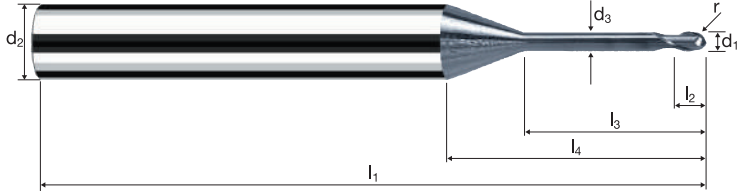
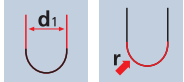


Ball nose end mills MicroX


Shank \varnothing 6mm, cylindrical neck, 9xd



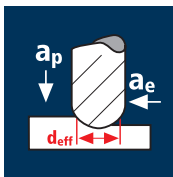
| | |
|----|---------------|
| HM | λ 30° |
| XA | γ -10° |



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

| Ø Code | Coating | | Article-N° | | ø-Code | | | | | | | X-AL |
|--------|-------------------|----------------------|----------------|----------------|---|----------------|----------------|-------------|-------|-------|---|------|
| | Example: Order-N° | X | 6567 | 020 |  | | | | | X6567 | | |
| | d ₁ | d ₂ h4 | d ₃ | l ₁ | l ₂ | l ₃ | l ₄ | r ±0.005 | α | z | | |
| 020 | 0.20 | 6.00 | 0.18 | 57 | 0.20 | 1.80 | 18.42 | 0.100 | 13.0° | 2 | ● | |
| 030 | 0.30 | 6.00 | 0.25 | 57 | 0.30 | 2.70 | 18.94 | 0.150 | 12.1° | 2 | ● | |
| 040 | 0.40 | 6.00 | 0.35 | 57 | 0.40 | 3.60 | 19.56 | 0.200 | 11.4° | 2 | ● | |
| 050 | 0.50 | 6.00 | 0.45 | 57 | 0.50 | 4.50 | 15.51 | 0.250 | 10.7° | 2 | ● | |
| 060 | 0.60 | 6.00 | 0.55 | 57 | 0.60 | 5.40 | 16.23 | 0.300 | 10.1° | 2 | ● | |
| 080 | 0.80 | 6.00 | 0.75 | 61 | 0.80 | 7.20 | 17.65 | 0.400 | 8.9° | 2 | ● | |
| 100 | 1.00 | 6.00 | 0.95 | 61 | 1.00 | 9.00 | 19.08 | 0.500 | 8.0° | 2 | ● | |
| 120 | 1.50 | 6.00 | 1.40 | 66 | 1.50 | 13.50 | 22.74 | 0.750 | 6.1° | 2 | ● | |
| 140 | 2.00 | 6.00 | 1.90 | 69 | 2.00 | 18.00 | 26.31 | 1.000 | 4.7° | 2 | ● | |
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Application



Material

Hardened tool steel
42 - 48 HRC

Hardened tool steel
48 - 52 HRC

Hardened tool steel
52 - 56 HRC

Hardened tool steel
56 - 60 HRC

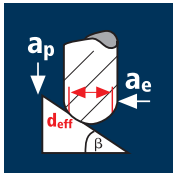
| d1 [mm] | z | v_c [m/min] | f_z [mm] | a_p [mm] | a_e [mm] | d_{eff} [mm] | n [min ⁻¹] | v_t [mm/min] | Q [mm ³ /min] |
|---------|---|---------------|------------|------------|------------|----------------|------------------------|----------------|--------------------------|
| 0.20 | 2 | 8 | 0.006 | 0.004 | 0.040 | 0.06 | 42440 | 535 | 0.1 |
| 0.30 | 2 | 11 | 0.010 | 0.005 | 0.060 | 0.08 | 43770 | 880 | 0.3 |
| 0.40 | 2 | 13 | 0.013 | 0.007 | 0.080 | 0.10 | 41380 | 1045 | 0.6 |
| 0.50 | 2 | 17 | 0.016 | 0.009 | 0.100 | 0.13 | 41625 | 1365 | 1.2 |
| 0.60 | 2 | 21 | 0.019 | 0.011 | 0.120 | 0.16 | 41780 | 1580 | 2.1 |
| 0.80 | 2 | 28 | 0.025 | 0.014 | 0.160 | 0.21 | 42440 | 2140 | 4.8 |
| 1.00 | 2 | 36 | 0.032 | 0.018 | 0.200 | 0.27 | 42440 | 2675 | 9.6 |
| 1.50 | 2 | 53 | 0.048 | 0.027 | 0.300 | 0.40 | 42175 | 4040 | 32.7 |
| 2.00 | 2 | 70 | 0.063 | 0.036 | 0.400 | 0.53 | 42040 | 5295 | 76.3 |

| | | | | | | | | | |
|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.20 | 2 | 8 | 0.006 | 0.004 | 0.040 | 0.06 | 42440 | 510 | 0.1 |
| 0.30 | 2 | 11 | 0.010 | 0.005 | 0.060 | 0.08 | 43770 | 840 | 0.3 |
| 0.40 | 2 | 13 | 0.012 | 0.007 | 0.080 | 0.10 | 41380 | 995 | 0.6 |
| 0.50 | 2 | 17 | 0.016 | 0.009 | 0.100 | 0.13 | 41625 | 1300 | 1.2 |
| 0.60 | 2 | 21 | 0.018 | 0.011 | 0.120 | 0.16 | 41780 | 1505 | 2.0 |
| 0.80 | 2 | 28 | 0.024 | 0.014 | 0.160 | 0.21 | 42440 | 2035 | 4.6 |
| 1.00 | 2 | 36 | 0.030 | 0.018 | 0.200 | 0.27 | 42440 | 2545 | 9.2 |
| 1.50 | 2 | 53 | 0.046 | 0.027 | 0.300 | 0.40 | 42175 | 3845 | 31.2 |
| 2.00 | 2 | 70 | 0.060 | 0.036 | 0.400 | 0.53 | 42040 | 5045 | 72.6 |

| | | | | | | | | | |
|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.20 | 2 | 8 | 0.005 | 0.004 | 0.040 | 0.06 | 42440 | 425 | 0.1 |
| 0.30 | 2 | 11 | 0.008 | 0.005 | 0.060 | 0.08 | 43770 | 700 | 0.2 |
| 0.40 | 2 | 13 | 0.010 | 0.007 | 0.080 | 0.10 | 41380 | 830 | 0.5 |
| 0.50 | 2 | 17 | 0.013 | 0.009 | 0.100 | 0.13 | 41625 | 1080 | 1.0 |
| 0.60 | 2 | 21 | 0.015 | 0.011 | 0.120 | 0.16 | 41780 | 1255 | 1.7 |
| 0.80 | 2 | 28 | 0.020 | 0.014 | 0.160 | 0.21 | 42440 | 1700 | 3.8 |
| 1.00 | 2 | 36 | 0.025 | 0.018 | 0.200 | 0.27 | 42440 | 2120 | 7.6 |
| 1.50 | 2 | 53 | 0.038 | 0.027 | 0.300 | 0.40 | 42175 | 3205 | 26.0 |
| 2.00 | 2 | 70 | 0.050 | 0.036 | 0.400 | 0.53 | 42040 | 4205 | 60.5 |

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|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.20 | 2 | 8 | 0.004 | 0.004 | 0.040 | 0.06 | 42440 | 380 | 0.1 |
| 0.30 | 2 | 11 | 0.007 | 0.005 | 0.060 | 0.08 | 43770 | 630 | 0.2 |
| 0.40 | 2 | 13 | 0.009 | 0.007 | 0.080 | 0.10 | 41380 | 745 | 0.4 |
| 0.50 | 2 | 17 | 0.012 | 0.009 | 0.100 | 0.13 | 41625 | 975 | 0.9 |
| 0.60 | 2 | 21 | 0.014 | 0.011 | 0.120 | 0.16 | 41780 | 1130 | 1.5 |
| 0.80 | 2 | 28 | 0.018 | 0.014 | 0.160 | 0.21 | 42440 | 1530 | 3.4 |
| 1.00 | 2 | 36 | 0.023 | 0.018 | 0.200 | 0.27 | 42440 | 1910 | 6.9 |
| 1.50 | 2 | 53 | 0.034 | 0.027 | 0.300 | 0.40 | 42175 | 2885 | 23.4 |
| 2.00 | 2 | 60 | 0.045 | 0.036 | 0.400 | 0.53 | 36035 | 3245 | 46.7 |

Application



Material

Hardened tool steel
42 - 48 HRC

Hardened tool steel
48 - 52 HRC

Hardened tool steel
52 - 56 HRC

Hardened tool steel
56 - 60 HRC

| d1 [mm] | z | v_c [m/min] | f_z [mm] | a_p [mm] | a_e [mm] | d_{eff} [mm] | n [min ⁻¹] | v_t [mm/min] | β [°] |
|---------|---|---------------|------------|------------|------------|----------------|------------------------|----------------|-------------|
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 36 | 0.010 | 0.010 | 0.010 | 0.27 | 42440 | 850 | 45° |
| 0.40 | 2 | 49 | 0.012 | 0.014 | 0.014 | 0.37 | 42155 | 1010 | 45° |
| 0.50 | 2 | 61 | 0.016 | 0.018 | 0.018 | 0.46 | 42210 | 1350 | 45° |
| 0.60 | 2 | 73 | 0.018 | 0.022 | 0.022 | 0.55 | 42250 | 1520 | 45° |
| 0.80 | 2 | 96 | 0.020 | 0.028 | 0.028 | 0.73 | 41860 | 1675 | 45° |
| 1.00 | 2 | 121 | 0.026 | 0.036 | 0.036 | 0.92 | 41865 | 2175 | 45° |
| 1.50 | 2 | 182 | 0.030 | 0.052 | 0.052 | 1.38 | 41980 | 2520 | 45° |
| 2.00 | 2 | 243 | 0.034 | 0.070 | 0.070 | 1.84 | 42040 | 2860 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 36 | 0.010 | 0.010 | 0.010 | 0.27 | 42440 | 850 | 45° |
| 0.40 | 2 | 49 | 0.012 | 0.014 | 0.014 | 0.37 | 42155 | 1010 | 45° |
| 0.50 | 2 | 61 | 0.016 | 0.018 | 0.018 | 0.46 | 42210 | 1350 | 45° |
| 0.60 | 2 | 73 | 0.018 | 0.022 | 0.022 | 0.55 | 42250 | 1520 | 45° |
| 0.80 | 2 | 96 | 0.020 | 0.028 | 0.028 | 0.73 | 41860 | 1675 | 45° |
| 1.00 | 2 | 121 | 0.024 | 0.036 | 0.036 | 0.92 | 41865 | 2010 | 45° |
| 1.50 | 2 | 182 | 0.028 | 0.052 | 0.052 | 1.38 | 41980 | 2350 | 45° |
| 2.00 | 2 | 243 | 0.032 | 0.070 | 0.070 | 1.84 | 42040 | 2690 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 36 | 0.010 | 0.010 | 0.010 | 0.27 | 42440 | 850 | 45° |
| 0.40 | 2 | 49 | 0.010 | 0.014 | 0.014 | 0.37 | 42155 | 845 | 45° |
| 0.50 | 2 | 61 | 0.014 | 0.018 | 0.018 | 0.46 | 42210 | 1180 | 45° |
| 0.60 | 2 | 73 | 0.016 | 0.022 | 0.022 | 0.55 | 42250 | 1350 | 45° |
| 0.80 | 2 | 96 | 0.018 | 0.028 | 0.028 | 0.73 | 41860 | 1505 | 45° |
| 1.00 | 2 | 121 | 0.024 | 0.036 | 0.036 | 0.92 | 41865 | 2010 | 45° |
| 1.50 | 2 | 182 | 0.028 | 0.052 | 0.052 | 1.38 | 41980 | 2350 | 45° |
| 2.00 | 2 | 200 | 0.030 | 0.070 | 0.070 | 1.84 | 34600 | 2075 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.20 | 2 | 25 | 0.006 | 0.008 | 0.008 | 0.19 | 41885 | 505 | 45° |
| 0.30 | 2 | 36 | 0.008 | 0.010 | 0.010 | 0.27 | 42440 | 680 | 45° |
| 0.40 | 2 | 49 | 0.010 | 0.014 | 0.014 | 0.37 | 42155 | 845 | 45° |
| 0.50 | 2 | 61 | 0.012 | 0.018 | 0.018 | 0.46 | 42210 | 1015 | 45° |
| 0.60 | 2 | 73 | 0.014 | 0.022 | 0.022 | 0.55 | 42250 | 1185 | 45° |
| 0.80 | 2 | 96 | 0.016 | 0.028 | 0.028 | 0.73 | 41860 | 1340 | 45° |
| 1.00 | 2 | 121 | 0.020 | 0.036 | 0.036 | 0.92 | 41865 | 1675 | 45° |
| 1.50 | 2 | 150 | 0.024 | 0.052 | 0.052 | 1.38 | 34600 | 1660 | 45° |
| 2.00 | 2 | 150 | 0.028 | 0.070 | 0.070 | 1.84 | 25950 | 1455 | 45° |