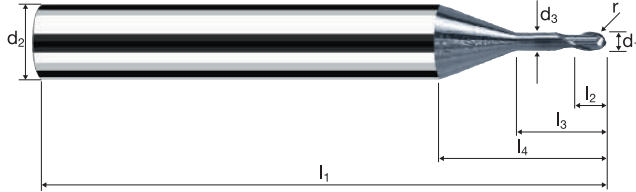
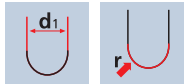


Ball nose end mills MicroX

Shank \varnothing 6mm, cylindrical neck, 4.5xd



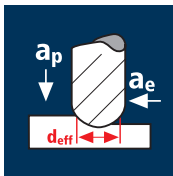
| | |
|-----------|---------------|
| HM | λ 30° |
| XA | γ -10° |



| | | | | | | | | | |
|--------------------|-----------------------|------------------------|------------------------|---------------------|---------------------|--------------------|--------------------------|-----------------------|---------------------------------------|
| 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 |
|--------------------|-----------------------|------------------------|------------------------|---------------------|---------------------|--------------------|--------------------------|-----------------------|---------------------------------------|

| Example: Order-N°. | | | | | | | | | | | X-AL |
|-----------------------|----------------|----------------------|----------------|----------------|----------------|----------------|----------------|-------------|----------|---|-------|
| | | | | | | | | | | | X6583 |
| | | | | | | | | | | | X6583 |
| \varnothing Code | d ₁ | d ₂ h4 | d ₃ | l ₁ | l ₂ | l ₃ | l ₄ | r ±0.005 | α | z | |
| 010 | 0.10 | 6.00 | 0.09 | 57 | 0.10 | 0.45 | 17.65 | 0.050 | 14.5° | 2 | ● |
| 020 | 0.20 | 6.00 | 0.18 | 57 | 0.20 | 0.90 | 17.84 | 0.100 | 14.0° | 2 | ● |
| 030 | 0.30 | 6.00 | 0.25 | 57 | 0.30 | 1.35 | 18.09 | 0.150 | 13.5° | 2 | ● |
| 040 | 0.40 | 6.00 | 0.35 | 57 | 0.40 | 1.80 | 18.26 | 0.200 | 13.0° | 2 | ● |
| 050 | 0.50 | 6.00 | 0.45 | 57 | 0.50 | 2.25 | 13.26 | 0.250 | 12.6° | 2 | ● |
| 060 | 0.60 | 6.00 | 0.55 | 57 | 0.60 | 2.70 | 13.53 | 0.300 | 12.1° | 2 | ● |
| 080 | 0.80 | 6.00 | 0.75 | 57 | 0.80 | 3.60 | 14.05 | 0.400 | 11.8° | 2 | ● |
| 100 | 1.00 | 6.00 | 0.95 | 57 | 1.00 | 4.50 | 14.58 | 0.500 | 10.6° | 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

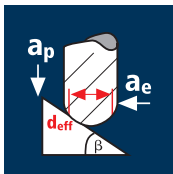
| d1 [mm] | z | v _c [m/min] | f _t [mm] | a _s [mm] | a _e [mm] | d _{eff} [mm] | n [min ⁻¹] | v _t [mm/min] | Q [mm ³ /min] |
|---------|---|------------------------|---------------------|---------------------|---------------------|-----------------------|------------------------|-------------------------|--------------------------|
| 0.10 | 2 | 5 | 0.004 | 0.004 | 0.020 | 0.04 | 39790 | 300 | 0.0 |
| 0.20 | 2 | 9 | 0.006 | 0.007 | 0.040 | 0.07 | 40925 | 515 | 0.1 |
| 0.30 | 2 | 15 | 0.010 | 0.011 | 0.060 | 0.11 | 43405 | 875 | 0.6 |
| 0.40 | 2 | 20 | 0.013 | 0.014 | 0.080 | 0.15 | 42440 | 1070 | 1.2 |
| 0.50 | 2 | 25 | 0.016 | 0.018 | 0.100 | 0.19 | 41885 | 1370 | 2.5 |
| 0.60 | 2 | 29 | 0.019 | 0.021 | 0.120 | 0.22 | 41960 | 1585 | 4.0 |
| 0.80 | 2 | 40 | 0.025 | 0.029 | 0.160 | 0.30 | 42440 | 2140 | 9.9 |
| 1.00 | 2 | 49 | 0.032 | 0.036 | 0.200 | 0.37 | 42155 | 2655 | 19.1 |

| | | | | | | | | | |
|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.10 | 2 | 5 | 0.004 | 0.004 | 0.020 | 0.04 | 39790 | 285 | 0.0 |
| 0.20 | 2 | 9 | 0.006 | 0.007 | 0.040 | 0.07 | 40925 | 490 | 0.1 |
| 0.30 | 2 | 15 | 0.010 | 0.011 | 0.060 | 0.11 | 43405 | 835 | 0.6 |
| 0.40 | 2 | 20 | 0.012 | 0.014 | 0.080 | 0.15 | 42440 | 1020 | 1.1 |
| 0.50 | 2 | 25 | 0.016 | 0.018 | 0.100 | 0.19 | 41885 | 1305 | 2.4 |
| 0.60 | 2 | 29 | 0.018 | 0.021 | 0.120 | 0.22 | 41960 | 1510 | 3.8 |
| 0.80 | 2 | 40 | 0.024 | 0.029 | 0.160 | 0.30 | 42440 | 2035 | 9.5 |
| 1.00 | 2 | 49 | 0.030 | 0.036 | 0.200 | 0.37 | 42155 | 2530 | 18.2 |

| | | | | | | | | | |
|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.10 | 2 | 5 | 0.003 | 0.004 | 0.020 | 0.04 | 39790 | 240 | 0.0 |
| 0.20 | 2 | 9 | 0.005 | 0.007 | 0.040 | 0.07 | 40925 | 410 | 0.1 |
| 0.30 | 2 | 15 | 0.008 | 0.011 | 0.060 | 0.11 | 43405 | 695 | 0.5 |
| 0.40 | 2 | 20 | 0.010 | 0.014 | 0.080 | 0.15 | 42440 | 850 | 1.0 |
| 0.50 | 2 | 25 | 0.013 | 0.018 | 0.100 | 0.19 | 41885 | 1090 | 2.0 |
| 0.60 | 2 | 29 | 0.015 | 0.021 | 0.120 | 0.22 | 41960 | 1260 | 3.2 |
| 0.80 | 2 | 40 | 0.020 | 0.029 | 0.160 | 0.30 | 42440 | 1700 | 7.9 |
| 1.00 | 2 | 49 | 0.025 | 0.036 | 0.200 | 0.37 | 42155 | 2110 | 15.2 |

| | | | | | | | | | |
|------|---|----|-------|-------|-------|------|-------|------|------|
| 0.10 | 2 | 5 | 0.003 | 0.004 | 0.020 | 0.04 | 39790 | 215 | 0.0 |
| 0.20 | 2 | 9 | 0.004 | 0.007 | 0.040 | 0.07 | 40925 | 370 | 0.1 |
| 0.30 | 2 | 15 | 0.007 | 0.011 | 0.060 | 0.11 | 43405 | 625 | 0.4 |
| 0.40 | 2 | 20 | 0.009 | 0.014 | 0.080 | 0.15 | 42440 | 765 | 0.9 |
| 0.50 | 2 | 25 | 0.012 | 0.018 | 0.100 | 0.19 | 41885 | 980 | 1.8 |
| 0.60 | 2 | 29 | 0.014 | 0.021 | 0.120 | 0.22 | 41960 | 1135 | 2.9 |
| 0.80 | 2 | 40 | 0.018 | 0.029 | 0.160 | 0.30 | 42440 | 1530 | 7.1 |
| 1.00 | 2 | 49 | 0.023 | 0.036 | 0.200 | 0.37 | 42155 | 1895 | 13.7 |

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 _t [mm] | a _s [mm] | a _e [mm] | d _{eff} [mm] | n [min ⁻¹] | v _t [mm/min] | β [°] |
|---------|---|------------------------|---------------------|---------------------|---------------------|-----------------------|------------------------|-------------------------|-------|
| 0.10 | 2 | 12 | 0.006 | 0.004 | 0.004 | 0.09 | 42440 | 510 | 45° |
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 37 | 0.010 | 0.012 | 0.012 | 0.28 | 42060 | 840 | 45° |
| 0.40 | 2 | 49 | 0.014 | 0.016 | 0.016 | 0.37 | 42155 | 1180 | 45° |
| 0.50 | 2 | 61 | 0.020 | 0.020 | 0.020 | 0.46 | 42210 | 1690 | 45° |
| 0.60 | 2 | 74 | 0.020 | 0.024 | 0.024 | 0.56 | 42060 | 1680 | 45° |
| 0.80 | 2 | 98 | 0.022 | 0.032 | 0.032 | 0.74 | 42155 | 1855 | 45° |
| 1.00 | 2 | 123 | 0.028 | 0.042 | 0.042 | 0.93 | 42100 | 2360 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.10 | 2 | 12 | 0.006 | 0.004 | 0.004 | 0.09 | 42440 | 510 | 45° |
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 37 | 0.010 | 0.012 | 0.012 | 0.28 | 42060 | 840 | 45° |
| 0.40 | 2 | 49 | 0.014 | 0.016 | 0.016 | 0.37 | 42155 | 1180 | 45° |
| 0.50 | 2 | 61 | 0.020 | 0.020 | 0.020 | 0.46 | 42210 | 1690 | 45° |
| 0.60 | 2 | 74 | 0.020 | 0.024 | 0.024 | 0.56 | 42060 | 1680 | 45° |
| 0.80 | 2 | 98 | 0.020 | 0.032 | 0.032 | 0.74 | 42155 | 1685 | 45° |
| 1.00 | 2 | 123 | 0.026 | 0.042 | 0.042 | 0.93 | 42100 | 2190 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.10 | 2 | 12 | 0.006 | 0.004 | 0.004 | 0.09 | 42440 | 510 | 45° |
| 0.20 | 2 | 25 | 0.008 | 0.008 | 0.008 | 0.19 | 41885 | 670 | 45° |
| 0.30 | 2 | 37 | 0.010 | 0.012 | 0.012 | 0.28 | 42060 | 840 | 45° |
| 0.40 | 2 | 49 | 0.012 | 0.016 | 0.016 | 0.37 | 42155 | 1010 | 45° |
| 0.50 | 2 | 61 | 0.018 | 0.020 | 0.020 | 0.46 | 42210 | 1520 | 45° |
| 0.60 | 2 | 74 | 0.018 | 0.024 | 0.024 | 0.56 | 42060 | 1515 | 45° |
| 0.80 | 2 | 98 | 0.020 | 0.032 | 0.032 | 0.74 | 42155 | 1685 | 45° |
| 1.00 | 2 | 123 | 0.026 | 0.042 | 0.042 | 0.93 | 42100 | 2190 | 45° |

| | | | | | | | | | |
|------|---|-----|-------|-------|-------|------|-------|------|-----|
| 0.10 | 2 | 12 | 0.004 | 0.004 | 0.004 | 0.09 | 42440 | 340 | 45° |
| 0.20 | 2 | 25 | 0.006 | 0.008 | 0.008 | 0.19 | 41885 | 505 | 45° |
| 0.30 | 2 | 37 | 0.008 | 0.012 | 0.012 | 0.28 | 42060 | 675 | 45° |
| 0.40 | 2 | 49 | 0.012 | 0.016 | 0.016 | 0.37 | 42155 | 1010 | 45° |
| 0.50 | 2 | 61 | 0.016 | 0.020 | 0.020 | 0.46 | 42210 | 1350 | 45° |
| 0.60 | 2 | 74 | 0.016 | 0.024 | 0.024 | 0.56 | 42060 | 1345 | 45° |
| 0.80 | 2 | 98 | 0.018 | 0.032 | 0.032 | 0.74 | 42155 | 1520 | 45° |
| 1.00 | 2 | 123 | 0.022 | 0.042 | 0.042 | 0.93 | 42100 | 1850 | 45° |