

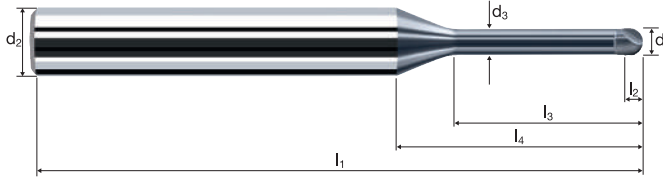
Ball nose end mills Microcut

Shank \varnothing 4mm, cylindrical neck, 10xd



new!

HM λ 0°
XA γ 0°



| | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|---------------------|--------------------------|-----------------------|---|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | Rm 1300-1500 | HRC 48-56 | HRC 56-60 | Inox Stainless | Ti Titanium | Cobalt-Chrome Gold / Platinum Copper |
|--------------------|-----------------------|------------------------|------------------------|---------------------|---------------------|--------------------------|-----------------------|---|

| Example: Order-N° | | | | | | | | | | | X-AL |
|--|-------|-------------|-------|-------|-------|-------|-------|--------------------|----------|-----|-------|
| | | | | | | | | | | | X6846 |
| Coating Article-N° \varnothing -Code | | | | | | | | | | | |
| X 6846 050 | | | | | | | | | | | |
| \varnothing Code | d_1 | d_2 h4 | d_3 | l_1 | l_2 | l_3 | l_4 | r ± 0.005 | α | z | |
| 050 | 0.50 | 4.00 | 0.45 | 50 | 0.30 | 5.00 | 11.78 | 0.250 | 8.6° | 2 | ● |
| 060 | 0.60 | 4.00 | 0.55 | 50 | 0.36 | 6.00 | 12.60 | 0.300 | 7.9° | 2 | ● |
| 080 | 0.80 | 4.00 | 0.75 | 50 | 0.48 | 8.00 | 14.22 | 0.400 | 6.6° | 2 | ● |
| 100 | 1.00 | 4.00 | 0.95 | 50 | 0.60 | 10.00 | 15.85 | 0.500 | 5.6° | 2 | ● |
| 120 | 1.50 | 4.00 | 1.40 | 50 | 0.90 | 15.00 | 19.80 | 0.750 | 3.8° | 2 | ● |
| 140 | 2.00 | 4.00 | 1.90 | 57 | 1.20 | 20.00 | 23.87 | 1.000 | 2.6° | 2 | ● |
| 160 | 2.50 | 4.00 | 2.30 | 57 | 1.50 | 25.00 | 27.84 | 1.250 | 1.7° | 2 | ● |
| 180 | 3.00 | 4.00 | 2.80 | 61 | 1.80 | 30.00 | 31.91 | 1.500 | 1.1° | 2 | ● |
| | | | | | | | | | | | |
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| Application | | Material | | d_1 [mm] | z | v_c [m/min] | f_z [mm] | a_p [mm] | a_e [mm] | d_{eff} [mm] | n [min ⁻¹] | v_f [mm/min] | Q [mm ² /min] |
|--|--|---|------|---------------|-------|------------------|---------------|---------------|---------------|-------------------|-----------------------------|-------------------|-------------------------------|
| | R Steel 850 - 1100 N/mm ² | 0.50 | 2 | 26 | 0.007 | 0.020 | 0.100 | 0.20 | 41380 | 596 | 1.2 | | |
| | | 0.60 | 2 | 31 | 0.009 | 0.024 | 0.120 | 0.24 | 41115 | 715 | 2.1 | | |
| | | 0.80 | 2 | 41 | 0.012 | 0.032 | 0.160 | 0.31 | 42099 | 977 | 5.0 | | |
| | | 1.00 | 2 | 52 | 0.015 | 0.040 | 0.200 | 0.39 | 42441 | 1231 | 9.9 | | |
| | | 1.50 | 2 | 101 | 0.028 | 0.105 | 0.225 | 0.77 | 41752 | 2355 | 55.7 | | |
| | | 2.00 | 2 | 108 | 0.038 | 0.140 | 0.300 | 1.02 | 33703 | 2541 | 106.8 | | |
| | | 2.50 | 2 | 108 | 0.047 | 0.175 | 0.375 | 1.28 | 26857 | 2530 | 166.0 | | |
| | | 3.00 | 2 | 108 | 0.057 | 0.210 | 0.450 | 1.53 | 22469 | 2539 | 240.0 | | |
| | | H Hardened tool steel 52 - 56 HRC | 0.50 | 2 | 26 | 0.005 | 0.020 | 0.100 | 0.20 | 41380 | 422 | 0.9 | |
| | | | 0.60 | 2 | 31 | 0.006 | 0.024 | 0.120 | 0.24 | 41115 | 502 | 1.5 | |
| 0.80 | 2 | | 41 | 0.008 | 0.032 | 0.160 | 0.31 | 42099 | 690 | 3.6 | | | |
| 1.00 | 2 | | 52 | 0.010 | 0.040 | 0.200 | 0.39 | 42441 | 866 | 7.0 | | | |
| 1.50 | 2 | | 54 | 0.020 | 0.105 | 0.225 | 0.77 | 22323 | 893 | 21.1 | | | |
| 2.00 | 2 | | 54 | 0.027 | 0.140 | 0.300 | 1.02 | 16852 | 897 | 37.7 | | | |
| 2.50 | 2 | | 54 | 0.033 | 0.175 | 0.375 | 1.28 | 13429 | 894 | 58.7 | | | |
| 3.00 | 2 | | 54 | 0.040 | 0.210 | 0.450 | 1.53 | 11234 | 899 | 85.0 | | | |
| I Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] | 0.50 | | 2 | 26 | 0.005 | 0.020 | 0.100 | 0.20 | 41380 | 439 | 0.9 | | |
| | 0.60 | | 2 | 31 | 0.006 | 0.024 | 0.120 | 0.24 | 41115 | 518 | 1.5 | | |
| | 0.80 | 2 | 41 | 0.009 | 0.032 | 0.160 | 0.31 | 42099 | 716 | 3.7 | | | |
| | 1.00 | 2 | 52 | 0.011 | 0.040 | 0.200 | 0.39 | 42441 | 900 | 7.2 | | | |
| | 1.50 | 2 | 54 | 0.021 | 0.105 | 0.225 | 0.77 | 22323 | 924 | 21.9 | | | |
| | 2.00 | 2 | 54 | 0.028 | 0.140 | 0.300 | 1.02 | 16852 | 930 | 39.1 | | | |
| | 2.50 | 2 | 54 | 0.034 | 0.175 | 0.375 | 1.28 | 13429 | 924 | 60.7 | | | |
| | 3.00 | 2 | 54 | 0.041 | 0.210 | 0.450 | 1.53 | 11234 | 928 | 87.7 | | | |
| | T Titanium alloys > 300 HB [Ti6Al4V] | 0.50 | 2 | 26 | 0.006 | 0.020 | 0.100 | 0.20 | 41380 | 464 | 1.0 | | |
| | | 0.60 | 2 | 31 | 0.007 | 0.024 | 0.120 | 0.24 | 41115 | 559 | 1.6 | | |
| 0.80 | | 2 | 36 | 0.009 | 0.032 | 0.160 | 0.31 | 36965 | 665 | 3.4 | | | |
| 1.00 | | 2 | 36 | 0.011 | 0.040 | 0.200 | 0.39 | 29382 | 664 | 5.3 | | | |
| 1.50 | | 2 | 36 | 0.022 | 0.105 | 0.225 | 0.77 | 14882 | 655 | 15.5 | | | |
| 2.00 | | 2 | 36 | 0.029 | 0.140 | 0.300 | 1.02 | 11234 | 661 | 27.8 | | | |
| 2.50 | | 2 | 36 | 0.037 | 0.175 | 0.375 | 1.28 | 8952 | 657 | 43.1 | | | |
| 3.00 | | 2 | 36 | 0.044 | 0.210 | 0.450 | 1.53 | 7490 | 661 | 62.5 | | | |
| A Steel 850 - 1100 N/mm ² | | F Steel 850 - 1100 N/mm ² | 0.50 | 2 | 55 | 0.042 | 0.020 | 0.065 | 0.46 | 38059 | 3197 | 45° | |
| | | | 0.60 | 2 | 65 | 0.046 | 0.020 | 0.070 | 0.55 | 37618 | 3461 | 45° | |
| | 0.80 | | 2 | 85 | 0.052 | 0.020 | 0.080 | 0.71 | 38108 | 3963 | 45° | | |
| | 1.00 | | 2 | 108 | 0.058 | 0.030 | 0.090 | 0.91 | 37777 | 4382 | 45° | | |
| | 1.50 | | 2 | 150 | 0.068 | 0.030 | 0.105 | 1.32 | 36172 | 4919 | 45° | | |
| | 2.00 | | 2 | 150 | 0.078 | 0.040 | 0.120 | 1.75 | 27284 | 4256 | 45° | | |
| | 2.50 | | 2 | 150 | 0.088 | 0.040 | 0.135 | 2.15 | 22208 | 3909 | 45° | | |
| | 3.00 | | 2 | 150 | 0.098 | 0.050 | 0.150 | 2.59 | 18435 | 3613 | 45° | | |
| | H Hardened tool steel 52 - 56 HRC | | 0.50 | 2 | 55 | 0.042 | 0.020 | 0.065 | 0.46 | 38059 | 3197 | 45° | |
| | | | 0.60 | 2 | 65 | 0.046 | 0.020 | 0.070 | 0.55 | 37618 | 3461 | 45° | |
| 0.80 | | 2 | 85 | 0.052 | 0.020 | 0.080 | 0.71 | 38108 | 3963 | 45° | | | |
| 1.00 | | 2 | 94 | 0.058 | 0.030 | 0.090 | 0.91 | 32880 | 3814 | 45° | | | |
| 1.50 | | 2 | 94 | 0.068 | 0.030 | 0.105 | 1.32 | 22668 | 3083 | 45° | | | |
| 2.00 | | 2 | 94 | 0.078 | 0.040 | 0.120 | 1.75 | 17098 | 2667 | 45° | | | |
| 2.50 | | 2 | 94 | 0.088 | 0.040 | 0.135 | 2.15 | 13917 | 2449 | 45° | | | |
| 3.00 | | 2 | 94 | 0.098 | 0.050 | 0.150 | 2.59 | 11553 | 2264 | 45° | | | |
| I Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571] | | 0.50 | 2 | 55 | 0.042 | 0.020 | 0.065 | 0.46 | 38059 | 3197 | 45° | | |
| | | 0.60 | 2 | 65 | 0.046 | 0.020 | 0.070 | 0.55 | 37618 | 3461 | 45° | | |
| | 0.80 | 2 | 85 | 0.052 | 0.020 | 0.080 | 0.71 | 38108 | 3963 | 45° | | | |
| | 1.00 | 2 | 94 | 0.058 | 0.030 | 0.090 | 0.91 | 32880 | 3814 | 45° | | | |
| | 1.50 | 2 | 94 | 0.068 | 0.030 | 0.105 | 1.32 | 22668 | 3083 | 45° | | | |
| | 2.00 | 2 | 94 | 0.078 | 0.040 | 0.120 | 1.75 | 17098 | 2667 | 45° | | | |
| | 2.50 | 2 | 94 | 0.088 | 0.040 | 0.135 | 2.15 | 13917 | 2449 | 45° | | | |
| | 3.00 | 2 | 94 | 0.098 | 0.050 | 0.150 | 2.59 | 11553 | 2264 | 45° | | | |
| | T Titanium alloys > 300 HB [Ti6Al4V] | 0.50 | 2 | 55 | 0.042 | 0.020 | 0.065 | 0.46 | 38059 | 3197 | 45° | | |
| | | 0.60 | 2 | 65 | 0.046 | 0.020 | 0.070 | 0.55 | 37618 | 3461 | 45° | | |
| 0.80 | | 2 | 56 | 0.052 | 0.020 | 0.080 | 0.71 | 25106 | 2611 | 45° | | | |
| 1.00 | | 2 | 70 | 0.058 | 0.030 | 0.090 | 0.91 | 24485 | 2840 | 45° | | | |
| 1.50 | | 2 | 70 | 0.068 | 0.030 | 0.105 | 1.32 | 16880 | 2296 | 45° | | | |
| 2.00 | | 2 | 70 | 0.078 | 0.040 | 0.120 | 1.75 | 12732 | 1986 | 45° | | | |
| 2.50 | | 2 | 70 | 0.088 | 0.040 | 0.135 | 2.15 | 10364 | 1824 | 45° | | | |
| 3.00 | | 2 | 70 | 0.098 | 0.050 | 0.150 | 2.59 | 8603 | 1686 | 45° | | | |