.5 | 6.2 |
| 16.00 | 70 | 0.280 | 1395 | 390 | 78.5 | 6.2 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 10.00 | 40 | 0.145 | 1275 | 185 | 14.5 | 10.2 |
| 10.20 | 40 | 0.145 | 1250 | 180 | 14.5 | 12.4 |
| 11.00 | 40 | 0.155 | 1155 | 180 | 17.0 | 12.2 |
| 12.00 | 40 | 0.170 | 1060 | 180 | 20.5 | 12.1 |
| 13.00 | 40 | 0.185 | 980 | 180 | 24.0 | 12.9 |
| 14.00 | 40 | 0.200 | 910 | 180 | 27.5 | 12.8 |
| 15.00 | 40 | 0.215 | 850 | 185 | 32.5 | 13.2 |
| 15.50 | 40 | 0.220 | 820 | 180 | 34.0 | 13.5 |
| 16.00 | 40 | 0.230 | 795 | 185 | 37.0 | 13.1 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|-------|----|-------|------|-----|------|-----|
| 10.00 | 60 | 0.150 | 1910 | 285 | 22.5 | 6.6 |
| 10.20 | 60 | 0.150 | 1870 | 280 | 23.0 | 8.0 |
| 11.00 | 60 | 0.165 | 1735 | 285 | 27.0 | 7.7 |
| 12.00 | 60 | 0.180 | 1590 | 285 | 32.0 | 7.7 |
| 13.00 | 60 | 0.195 | 1470 | 285 | 38.0 | 8.1 |
| 14.00 | 60 | 0.210 | 1365 | 285 | 44.0 | 8.1 |
| 15.00 | 60 | 0.225 | 1275 | 285 | 50.5 | 8.6 |
| 15.50 | 60 | 0.230 | 1230 | 285 | 54.0 | 8.5 |
| 16.00 | 60 | 0.240 | 1195 | 285 | 57.5 | 8.5 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 220 | 0.315 | 7005 | 2205 | 173.0 | 0.9 |
| 10.20 | 220 | 0.320 | 6865 | 2195 | 179.5 | 1.0 |
| 11.00 | 220 | 0.345 | 6365 | 2195 | 208.5 | 1.0 |
| 12.00 | 220 | 0.375 | 5835 | 2190 | 247.5 | 1.0 |
| 13.00 | 220 | 0.405 | 5385 | 2180 | 289.5 | 1.1 |
| 14.00 | 220 | 0.440 | 5000 | 2200 | 338.5 | 1.0 |
| 15.00 | 220 | 0.470 | 4670 | 2195 | 388.0 | 1.1 |
| 15.50 | 220 | 0.485 | 4520 | 2190 | 413.0 | 1.1 |
| 16.00 | 220 | 0.500 | 4375 | 2190 | 440.5 | 1.1 |

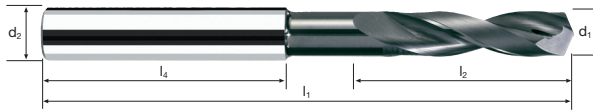
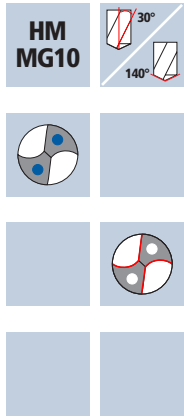
Wrought aluminium
alloys Si < 6%

| | | | | | | |
|-------|-----|-------|------|------|-------|-----|
| 10.00 | 250 | 0.285 | 7960 | 2270 | 178.5 | 0.8 |
| 10.20 | 250 | 0.290 | 7800 | 2260 | 184.5 | 1.0 |
| 11.00 | 250 | 0.315 | 7235 | 2280 | 216.5 | 1.0 |
| 12.00 | 250 | 0.345 | 6630 | 2285 | 258.5 | 1.0 |
| 13.00 | 250 | 0.370 | 6120 | 2265 | 300.5 | 1.0 |
| 14.00 | 250 | 0.400 | 5685 | 2275 | 350.0 | 1.0 |
| 15.00 | 250 | 0.430 | 5305 | 2280 | 403.0 | 1.1 |
| 15.50 | 250 | 0.445 | 5135 | 2285 | 431.0 | 1.1 |
| 16.00 | 250 | 0.455 | 4975 | 2265 | 455.5 | 1.1 |

Spiral flute drills Supradrill® U

3xd

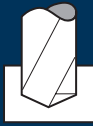
new!



| | | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|--|--|--|--------------------------|--|---------------------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | | | | Inox Stainless | | GG(G) Aluminium |
|--------------------|-----------------------|------------------------|------------------------|--|--|--|--------------------------|--|---------------------------|

| Example: Order-N°. | | | | | | | Article-N°. | | ø-Code | | | NANO-U ² |
|-----------------------|----------|----------|-----|----|----|------------------|---------------|--|--------------|--|---|---------------------|
| | | | | | | | B62011 | | .0950 | | | B62011 |
| | | | | | | | | | | | | B63011 |
| ø Code | d1 m7 | d2 h6 | l1 | l2 | l4 | L _{max} | | | | | | |
| .0950 | 9.5 | 10 | 89 | 47 | 40 | 31.5 | | | | | ● | |
| .0980 | 9.8 | 10 | 89 | 47 | 40 | 31.4 | | | | | ● | |
| .1000 | 10.0 | 10 | 89 | 47 | 40 | 31.5 | | | | | ● | |
| .1020 | 10.2 | 12 | 102 | 55 | 45 | 37.2 | | | | | ● | |
| .1050 | 10.5 | 12 | 102 | 55 | 45 | 37.1 | | | | | ● | |
| .1080 | 10.8 | 12 | 102 | 55 | 45 | 36.9 | | | | | ● | |
| .1100 | 11.0 | 12 | 102 | 55 | 45 | 36.7 | | | | | ● | |
| .1150 | 11.5 | 12 | 102 | 55 | 45 | 36.5 | | | | | ● | |
| .1180 | 11.8 | 12 | 102 | 55 | 45 | 36.3 | | | | | ● | |
| .1200 | 12.0 | 12 | 102 | 55 | 45 | 36.4 | | | | | ● | |
| .1250 | 12.5 | 14 | 107 | 60 | 45 | 39.1 | | | | | ● | |
| .1280 | 12.8 | 14 | 107 | 60 | 45 | 38.9 | | | | | ● | |
| .1300 | 13.0 | 14 | 107 | 60 | 45 | 38.7 | | | | | ● | |
| .1350 | 13.5 | 14 | 107 | 60 | 45 | 38.5 | | | | | ● | |
| .1380 | 13.8 | 14 | 107 | 60 | 45 | 38.3 | | | | | ● | |
| .1400 | 14.0 | 14 | 107 | 60 | 45 | 38.4 | | | | | ● | |
| .1450 | 14.5 | 16 | 115 | 65 | 48 | 41.1 | | | | | ● | |
| .1480 | 14.8 | 16 | 115 | 65 | 48 | 40.8 | | | | | ● | |
| .1500 | 15.0 | 16 | 115 | 65 | 48 | 40.7 | | | | | ● | |
| .1550 | 15.5 | 16 | 115 | 65 | 48 | 40.5 | | | | | ● | |
| .1580 | 15.8 | 16 | 115 | 65 | 48 | 40.3 | | | | | ● | |
| .1600 | 16.0 | 16 | 115 | 65 | 48 | 40.4 | | | | | ● | |

Application



Material

Steel
< 500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 150 | 0.080 | 15915 | 1275 | 9.0 | 1.3 |
| 3.30 | 150 | 0.090 | 14470 | 1300 | 11.0 | 1.2 |
| 3.50 | 150 | 0.095 | 13640 | 1295 | 12.5 | 1.2 |
| 3.80 | 150 | 0.105 | 12565 | 1320 | 15.0 | 1.6 |
| 4.00 | 150 | 0.110 | 11935 | 1315 | 16.5 | 1.6 |
| 4.20 | 150 | 0.120 | 11370 | 1365 | 19.0 | 1.5 |
| 4.50 | 150 | 0.140 | 10610 | 1485 | 23.5 | 1.4 |
| 4.80 | 150 | 0.145 | 9945 | 1440 | 26.0 | 2.0 |
| 5.00 | 150 | 0.155 | 9550 | 1480 | 29.0 | 1.9 |

Steel
500 - 850 N/mm²

| | | | | | | |
|------|-----|-------|-------|------|------|-----|
| 3.00 | 120 | 0.070 | 12730 | 890 | 6.5 | 1.8 |
| 3.30 | 120 | 0.075 | 11575 | 870 | 7.5 | 1.9 |
| 3.50 | 120 | 0.080 | 10915 | 875 | 8.5 | 1.8 |
| 3.80 | 120 | 0.090 | 10050 | 905 | 10.5 | 2.3 |
| 4.00 | 120 | 0.095 | 9550 | 905 | 11.5 | 2.3 |
| 4.20 | 120 | 0.105 | 9095 | 955 | 13.0 | 2.2 |
| 4.50 | 120 | 0.120 | 8490 | 1020 | 16.0 | 2.0 |
| 4.80 | 120 | 0.125 | 7960 | 995 | 18.0 | 2.9 |
| 5.00 | 120 | 0.130 | 7640 | 995 | 19.5 | 2.9 |

Steel
850 - 1100 N/mm²

| | | | | | | |
|------|-----|-------|-------|-----|------|-----|
| 3.00 | 100 | 0.065 | 10610 | 690 | 5.0 | 2.4 |
| 3.30 | 100 | 0.070 | 9645 | 675 | 6.0 | 2.4 |
| 3.50 | 100 | 0.075 | 9095 | 680 | 6.5 | 2.4 |
| 3.80 | 100 | 0.080 | 8375 | 670 | 7.5 | 3.2 |
| 4.00 | 100 | 0.090 | 7960 | 715 | 9.0 | 2.9 |
| 4.20 | 100 | 0.095 | 7580 | 720 | 10.0 | 2.9 |
| 4.50 | 100 | 0.110 | 7075 | 780 | 12.5 | 2.7 |
| 4.80 | 100 | 0.115 | 6630 | 760 | 14.0 | 3.7 |
| 5.00 | 100 | 0.120 | 6365 | 765 | 15.0 | 3.7 |

Steel
1100 - 1300 N/mm²

| | | | | | | |
|------|----|-------|------|-----|-----|-----|
| 3.00 | 70 | 0.050 | 7425 | 370 | 2.5 | 4.4 |
| 3.30 | 70 | 0.055 | 6750 | 370 | 3.0 | 4.4 |
| 3.50 | 70 | 0.055 | 6365 | 350 | 3.5 | 4.6 |
| 3.80 | 70 | 0.060 | 5865 | 350 | 4.0 | 6.1 |
| 4.00 | 70 | 0.065 | 5570 | 360 | 4.5 | 5.8 |
| 4.20 | 70 | 0.070 | 5305 | 370 | 5.0 | 5.6 |
| 4.50 | 70 | 0.085 | 4950 | 420 | 6.5 | 4.9 |
| 4.80 | 70 | 0.090 | 4640 | 420 | 7.5 | 6.8 |
| 5.00 | 70 | 0.090 | 4455 | 400 | 8.0 | 7.2 |

Material

Steel
1300 - 1500 N/mm²

| d1 [mm] | v _c [m/min] | f [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | T [sek] |
|------------|---------------------------|-----------|---------------------------|----------------------------|-----------------------------|------------|
| 3.00 | 40 | 0.035 | 4245 | 150 | 1.0 | 10.9 |
| 3.30 | 40 | 0.040 | 3860 | 155 | 1.5 | 10.4 |
| 3.50 | 40 | 0.045 | 3640 | 165 | 1.5 | 9.7 |
| 3.80 | 40 | 0.045 | 3350 | 150 | 1.5 | 14.2 |
| 4.00 | 40 | 0.050 | 3185 | 160 | 2.0 | 13.1 |
| 4.20 | 40 | 0.055 | 3030 | 165 | 2.5 | 12.7 |
| 4.50 | 40 | 0.065 | 2830 | 185 | 3.0 | 11.2 |
| 4.80 | 40 | 0.070 | 2655 | 185 | 3.5 | 15.4 |
| 5.00 | 40 | 0.070 | 2545 | 180 | 3.5 | 15.9 |

Cold work tool steel
(12% Cr)
high alloyed
[1.2379]
Stainless steel
[Cr-Ni/1.4301]

| | | | | | | |
|------|----|-------|------|-----|-----|------|
| 3.00 | 60 | 0.035 | 6365 | 225 | 1.5 | 7.3 |
| 3.30 | 60 | 0.040 | 5785 | 230 | 2.0 | 7.0 |
| 3.50 | 60 | 0.045 | 5455 | 245 | 2.5 | 6.6 |
| 3.80 | 60 | 0.045 | 5025 | 225 | 2.5 | 9.4 |
| 4.00 | 60 | 0.050 | 4775 | 240 | 3.0 | 8.7 |
| 4.20 | 60 | 0.055 | 4545 | 250 | 3.5 | 8.4 |
| 4.50 | 60 | 0.065 | 4245 | 275 | 4.5 | 7.5 |
| 4.80 | 60 | 0.070 | 3980 | 280 | 5.0 | 10.2 |
| 5.00 | 60 | 0.070 | 3820 | 265 | 5.0 | 10.8 |

Titanium alloys
>300 HB
[Ti6Al4V]

| | | | | | | |
|------|----|-------|------|-----|-----|------|
| 3.00 | 35 | 0.035 | 3715 | 130 | 1.0 | 12.6 |
| 3.30 | 35 | 0.040 | 3375 | 135 | 1.0 | 12.0 |
| 3.50 | 35 | 0.045 | 3185 | 145 | 1.5 | 11.1 |
| 3.80 | 35 | 0.045 | 2930 | 130 | 1.5 | 16.3 |
| 4.00 | 35 | 0.050 | 2785 | 140 | 2.0 | 15.0 |
| 4.20 | 35 | 0.055 | 2655 | 145 | 2.0 | 14.4 |
| 4.50 | 35 | 0.065 | 2475 | 160 | 2.5 | 13.0 |
| 4.80 | 35 | 0.070 | 2320 | 160 | 3.0 | 17.8 |
| 5.00 | 35 | 0.070 | 2230 | 155 | 3.0 | 18.5 |

Cast iron
(lamellar / spheroidal)

| | | | | | | |
|------|-----|-------|-------|------|------|-----|
| 3.00 | 220 | 0.075 | 23345 | 1750 | 12.5 | 0.9 |
| 3.30 | 220 | 0.080 | 21220 | 1700 | 14.5 | 1.0 |
| 3.50 | 220 | 0.085 | 20010 | 1700 | 16.5 | 0.9 |
| 3.80 | 220 | 0.095 | 18430 | 1750 | 20.0 | 1.2 |
| 4.00 | 220 | 0.100 | 17505 | 1750 | 22.0 | 1.2 |
| 4.20 | 220 | 0.110 | 16675 | 1835 | 25.5 | 1.1 |
| 4.50 | 220 | 0.125 | 15560 | 1945 | 31.0 | 1.1 |
| 4.80 | 220 | 0.135 | 14590 | 1970 | 35.5 | 1.4 |
| 5.00 | 220 | 0.140 | 14005 | 1960 | 38.5 | 1.5 |