

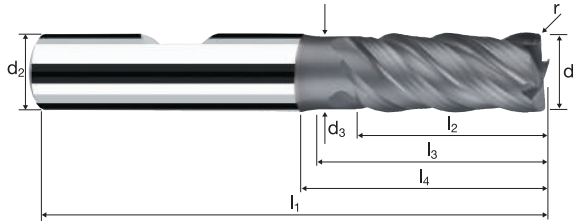
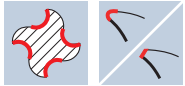
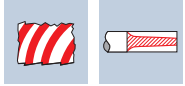
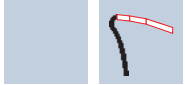
# Corner radius end mills ZX

Smooth-edged, normal version, short neck



HM  
MG10

$\lambda$  40°  
 $\gamma$  5°



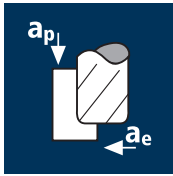
Roughing

Finishing



Ø Code	d <sub>1</sub> e8	d <sub>2</sub> h6	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r	α	z	TICUT		POLYCHROM		
											18820	18720	P8820	P8720	
Example: Order-N°: <b>P</b> Coating: <b>P</b> Article-N°: <b>8820</b> ø-Code: <b>299</b>															
299	6.00	6.00	5.50	57	13.00	18.15	20.00	0.400	0.0°	4	●	■	●		
387	8.00	8.00	7.40	63	19.00	23.63	26.00	0.400	0.0°	4	●	■	●		
447	10.00	10.00	9.20	72	22.00	27.99	31.00	0.400	0.0°	4	●	■	●		
497	12.00	12.00	11.00	83	26.00	33.29	37.00	0.400	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	●	■	●		
301	6.00	6.00	5.50	57	13.00	18.15	20.00	0.800	0.0°	4	●	■	●		
389	8.00	8.00	7.40	63	19.00	23.63	26.00	0.800	0.0°	4	●	■	●		
449	10.00	10.00	9.20	72	22.00	27.99	31.00	0.800	0.0°	4	●	■	●		
499	12.00	12.00	11.00	83	26.00	33.29	37.00	0.800	0.0°	4	●	■	●		
607	16.00	16.00	15.00	92	32.00	38.73	43.00	0.800	0.0°	4	●	■	●		
■ Availability and delivery dates on request															

## Application



## Material

Nickel-based alloys  
annealed  
Rm <1000 N/mm<sup>2</sup>  
[Inconel 718]



d1 [mm]	z	v <sub>c</sub> [m/min]	f <sub>s</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>r</sub> [mm/min]	Q [cm <sup>3</sup> /min]
3.00	4	35	0.010	5.400	1.350	3715	150	1.1
4.00	4	35	0.015	7.200	1.800	2785	165	2.2
5.00	4	35	0.020	9.000	2.250	2230	180	3.6
6.00	4	35	0.020	10.800	2.700	1855	150	4.3
8.00	4	35	0.030	14.400	3.600	1395	165	8.7
10.00	4	35	0.035	18.000	4.500	1115	155	12.6
12.00	4	35	0.045	21.600	5.400	930	165	19.5
16.00	4	35	0.050	28.800	7.200	695	140	28.9

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



3.00	4	25	0.010	5.400	1.350	2655	105	0.8
4.00	4	25	0.010	7.200	1.800	1990	80	1.0
5.00	4	25	0.015	9.000	2.250	1590	95	1.9
6.00	4	25	0.015	10.800	2.700	1325	80	2.3
8.00	4	25	0.025	14.400	3.600	995	100	5.2
10.00	4	25	0.030	18.000	4.500	795	95	7.7
12.00	4	25	0.035	21.600	5.400	665	95	10.8
16.00	4	25	0.040	28.800	7.200	495	80	16.5

Manganese steel  
Mn >5%  
[1.3964 / Nitronic]  
[1.3401 / X120Mn12]



3.00	4	40	0.010	5.400	1.350	4245	170	1.2
4.00	4	40	0.015	7.200	1.800	3185	190	2.5
5.00	4	40	0.020	9.000	2.250	2545	205	4.1
6.00	4	40	0.020	10.800	2.700	2120	170	5.0
8.00	4	40	0.030	14.400	3.600	1590	190	9.9
10.00	4	40	0.035	18.000	4.500	1275	180	14.4
12.00	4	40	0.045	21.600	5.400	1060	190	22.3
16.00	4	40	0.050	28.800	7.200	795	160	33.0

Inox difficult  
[Cr-Ni-Mo++/1.4529]  
Heat resistant steel  
[1.4841]



3.00	4	50	0.015	5.400	1.350	5305	320	2.3
4.00	4	50	0.020	7.200	1.800	3980	320	4.1
5.00	4	50	0.030	9.000	2.250	3185	380	7.7
6.00	4	50	0.035	10.800	2.700	2655	370	10.8
8.00	4	50	0.045	14.400	3.600	1990	360	18.6
10.00	4	50	0.055	18.000	4.500	1590	350	28.4
12.00	4	50	0.065	21.600	5.400	1325	345	40.2
16.00	4	50	0.070	28.800	7.200	995	280	57.8

PM high-speed steel  
annealed  
[Böhler S390]  
[ASP 2023]

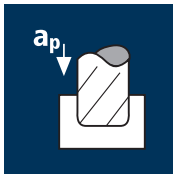


3.00	4	80	0.010	5.400	1.350	8490	340	2.5
4.00	4	80	0.015	7.200	1.800	6365	380	5.0
5.00	4	80	0.020	9.000	2.250	5095	405	8.3
6.00	4	80	0.020	10.800	2.700	4245	340	9.9
8.00	4	80	0.030	14.400	3.600	3185	380	19.8
10.00	4	80	0.035	18.000	4.500	2545	355	28.9
12.00	4	80	0.045	21.600	5.400	2120	380	44.6
16.00	4	80	0.050	28.800	7.200	1590	320	66.0

Titanium alloys  
> 300 HB  
[Ti6Al4V]



3.00	4	70	0.010	5.400	1.350	7425	295	2.2
4.00	4	70	0.015	7.200	1.800	5570	335	4.3
5.00	4	70	0.015	9.000	2.250	4455	265	5.4
6.00	4	70	0.020	10.800	2.700	3715	295	8.7
8.00	4	70	0.025	14.400	3.600	2785	280	14.4
10.00	4	70	0.035	18.000	4.500	2230	310	25.3
12.00	4	70	0.040	21.600	5.400	1855	295	34.7
16.00	4	70	0.045	28.800	7.200	1395	250	52.0



Nickel-based alloys  
annealed  
Rm <1000 N/mm<sup>2</sup>  
[Inconel 718]



3.00	4	25	0.010	3.750	3.000	2655	105	1.2
4.00	4	25	0.010	5.000	4.000	1990	80	1.6
5.00	4	25	0.015	6.250	5.000	1590	95	3.0
6.00	4	25	0.015	7.500	6.000	1325	80	3.6
8.00	4	25	0.025	10.000	8.000	995	100	8.0
10.00	4	25	0.030	12.500	10.000	795	95	11.9
12.00	4	25	0.035	15.000	12.000	665	95	16.7
16.00	4	25	0.040	20.000	16.000	495	80	25.5

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



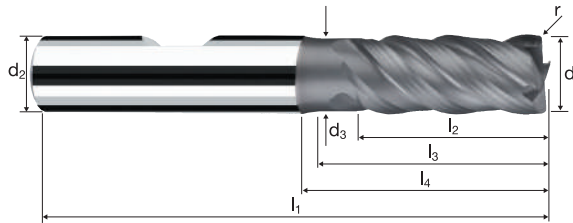
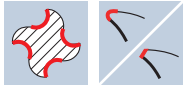
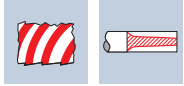
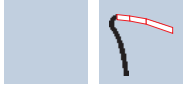
3.00	4	20	0.005	3.750	3.000	2120	40	0.5
4.00	4	20	0.010	5.000	4.000	1590	65	1.3
5.00	4	20	0.010	6.250	5.000	1275	50	1.6
6.00	4	20	0.015	7.500	6.000	1060	65	2.9
8.00	4	20	0.020	10.000	8.000	795	65	5.1
10.00	4	20	0.020	12.500	10.000	635	50	6.4
12.00	4	20	0.025	15.000	12.000	530	55	9.5
16.00	4	20	0.030	20.000	16.000	400	50	15.3

# Corner radius end mills ZX

Smooth-edged, normal version, short neck



HM  
MG10     λ 40°  
                  γ 5°



Roughing

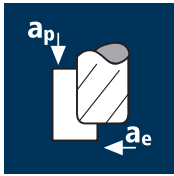


Finishing



Ø Code	d <sub>1</sub> e8	d <sub>2</sub> h6	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r	α	z	TICUT		POLYCHROM	
											18820	18720	P8820	P8720
<b>302</b>	6.00	6.00	5.50	57	13.00	18.15	20.00	1.000	0.0°	4	●	■	●	
<b>391</b>	8.00	8.00	7.40	63	19.00	23.63	26.00	1.000	0.0°	4	●	■	●	
<b>450</b>	10.00	10.00	9.20	72	22.00	27.99	31.00	1.000	0.0°	4	●	■	●	
<b>501</b>	12.00	12.00	11.00	83	26.00	33.29	37.00	1.000	0.0°	4	●	■	●	
<b>608</b>	16.00	16.00	15.00	92	32.00	38.73	43.00	1.000	0.0°	4	●	■	●	
<b>680</b>	20.00	20.00	19.00	104	38.00	48.23	53.00	1.000	0.0°	4	●	■	●	
<b>453</b>	10.00	10.00	9.20	72	22.00	27.99	31.00	1.500	0.0°	4	●	■	●	
<b>503</b>	12.00	12.00	11.00	83	26.00	33.29	37.00	1.500	0.0°	4	●	■	●	
<b>610</b>	16.00	16.00	15.00	92	32.00	38.73	43.00	1.500	0.0°	4	●	■	●	
<b>505</b>	12.00	12.00	11.00	83	26.00	33.29	37.00	2.000	0.0°	4	●	■	●	
<b>611</b>	16.00	16.00	15.00	92	32.00	38.73	43.00	2.000	0.0°	4	●	■	●	
<b>683</b>	20.00	20.00	19.00	104	38.00	48.23	53.00	2.000	0.0°	4	●	■	●	
■ Availability and delivery dates on request														

## Application



## Material

Nickel-based alloys  
annealed  
Rm < 1000 N/mm<sup>2</sup>  
[Inconel 718]



d1 [mm]	z	v <sub>r</sub> [m/min]	f <sub>s</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>r</sub> [mm/min]	Q [cm <sup>3</sup> /min]
6.00	4	35	0.020	10.800	2.400	1855	150	3.9
8.00	4	35	0.025	14.400	3.200	1395	140	6.4
10.00	4	35	0.030	18.000	4.000	1115	135	9.6
12.00	4	35	0.040	21.600	4.800	930	150	15.4
16.00	4	35	0.045	28.800	6.400	695	125	23.1
20.00	4	35	0.055	36.000	8.000	555	125	35.3

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



6.00	4	25	0.015	10.800	2.400	1325	80	2.1
8.00	4	25	0.020	14.400	3.200	995	80	3.7
10.00	4	25	0.025	18.000	4.000	795	80	5.7
12.00	4	25	0.030	21.600	4.800	665	80	8.3
16.00	4	25	0.035	28.800	6.400	495	70	12.8
20.00	4	25	0.045	36.000	8.000	400	70	20.6

Manganese steel  
Mn > 5%  
[1.3964 / Nitronic]  
[1.3401 / X120Mn12]



6.00	4	40	0.020	10.800	2.400	2120	170	4.4
8.00	4	40	0.025	14.400	3.200	1590	160	7.3
10.00	4	40	0.030	18.000	4.000	1275	155	11.0
12.00	4	40	0.040	21.600	4.800	1060	170	17.6
16.00	4	40	0.045	28.800	6.400	795	145	26.4
20.00	4	40	0.055	36.000	8.000	635	140	40.3

Inox difficult  
[Cr-Ni-Mo+/1.4529]  
Heat resistant steel  
[1.4841]



6.00	4	50	0.030	10.800	2.400	2655	320	8.3
8.00	4	50	0.040	14.400	3.200	1990	320	14.7
10.00	4	50	0.050	18.000	4.000	1590	320	22.9
12.00	4	50	0.060	21.600	4.800	1325	320	33.0
16.00	4	50	0.065	28.800	6.400	995	260	47.7
20.00	4	50	0.080	36.000	8.000	795	255	73.3

PM high-speed steel  
annealed  
[Böhler S390]  
[ASP 2023]

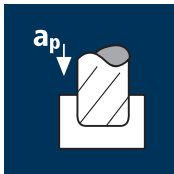


6.00	4	80	0.020	10.800	2.400	4245	340	8.8
8.00	4	80	0.025	14.400	3.200	3185	320	14.7
10.00	4	80	0.030	18.000	4.000	2545	305	22.0
12.00	4	80	0.040	21.600	4.800	2120	340	35.2
16.00	4	80	0.045	28.800	6.400	1590	285	52.8
20.00	4	80	0.055	36.000	8.000	1275	280	80.7

Titanium alloys  
> 300 HB  
[Ti6Al4V]



6.00	4	70	0.020	10.800	2.400	3715	295	7.7
8.00	4	70	0.025	14.400	3.200	2785	280	12.8
10.00	4	70	0.030	18.000	4.000	2230	265	19.3
12.00	4	70	0.035	21.600	4.800	1855	260	27.0
16.00	4	70	0.040	28.800	6.400	1395	225	41.1
20.00	4	70	0.050	36.000	8.000	1115	225	64.2



Nickel-based alloys  
annealed  
Rm < 1000 N/mm<sup>2</sup>  
[Inconel 718]



6.00	4	25	0.015	7.200	6.000	1325	80	3.4
8.00	4	25	0.020	9.600	8.000	995	80	6.1
10.00	4	25	0.025	12.000	10.000	795	80	9.5
12.00	4	25	0.030	14.400	12.000	665	80	13.8
16.00	4	25	0.035	19.200	16.000	495	70	21.4
20.00	4	25	0.045	24.000	20.000	400	70	34.4

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



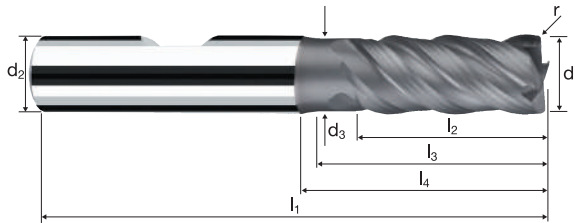
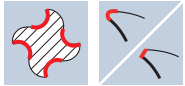
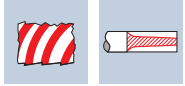
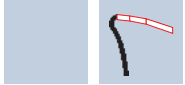
6.00	4	20	0.010	7.200	6.000	1060	40	1.8
8.00	4	20	0.015	9.600	8.000	795	50	3.7
10.00	4	20	0.020	12.000	10.000	635	50	6.1
12.00	4	20	0.025	14.400	12.000	530	55	9.2
16.00	4	20	0.030	19.200	16.000	400	50	14.7
20.00	4	20	0.035	24.000	20.000	320	45	21.4

# Corner radius end mills ZX

Smooth-edged, normal version, short neck



HM  
MG10     $\lambda$  40°  
                   $\gamma$  5°



Roughing

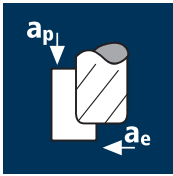


Finishing



Ø Code	d <sub>1</sub> e8	d <sub>2</sub> h6	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r	α	z	Coating		
											TICUT	POLYCHROM	
Example: Order-N°.												Coating: <b>P</b> Article-N°: <b>8820</b> ø-Code: <b>457</b>	
<b>457</b>	10.00	10.00	9.20	72	22.00	27.99	31.00	2.500	0.0°	4	●	■	
<b>506</b>	12.00	12.00	11.00	83	26.00	33.29	37.00	2.500	0.0°	4	●	■	
<b>612</b>	16.00	16.00	15.00	92	32.00	38.73	43.00	2.500	0.0°	4	●	■	
<b>684</b>	20.00	20.00	19.00	104	38.00	48.23	53.00	2.500	0.0°	4	●	■	
<b>508</b>	12.00	12.00	11.00	83	26.00	33.29	37.00	4.000	0.0°	4	●	■	
<b>614</b>	16.00	16.00	15.00	92	32.00	38.73	43.00	4.000	0.0°	4	●	■	
<b>686</b>	20.00	20.00	19.00	104	38.00	48.23	53.00	4.000	0.0°	4	●	■	
■ Availability and delivery dates on request													

## Application



## Material

Nickel-based alloys  
annealed  
Rm <1000 N/mm<sup>2</sup>  
[Inconel 718]



d1 [mm]	z	v <sub>c</sub> [m/min]	f <sub>s</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>r</sub> [mm/min]	Q [cm <sup>3</sup> /min]
10.00	4	35	0.030	18.000	4.000	1115	135	9.6
12.00	4	35	0.040	21.600	4.800	930	150	15.4
16.00	4	35	0.045	28.800	6.400	695	125	23.1
20.00	4	35	0.055	36.000	8.000	555	125	35.3

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



10.00	4	25	0.025	18.000	4.000	795	80	5.7
12.00	4	25	0.030	21.600	4.800	665	80	8.3
16.00	4	25	0.035	28.800	6.400	495	70	12.8
20.00	4	25	0.045	36.000	8.000	400	70	20.6

Manganese steel  
Mn >5%  
[1.3964 / Nitronic]  
[1.3401 / X120Mn12]



10.00	4	40	0.030	18.000	4.000	1275	155	11.0
12.00	4	40	0.040	21.600	4.800	1060	170	17.6
16.00	4	40	0.045	28.800	6.400	795	145	26.4
20.00	4	40	0.055	36.000	8.000	635	140	40.3

Inox difficult  
[Cr-Ni-Mo+/1.4529]  
Heat resistant steel  
[1.4841]



10.00	4	50	0.050	18.000	4.000	1590	320	22.9
12.00	4	50	0.060	21.600	4.800	1325	320	33.0
16.00	4	50	0.065	28.800	6.400	995	260	47.7
20.00	4	50	0.080	36.000	8.000	795	255	73.3

PM high-speed steel  
annealed  
[Böhler S390]  
[ASP 2023]

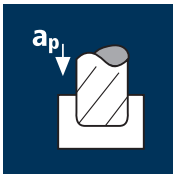


10.00	4	80	0.030	18.000	4.000	2545	305	22.0
12.00	4	80	0.040	21.600	4.800	2120	340	35.2
16.00	4	80	0.045	28.800	6.400	1590	285	52.8
20.00	4	80	0.055	36.000	8.000	1275	280	80.7

Titanium alloys  
> 300 HB  
[Ti6Al4V]



10.00	4	70	0.030	18.000	4.000	2230	265	19.3
12.00	4	70	0.035	21.600	4.800	1855	260	27.0
16.00	4	70	0.040	28.800	6.400	1395	225	41.1
20.00	4	70	0.050	36.000	8.000	1115	225	64.2



Nickel-based alloys  
annealed  
Rm <1000 N/mm<sup>2</sup>  
[Inconel 718]



10.00	4	25	0.025	12.000	10.000	795	80	9.5
12.00	4	25	0.030	14.400	12.000	665	80	13.8
16.00	4	25	0.035	19.200	16.000	495	70	21.4
20.00	4	25	0.045	24.000	20.000	400	70	34.4

Nickel-based alloys  
precipitation hardened  
Rm > 1000 N/mm<sup>2</sup>  
[Inconel 718]



10.00	4	20	0.020	12.000	10.000	635	50	6.1
12.00	4	20	0.025	14.400	12.000	530	55	9.2
16.00	4	20	0.030	19.200	16.000	400	50	14.7
20.00	4	20	0.035	24.000	20.000	320	45	21.4