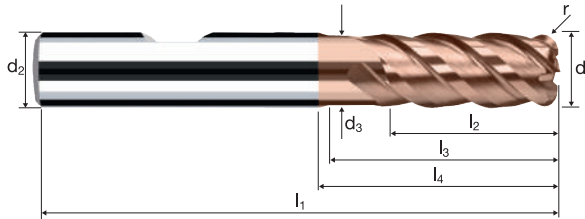
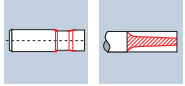


Corner radius end mills HX

Smooth-edged, normal version, short neck
High-performance penetration edge



HM
XA λ 45°
 γ -10°

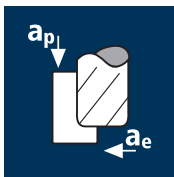


Roughing HPC Roughing HDC Finishing

| | | | | | | | | | |
|--|--|--|--|--------------|--------------|-------------|--|--|-----|
| | | | | HRC 48-56 | HRC 56-60 | HRC > 60 | | | HSS |
|--|--|--|--|--------------|--------------|-------------|--|--|-----|

| Ø Code | d ₁ 0/-0.01 | d ₂ h4 | d ₃ | l ₁ | l ₂ | l ₃ | l ₄ | r 0/+0.015 | α | z | DURO-Si | |
|-----------|---------------------------|----------------------|----------------|----------------|----------------|----------------|----------------|---------------|------|---|---------|-------|
| | | | | | | | | | | | H8607 | H8507 |
| 178 | 3.00 | 6.00 | 2.80 | 57 | 8.00 | 14.00 | 20.37 | 0.200 | 4.5° | 4 | ● | |
| 218 | 4.00 | 6.00 | 3.70 | 57 | 11.00 | 16.00 | 20.82 | 0.200 | 3.0° | 4 | ● | |
| 258 | 5.00 | 6.00 | 4.60 | 57 | 13.00 | 18.00 | 21.27 | 0.200 | 1.5° | 4 | ● | |
| 297 | 6.00 | 6.00 | 5.50 | 57 | 13.00 | 18.15 | 20.00 | 0.200 | 0.0° | 4 | ● | |
| 385 | 8.00 | 8.00 | 7.40 | 63 | 19.00 | 23.63 | 26.00 | 0.200 | 0.0° | 4 | ● | |
| 445 | 10.00 | 10.00 | 9.20 | 72 | 22.00 | 27.99 | 31.00 | 0.200 | 0.0° | 4 | ● | |
| 496 | 12.00 | 12.00 | 11.00 | 83 | 26.00 | 33.29 | 37.00 | 0.200 | 0.0° | 4 | ● | |
| 605 | 16.00 | 16.00 | 15.00 | 92 | 32.00 | 38.73 | 43.00 | 0.200 | 0.0° | 4 | ● | |
| 180 | 3.00 | 6.00 | 2.80 | 57 | 8.00 | 14.00 | 20.37 | 0.500 | 4.5° | 4 | ● | |
| 220 | 4.00 | 6.00 | 3.70 | 57 | 11.00 | 16.00 | 20.82 | 0.500 | 3.0° | 4 | ● | |
| 260 | 5.00 | 6.00 | 4.60 | 57 | 13.00 | 18.00 | 21.27 | 0.500 | 1.5° | 4 | ● | |
| 300 | 6.00 | 6.00 | 5.50 | 57 | 13.00 | 18.15 | 20.00 | 0.500 | 0.0° | 4 | ● | |
| 388 | 8.00 | 8.00 | 7.40 | 63 | 19.00 | 23.63 | 26.00 | 0.500 | 0.0° | 4 | ● | |
| 448 | 10.00 | 10.00 | 9.20 | 72 | 22.00 | 27.99 | 31.00 | 0.500 | 0.0° | 4 | ● | |
| 498 | 12.00 | 12.00 | 11.00 | 83 | 26.00 | 33.29 | 37.00 | 0.500 | 0.0° | 4 | ● | |
| 606 | 16.00 | 16.00 | 15.00 | 92 | 32.00 | 38.73 | 43.00 | 0.500 | 0.0° | 4 | ● | |

Application

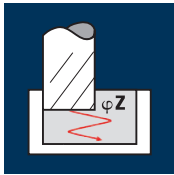


Material

Hardened tool steel
52 - 56 HRC

H

| d1 [mm] | z | v _c [m/min] | f _s [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _r [mm/min] | Q [cm ³ /min] | q _Z [°] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|--------------------|
| 3.00 | 4 | 60 | 0.012 | 4.500 | 1.800 | 6365 | 305 | 2.5 | 5° |
| 4.00 | 4 | 60 | 0.017 | 6.000 | 2.400 | 4775 | 325 | 4.7 | 5° |
| 5.00 | 4 | 60 | 0.022 | 7.500 | 3.000 | 3820 | 335 | 7.5 | 5° |
| 6.00 | 4 | 60 | 0.027 | 9.000 | 3.600 | 3185 | 345 | 11.2 | 5° |
| 8.00 | 4 | 60 | 0.035 | 12.000 | 4.800 | 2385 | 335 | 19.3 | 5° |
| 10.00 | 4 | 60 | 0.045 | 15.000 | 6.000 | 1910 | 345 | 31.1 | 5° |
| 12.00 | 4 | 60 | 0.055 | 18.000 | 7.200 | 1590 | 350 | 45.4 | 5° |
| 16.00 | 4 | 60 | 0.065 | 24.000 | 9.600 | 1195 | 310 | 71.4 | 5° |



Hardened tool steel
> 60 HRC

H

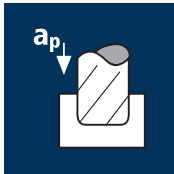
| | | | | | | | | | |
|-------|---|----|-------|--------|-------|------|----|------|----|
| 3.00 | 4 | 25 | 0.006 | 3.750 | 1.800 | 2655 | 65 | 0.4 | 3° |
| 4.00 | 4 | 25 | 0.008 | 5.000 | 2.400 | 1990 | 65 | 0.8 | 4° |
| 5.00 | 4 | 25 | 0.010 | 6.250 | 3.000 | 1590 | 65 | 1.2 | 5° |
| 6.00 | 4 | 25 | 0.012 | 7.500 | 3.600 | 1325 | 65 | 1.8 | 5° |
| 8.00 | 4 | 25 | 0.015 | 10.000 | 4.800 | 995 | 60 | 2.9 | 5° |
| 10.00 | 4 | 25 | 0.020 | 12.500 | 6.000 | 795 | 65 | 4.9 | 5° |
| 12.00 | 4 | 25 | 0.025 | 15.000 | 7.200 | 665 | 65 | 7.0 | 5° |
| 16.00 | 4 | 25 | 0.030 | 20.000 | 9.600 | 495 | 60 | 11.5 | 5° |

High speed steel,
hardened
64 - 70 HRC

H

| | | | | | | | | | |
|-------|---|----|-------|--------|-------|------|----|-----|----|
| 3.00 | 4 | 15 | 0.005 | 3.000 | 0.750 | 1590 | 30 | 0.1 | 3° |
| 4.00 | 4 | 15 | 0.009 | 4.000 | 1.000 | 1195 | 45 | 0.2 | 4° |
| 5.00 | 4 | 15 | 0.012 | 5.000 | 1.250 | 955 | 45 | 0.3 | 5° |
| 6.00 | 4 | 15 | 0.009 | 6.000 | 3.600 | 795 | 30 | 0.6 | 5° |
| 8.00 | 4 | 15 | 0.012 | 8.000 | 4.800 | 595 | 30 | 1.2 | 5° |
| 10.00 | 4 | 15 | 0.015 | 10.000 | 6.000 | 475 | 30 | 1.8 | 5° |
| 12.00 | 4 | 15 | 0.018 | 12.000 | 7.200 | 400 | 30 | 2.6 | 5° |
| 16.00 | 4 | 15 | 0.023 | 16.000 | 9.600 | 300 | 30 | 4.6 | 5° |

Application

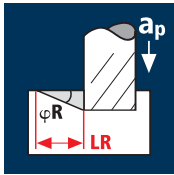


Material

Hardened tool steel
52 - 56 HRC

H

| d1 [mm] | z | v _c [m/min] | f _s [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _r [mm/min] | Q [cm ³ /min] | q _R [°] | LR [mm] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|--------------------|---------|
| 3.00 | 4 | 50 | 0.013 | 3.000 | 3.000 | 5305 | 275 | 2.5 | 5° | 34.3 |
| 4.00 | 4 | 50 | 0.017 | 4.000 | 4.000 | 3980 | 270 | 4.3 | 5° | 45.7 |
| 5.00 | 4 | 50 | 0.022 | 5.000 | 5.000 | 3185 | 280 | 7.0 | 5° | 57.2 |
| 6.00 | 4 | 50 | 0.027 | 6.000 | 6.000 | 2655 | 285 | 10.3 | 5° | 68.6 |
| 8.00 | 4 | 50 | 0.035 | 8.000 | 8.000 | 1990 | 280 | 17.9 | 5° | 91.4 |
| 10.00 | 4 | 50 | 0.045 | 10.000 | 10.000 | 1590 | 285 | 28.5 | 5° | 114.3 |
| 12.00 | 4 | 50 | 0.055 | 12.000 | 12.000 | 1325 | 290 | 41.8 | 5° | 137.2 |
| 16.00 | 4 | 50 | 0.080 | 8.000 | 16.000 | 995 | 320 | 41.0 | 5° | 91.4 |



Hardened tool steel
> 60 HRC

H

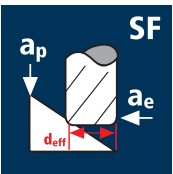
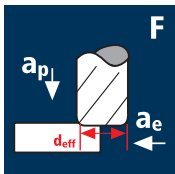
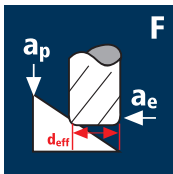
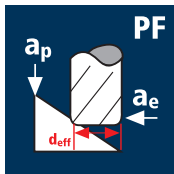
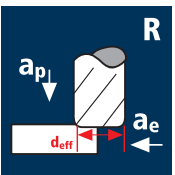
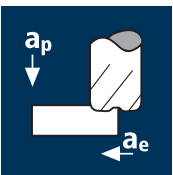
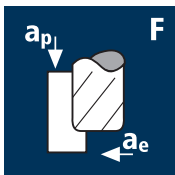
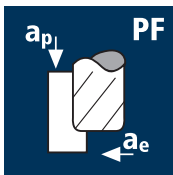
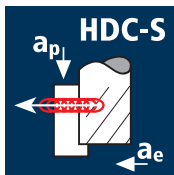
| | | | | | | | | | | |
|-------|---|----|-------|--------|--------|------|----|------|----|-------|
| 3.00 | 4 | 20 | 0.007 | 3.000 | 3.000 | 2120 | 60 | 0.5 | 3° | 57.2 |
| 4.00 | 4 | 20 | 0.010 | 4.000 | 4.000 | 1590 | 65 | 1.0 | 4° | 57.2 |
| 5.00 | 4 | 20 | 0.013 | 5.000 | 5.000 | 1275 | 65 | 1.6 | 5° | 57.2 |
| 6.00 | 4 | 20 | 0.016 | 6.000 | 6.000 | 1060 | 70 | 2.5 | 5° | 68.6 |
| 8.00 | 4 | 20 | 0.021 | 8.000 | 8.000 | 795 | 65 | 4.2 | 5° | 91.4 |
| 10.00 | 4 | 20 | 0.026 | 10.000 | 10.000 | 635 | 65 | 6.5 | 5° | 114.3 |
| 12.00 | 4 | 20 | 0.032 | 12.000 | 12.000 | 530 | 70 | 10.1 | 5° | 137.2 |
| 16.00 | 4 | 20 | 0.050 | 8.000 | 16.000 | 400 | 80 | 10.2 | 5° | 91.4 |

High speed steel,
hardened
64 - 70 HRC

H

| | | | | | | | | | | |
|-------|---|----|-------|-------|--------|------|----|-----|----|-------|
| 3.00 | 4 | 10 | 0.004 | 1.500 | 3.000 | 1060 | 15 | 0.1 | 3° | 28.6 |
| 4.00 | 4 | 10 | 0.006 | 2.000 | 4.000 | 795 | 20 | 0.2 | 4° | 28.6 |
| 5.00 | 4 | 10 | 0.008 | 3.750 | 5.000 | 635 | 20 | 0.4 | 5° | 42.9 |
| 6.00 | 4 | 10 | 0.009 | 4.500 | 6.000 | 530 | 20 | 0.5 | 5° | 51.4 |
| 8.00 | 4 | 10 | 0.012 | 6.000 | 8.000 | 400 | 20 | 1.0 | 5° | 68.6 |
| 10.00 | 4 | 10 | 0.015 | 7.500 | 10.000 | 320 | 20 | 1.5 | 5° | 85.7 |
| 12.00 | 4 | 10 | 0.020 | 9.000 | 12.000 | 265 | 20 | 2.2 | 5° | 102.9 |
| 16.00 | 4 | 10 | 0.030 | 8.000 | 16.000 | 200 | 25 | 3.2 | 5° | 91.4 |

Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert 2.0**

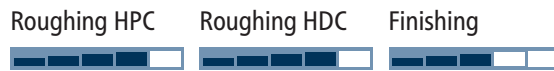
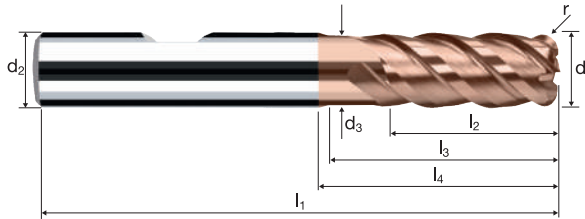
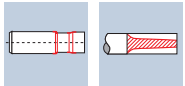


Corner radius end mills HX

Smooth-edged, normal version, short neck
High-performance penetration edge



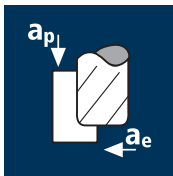
HM
XA λ 45°
 γ -10°



| | | | | | | | | | |
|--|--|--|--|--------------|--------------|-------------|--|--|-----|
| | | | | HRC 48-56 | HRC 56-60 | HRC > 60 | | | HSS |
|--|--|--|--|--------------|--------------|-------------|--|--|-----|

| Ø Code | d ₁ 0/-0.01 | d ₂ h4 | d ₃ | l ₁ | l ₂ | l ₃ | l ₄ | r 0/+0.015 | α | z | DURO-Si | |
|-----------|---------------------------|----------------------|----------------|----------------|----------------|----------------|----------------|---------------|------|---|---------|-------|
| | | | | | | | | | | | H8607 | H8507 |
| 302 | 6.00 | 6.00 | 5.50 | 57 | 13.00 | 18.15 | 20.00 | 1.000 | 0.0° | 4 | ● | |
| 391 | 8.00 | 8.00 | 7.40 | 63 | 19.00 | 23.63 | 26.00 | 1.000 | 0.0° | 4 | ● | |
| 450 | 10.00 | 10.00 | 9.20 | 72 | 22.00 | 27.99 | 31.00 | 1.000 | 0.0° | 4 | ● | |
| 501 | 12.00 | 12.00 | 11.00 | 83 | 26.00 | 33.29 | 37.00 | 1.000 | 0.0° | 4 | ● | |
| 608 | 16.00 | 16.00 | 15.00 | 92 | 32.00 | 38.73 | 43.00 | 1.000 | 0.0° | 4 | ● | |
| 304 | 6.00 | 6.00 | 5.50 | 57 | 13.00 | 18.15 | 20.00 | 1.500 | 0.0° | 4 | ● | |
| 395 | 8.00 | 8.00 | 7.40 | 63 | 19.00 | 23.63 | 26.00 | 2.000 | 0.0° | 4 | ● | |
| 457 | 10.00 | 10.00 | 9.20 | 72 | 22.00 | 27.99 | 31.00 | 2.500 | 0.0° | 4 | ● | |
| 507 | 12.00 | 12.00 | 11.00 | 83 | 26.00 | 33.29 | 37.00 | 3.000 | 0.0° | 4 | ● | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Application

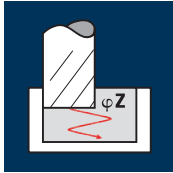


Material

Hardened tool steel
52 - 56 HRC



| d1 [mm] | z | v _c [m/min] | f _s [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | φZ [°] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|--------|
| 6.00 | 4 | 60 | 0.027 | 9.000 | 3.600 | 3185 | 345 | 11.2 | 5° |
| 8.00 | 4 | 60 | 0.035 | 12.000 | 4.800 | 2385 | 335 | 19.3 | 5° |
| 10.00 | 4 | 60 | 0.045 | 15.000 | 6.000 | 1910 | 345 | 31.1 | 5° |
| 12.00 | 4 | 60 | 0.055 | 18.000 | 7.200 | 1590 | 350 | 45.4 | 5° |
| 16.00 | 4 | 60 | 0.065 | 24.000 | 9.600 | 1195 | 310 | 71.4 | 5° |



Hardened tool steel
> 60 HRC



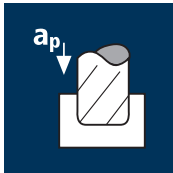
| | | | | | | | | | |
|-------|---|----|-------|--------|-------|------|----|------|----|
| 6.00 | 4 | 25 | 0.012 | 7.500 | 3.600 | 1325 | 65 | 1.8 | 5° |
| 8.00 | 4 | 25 | 0.015 | 10.000 | 4.800 | 995 | 60 | 2.9 | 5° |
| 10.00 | 4 | 25 | 0.020 | 12.500 | 6.000 | 795 | 65 | 4.9 | 5° |
| 12.00 | 4 | 25 | 0.025 | 15.000 | 7.200 | 665 | 65 | 7.0 | 5° |
| 16.00 | 4 | 25 | 0.030 | 20.000 | 9.600 | 495 | 60 | 11.5 | 5° |

High speed steel,
hardened
64 - 70 HRC



| | | | | | | | | | |
|-------|---|----|-------|--------|-------|-----|----|-----|----|
| 6.00 | 4 | 15 | 0.009 | 6.000 | 3.600 | 795 | 30 | 0.6 | 5° |
| 8.00 | 4 | 15 | 0.012 | 8.000 | 4.800 | 595 | 30 | 1.2 | 5° |
| 10.00 | 4 | 15 | 0.015 | 10.000 | 6.000 | 475 | 30 | 1.8 | 5° |
| 12.00 | 4 | 15 | 0.018 | 12.000 | 7.200 | 400 | 30 | 2.6 | 5° |
| 16.00 | 4 | 15 | 0.023 | 16.000 | 9.600 | 300 | 30 | 4.6 | 5° |

Application

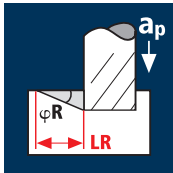


Material

Hardened tool steel
52 - 56 HRC



| d1 [mm] | z | v _c [m/min] | f _s [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] | Q [cm ³ /min] | φR [°] | LR [mm] |
|---------|---|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|--------------------------|--------|---------|
| 6.00 | 4 | 50 | 0.027 | 6.000 | 6.000 | 2655 | 285 | 10.3 | 5° | 68.6 |
| 8.00 | 4 | 50 | 0.035 | 8.000 | 8.000 | 1990 | 280 | 17.9 | 5° | 91.4 |
| 10.00 | 4 | 50 | 0.045 | 10.000 | 10.000 | 1590 | 285 | 28.5 | 5° | 114.3 |
| 12.00 | 4 | 50 | 0.055 | 12.000 | 12.000 | 1325 | 290 | 41.8 | 5° | 137.2 |
| 16.00 | 4 | 50 | 0.080 | 8.000 | 16.000 | 995 | 320 | 41.0 | 5° | 91.4 |



Hardened tool steel
> 60 HRC



| | | | | | | | | | | |
|-------|---|----|-------|--------|--------|------|----|------|----|-------|
| 6.00 | 4 | 20 | 0.016 | 6.000 | 6.000 | 1060 | 70 | 2.5 | 5° | 68.6 |
| 8.00 | 4 | 20 | 0.021 | 8.000 | 8.000 | 795 | 65 | 4.2 | 5° | 91.4 |
| 10.00 | 4 | 20 | 0.026 | 10.000 | 10.000 | 635 | 65 | 6.5 | 5° | 114.3 |
| 12.00 | 4 | 20 | 0.032 | 12.000 | 12.000 | 530 | 70 | 10.1 | 5° | 137.2 |
| 16.00 | 4 | 20 | 0.050 | 8.000 | 16.000 | 400 | 80 | 10.2 | 5° | 91.4 |

High speed steel,
hardened
64 - 70 HRC



| | | | | | | | | | | |
|-------|---|----|-------|-------|--------|-----|----|-----|----|-------|
| 6.00 | 4 | 10 | 0.009 | 4.500 | 6.000 | 530 | 20 | 0.5 | 5° | 51.4 |
| 8.00 | 4 | 10 | 0.012 | 6.000 | 8.000 | 400 | 20 | 1.0 | 5° | 68.6 |
| 10.00 | 4 | 10 | 0.015 | 7.500 | 10.000 | 320 | 20 | 1.5 | 5° | 85.7 |
| 12.00 | 4 | 10 | 0.020 | 9.000 | 12.000 | 265 | 20 | 2.2 | 5° | 102.9 |
| 16.00 | 4 | 10 | 0.030 | 8.000 | 16.000 | 200 | 25 | 3.2 | 5° | 91.4 |



Precise cutting data for other applications and materials can be found in the cutting data software **ToolExpert 2.0**

