

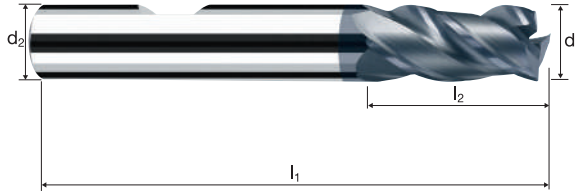
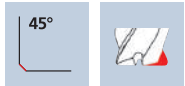
# Cylindrical end mills

Smooth-edged, normal version



HM  
MG10

$\lambda$  40°  
 $\gamma$  6°



Roughing

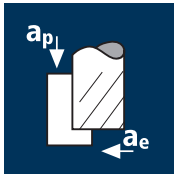
Finishing



Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys
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										POLYCHROM
Example: Order-N°.										P45333
										P45233
Ø Code	d <sub>1</sub> e8	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	45°	α	z		
140	2.00	6.00	54	6.00	15.32	0.10	8.0°	3		●
160	2.50	6.00	54	6.00	14.89	0.10	7.5°	3		●
180	3.00	6.00	57	7.00	14.96	0.10	6.0°	3		●
200	3.50	6.00	57	7.00	14.02	0.10	5.5°	3		●
220	4.00	6.00	57	8.00	14.59	0.10	4.5°	3		●
240	4.50	6.00	57	8.00	13.66	0.15	3.5°	3		●
260	5.00	6.00	57	10.00	14.72	0.15	2.5°	3		●
280	5.50	6.00	57	10.00	13.79	0.15	1.5°	3		●
300	6.00	6.00	57	10.00	-	0.15	0.0°	3		●
322	6.50	8.00	63	13.00	18.66	0.15	2.5°	3		●
331	7.00	8.00	63	13.00	17.72	0.15	2.0°	3		●
362	7.50	8.00	63	16.00	19.79	0.15	1.0°	3		●
391	8.00	8.00	63	16.00	-	0.15	0.0°	3		●
410	8.50	10.00	72	16.00	21.66	0.20	2.5°	3		●
420	9.00	10.00	72	16.00	20.72	0.20	1.5°	3		●
430	9.50	10.00	72	19.00	22.79	0.20	1.0°	3		●
450	10.00	10.00	72	19.00	-	0.20	0.0°	3		●

## Application



## Material

Steel  
< 850 N/mm<sup>2</sup>



Steel  
850 - 1100 N/mm<sup>2</sup>



Inox normal  
[Cr-Ni/1.4301]  
[Cr-Ni-Mo/1.4571]



Cast iron  
(lamellar / spheroidal)



Steel  
< 850 N/mm<sup>2</sup>



Steel  
850 - 1100 N/mm<sup>2</sup>



Inox normal  
[Cr-Ni/1.4301]  
[Cr-Ni-Mo/1.4571]



Cast iron  
(lamellar / spheroidal)

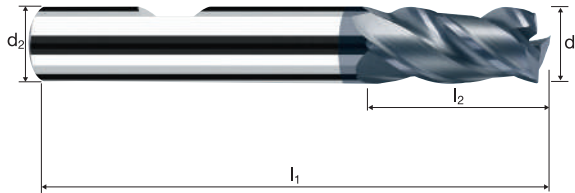
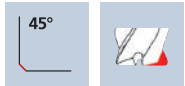


d1 [mm]	z	v <sub>c</sub> [m/min]	f <sub>s</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>r</sub> [mm/min]	Q [cm <sup>3</sup> /min]
2.00	3	165	0.005	3.000	1.300	26260	395	1.5
3.00	3	165	0.010	4.500	1.950	17505	525	4.6
4.00	3	165	0.015	6.000	2.600	13130	590	9.2
5.00	3	165	0.020	7.500	3.250	10505	630	15.4
6.00	3	165	0.020	9.000	3.900	8755	525	18.4
7.00	3	165	0.025	10.500	4.550	7505	565	26.9
8.00	3	165	0.030	12.000	5.200	6565	590	36.9
9.00	3	165	0.030	13.500	5.850	5835	525	41.5
10.00	3	165	0.035	15.000	6.500	5250	550	53.8
2.00	3	110	0.005	3.000	1.300	17505	265	1.0
3.00	3	110	0.010	4.500	1.950	11670	350	3.1
4.00	3	110	0.015	6.000	2.600	8755	395	6.1
5.00	3	110	0.020	7.500	3.250	7005	420	10.2
6.00	3	110	0.020	9.000	3.900	5835	350	12.3
7.00	3	110	0.025	10.500	4.550	5000	375	17.9
8.00	3	110	0.030	12.000	5.200	4375	395	24.6
9.00	3	110	0.030	13.500	5.850	3890	350	27.7
10.00	3	110	0.035	15.000	6.500	3500	370	35.8
2.00	3	80	0.005	3.000	1.300	12730	190	0.7
3.00	3	80	0.010	4.500	1.950	8490	255	2.2
4.00	3	80	0.010	6.000	2.600	6365	190	3.0
5.00	3	80	0.015	7.500	3.250	5095	230	5.6
6.00	3	80	0.015	9.000	3.900	4245	190	6.7
7.00	3	80	0.020	10.500	4.550	3640	220	10.4
8.00	3	80	0.020	12.000	5.200	3185	190	11.9
9.00	3	80	0.025	13.500	5.850	2830	210	16.8
10.00	3	80	0.025	15.000	6.500	2545	190	18.6
2.00	3	130	0.005	3.000	1.300	20690	310	1.2
3.00	3	130	0.010	4.500	1.950	13795	415	3.6
4.00	3	130	0.015	6.000	2.600	10345	465	7.3
5.00	3	130	0.020	7.500	3.250	8275	495	12.1
6.00	3	130	0.020	9.000	3.900	6895	415	14.5
7.00	3	130	0.025	10.500	4.550	5910	445	21.2
8.00	3	130	0.030	12.000	5.200	5175	465	29.0
9.00	3	130	0.030	13.500	5.850	4600	415	32.7
10.00	3	130	0.035	15.000	6.500	4140	435	42.4
2.00	3	130	0.005	2.800	2.000	20690	310	1.7
3.00	3	130	0.010	4.200	3.000	13795	415	5.2
4.00	3	130	0.015	5.600	4.000	10345	465	10.4
5.00	3	130	0.015	7.000	5.000	8275	370	13.0
6.00	3	130	0.020	8.400	6.000	6895	415	20.9
7.00	3	130	0.025	9.800	7.000	5910	445	30.4
8.00	3	130	0.025	11.200	8.000	5175	390	34.8
9.00	3	130	0.030	12.600	9.000	4600	415	46.9
10.00	3	130	0.030	14.000	10.000	4140	370	52.1
2.00	3	85	0.005	2.800	2.000	13530	205	1.1
3.00	3	85	0.010	4.200	3.000	9020	270	3.4
4.00	3	85	0.015	5.600	4.000	6765	305	6.8
5.00	3	85	0.015	7.000	5.000	5410	245	8.5
6.00	3	85	0.020	8.400	6.000	4510	270	13.6
7.00	3	85	0.025	9.800	7.000	3865	290	19.9
8.00	3	85	0.025	11.200	8.000	3380	255	22.7
9.00	3	85	0.030	12.600	9.000	3005	270	30.7
10.00	3	85	0.030	14.000	10.000	2705	245	34.1
2.00	3	65	0.005	2.800	2.000	10345	155	0.9
3.00	3	65	0.005	4.200	3.000	6895	105	1.3
4.00	3	65	0.010	5.600	4.000	5175	155	3.5
5.00	3	65	0.010	7.000	5.000	4140	125	4.3
6.00	3	65	0.015	8.400	6.000	3450	155	7.8
7.00	3	65	0.015	9.800	7.000	2955	135	9.1
8.00	3	65	0.020	11.200	8.000	2585	155	13.9
9.00	3	65	0.020	12.600	9.000	2300	140	15.6
10.00	3	65	0.025	14.000	10.000	2070	155	21.7
2.00	3	110	0.005	2.800	2.000	17505	265	1.5
3.00	3	110	0.010	4.200	3.000	11670	350	4.4
4.00	3	110	0.015	5.600	4.000	8755	395	8.8
5.00	3	110	0.015	7.000	5.000	7005	315	11.0
6.00	3	110	0.020	8.400	6.000	5835	350	17.6
7.00	3	110	0.025	9.800	7.000	5000	375	25.7
8.00	3	110	0.025	11.200	8.000	4375	330	29.4
9.00	3	110	0.030	12.600	9.000	3890	350	39.7
10.00	3	110	0.030	14.000	10.000	3500	315	44.1

# Cylindrical end mills

Smooth-edged, normal version

HM  
MG10     $\lambda$  40°  
                  $\gamma$  6°



Roughing

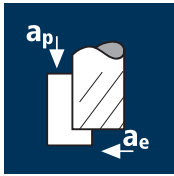
Finishing



Rm < 850	Rm 850-1100	Rm 1100-1300						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys
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Ø Code	d <sub>1</sub> e8	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	45°	α	z		POLYCHROM
Example: <b>Order-N°.</b> Coating    Article-N°    ø-Code <b>P</b> <b>45333</b> <b>470</b>									<b>P45333</b>	
									<b>P45233</b>	
<b>470</b>	11.00	12.00	83	22.00	27.22	0.20	1.5°	3		●
<b>501</b>	12.00	12.00	83	22.00	-	0.20	0.0°	3		●
<b>540</b>	13.00	14.00	83	22.00	27.22	0.20	1.5°	3		●
<b>570</b>	14.00	14.00	83	22.00	-	0.20	0.0°	3		●
<b>581</b>	15.00	16.00	92	26.00	31.22	0.20	1.0°	3		●
<b>610</b>	16.00	16.00	92	26.00	-	0.20	0.0°	3		●
<b>682</b>	20.00	20.00	104	32.00	-	0.20	0.0°	3		●

## Application



## Material

Steel  
< 850 N/mm<sup>2</sup>



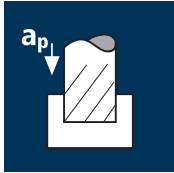
Steel  
850 - 1100 N/mm<sup>2</sup>



Inox normal  
[Cr-Ni/1.4301]  
[Cr-Ni-Mo/1.4571]



Cast iron  
(lamellar / spheroidal)



Steel  
< 850 N/mm<sup>2</sup>



Steel  
850 - 1100 N/mm<sup>2</sup>



Inox normal  
[Cr-Ni/1.4301]  
[Cr-Ni-Mo/1.4571]



Cast iron  
(lamellar / spheroidal)



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]
11.00	3	165	0.040	16.500	7.150	4775	575	67.6
12.00	3	165	0.045	18.000	7.440	4375	590	79.1
13.00	3	165	0.045	19.500	7.800	4040	545	83.0
14.00	3	165	0.050	21.000	8.120	3750	565	96.0
15.00	3	165	0.055	22.500	8.400	3500	580	109.2
16.00	3	165	0.055	24.000	8.800	3285	540	114.4
20.00	3	165	0.070	30.000	11.000	2625	550	182.0

11.00	3	110	0.040	16.500	7.150	3185	380	45.1
12.00	3	110	0.045	18.000	7.440	2920	395	52.8
13.00	3	110	0.045	19.500	7.800	2695	365	55.3
14.00	3	110	0.050	21.000	8.120	2500	375	64.0
15.00	3	110	0.055	22.500	8.400	2335	385	72.8
16.00	3	110	0.055	24.000	8.800	2190	360	76.3
20.00	3	110	0.070	30.000	11.000	1750	370	121.3

11.00	3	80	0.030	16.500	7.150	2315	210	24.6
12.00	3	80	0.030	18.000	7.440	2120	190	25.6
13.00	3	80	0.035	19.500	7.800	1960	205	31.3
14.00	3	80	0.035	21.000	8.120	1820	190	32.6
15.00	3	80	0.040	22.500	8.400	1700	205	38.5
16.00	3	80	0.040	24.000	8.800	1590	190	40.3
20.00	3	80	0.055	30.000	11.000	1275	210	69.3

11.00	3	130	0.040	16.500	7.150	3760	450	53.3
12.00	3	130	0.045	18.000	7.440	3450	465	62.3
13.00	3	130	0.045	19.500	7.800	3185	430	65.4
14.00	3	130	0.050	21.000	8.120	2955	445	75.6
15.00	3	130	0.055	22.500	8.400	2760	455	86.0
16.00	3	130	0.055	24.000	8.800	2585	425	90.1
20.00	3	130	0.070	30.000	11.000	2070	435	143.4

11.00	3	130	0.035	15.400	11.000	3760	395	66.9
12.00	3	130	0.040	16.200	12.000	3450	415	80.4
13.00	3	130	0.040	17.030	13.000	3185	380	84.6
14.00	3	130	0.045	17.990	14.000	2955	400	100.5
15.00	3	130	0.050	18.750	15.000	2760	415	116.4
16.00	3	130	0.050	19.200	16.000	2585	390	119.2
20.00	3	130	0.065	22.000	20.000	2070	405	177.5

11.00	3	85	0.035	15.400	11.000	2460	260	43.8
12.00	3	85	0.040	16.200	12.000	2255	270	52.6
13.00	3	85	0.040	17.030	13.000	2080	250	55.3
14.00	3	85	0.045	17.990	14.000	1935	260	65.7
15.00	3	85	0.050	18.750	15.000	1805	270	76.1
16.00	3	85	0.050	19.200	16.000	1690	255	77.9
20.00	3	85	0.065	22.000	20.000	1355	265	116.1

11.00	3	65	0.025	15.400	11.000	1880	140	23.9
12.00	3	65	0.030	16.200	12.000	1725	155	30.2
13.00	3	65	0.030	17.030	13.000	1590	145	31.7
14.00	3	65	0.035	17.990	14.000	1480	155	39.1
15.00	3	65	0.035	18.750	15.000	1380	145	40.7
16.00	3	65	0.040	19.200	16.000	1295	155	47.7
20.00	3	65	0.045	22.000	20.000	1035	140	61.4

11.00	3	110	0.035	15.400	11.000	3185	335	56.6
12.00	3	110	0.040	16.200	12.000	2920	350	68.1
13.00	3	110	0.040	17.030	13.000	2695	325	71.6
14.00	3	110	0.045	17.990	14.000	2500	340	85.0
15.00	3	110	0.050	18.750	15.000	2335	350	98.5
16.00	3	110	0.050	19.200	16.000	2190	330	100.8
20.00	3	110	0.065	22.000	20.000	1750	340	150.2