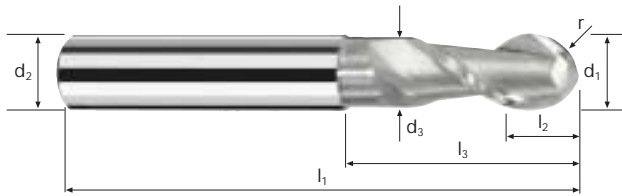


Ball nose end mills Sphercut-Alu

Tolerance r f8 (-/-), 3xd

HM
MG10

λ 40°
 γ 20°



HRC
< 24

Al
Aluminum
> 99%

Al
Aluminum
Alloy

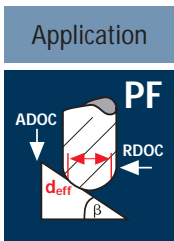
Al
Aluminum
Cast

Cu
Copper

Plastic
Thermoplast

Order-N°	d1 -/-	d2 h6	d3	l1	l2	l3	l4	r f8	α	fl	CELERO
C5290140	2	6	1.9	57	4	6	14.3	1.0	9.0°	2	●
C5290180	3	6	2.8	57	6	9	15.6	1.5	6.4°	2	●
C5290220	4	6	3.7	57	8	12	17.0	2.0	4.0°	2	●
C5290260	5	6	4.6	57	10	15	18.3	2.5	1.9°	2	●
C5290300	6	6	5.5	57	12	20	-	3.0	0.0°	2	●
C5290391	8	8	7.4	63	16	26	-	4.0	0.0°	2	●
C5290450	10	10	9.2	72	20	31	-	5.0	0.0°	2	●
C5290501	12	12	11.0	83	24	37	-	6.0	0.0°	2	●
C5290610	16	16	15.0	92	32	43	-	8.0	0.0°	2	●
C5290682	20	20	19.0	104	40	53	-	10.0	0.0°	2	●
CNC Radius R											
	dt	r	Tolerance f8		Radius		R				
			Minimum	Maximum	Minimum	Maximum					
	2	1.0	-0.006	-0.020	0.980	0.994	0.987				
	3	1.5			1.480	1.494	1.487				
	4	2.0			1.980	1.994	1.987				
	5	2.5			2.480	2.494	2.487				
	6	3.0			2.980	2.994	2.987				
	8	4.0	-0.010	-0.028	3.972	3.990	3.981				
	10	5.0			4.972	4.990	4.981				
	12	6.0			5.972	5.990	5.981				
	16	8.0	-0.013	-0.035	7.965	7.987	7.976				
	20	10.0			9.965	9.987	9.976				

VII



Material

Wrought aluminum alloys Si < 6%

d1 [mm]	f1	Speed [m/min]	FPT [mm]	ADOC [mm]	RDOC [mm]	d _{eff} [mm]	RPM [min ⁻¹]	Feed [mm/min]	β [°]
2	2	650	0.065	0.30	0.30	2.00	60000	7800	45°
3	2	650	0.075	0.45	0.45	3.00	60000	9000	45°
4	2	650	0.090	0.60	0.60	4.00	51725	9310	45°
5	2	650	0.090	0.75	0.75	5.00	41380	7450	45°
6	2	650	0.090	0.90	0.90	6.00	34485	6205	45°
8	2	650	0.115	1.20	1.20	8.00	25865	5950	45°
10	2	650	0.125	1.50	1.50	10.00	20690	5175	45°
12	2	650	0.135	1.80	1.80	12.00	17240	4655	45°
16	2	650	0.160	2.40	2.40	16.00	12930	4140	45°

Unalloyed copper

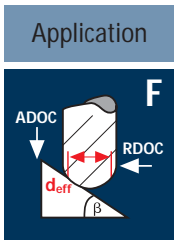
2	2	500	0.060	0.30	0.30	2.00	60000	7200	45°
3	2	500	0.070	0.45	0.45	3.00	53055	7430	45°
4	2	500	0.080	0.60	0.60	4.00	39790	6365	45°
5	2	500	0.080	0.75	0.75	5.00	31830	5095	45°
6	2	500	0.080	0.90	0.90	6.00	26525	4245	45°
8	2	500	0.105	1.20	1.20	8.00	19895	4180	45°
10	2	500	0.115	1.50	1.50	10.00	15915	3660	45°
12	2	500	0.120	1.80	1.80	12.00	13265	3185	45°
16	2	500	0.145	2.40	2.40	16.00	9945	2885	45°

Thermoplastics

2	2	1000	0.065	0.30	0.30	2.00	60000	7800	45°
3	2	1000	0.075	0.45	0.45	3.00	60000	9000	45°
4	2	1000	0.090	0.60	0.60	4.00	60000	10800	45°
5	2	1000	0.090	0.75	0.75	5.00	60000	10800	45°
6	2	1000	0.090	0.90	0.90	6.00	53055	9550	45°
8	2	1000	0.115	1.20	1.20	8.00	39790	9150	45°
10	2	1000	0.125	1.50	1.50	10.00	31830	7960	45°
12	2	1000	0.135	1.80	1.80	12.00	26525	7160	45°
16	2	1000	0.160	2.40	2.40	16.00	19895	6365	45°

Cast aluminum Si 6%-15%

2	2	450	0.045	0.30	0.30	2.00	60000	5400	45°
3	2	450	0.055	0.45	0.45	3.00	47750	5255	45°
4	2	450	0.065	0.60	0.60	4.00	35810	4655	45°
5	2	450	0.065	0.75	0.75	5.00	28650	3725	45°
6	2	450	0.065	0.90	0.90	6.00	23875	3105	45°
8	2	450	0.080	1.20	1.20	8.00	17905	2865	45°
10	2	450	0.090	1.50	1.50	10.00	14325	2580	45°
12	2	450	0.095	1.80	1.80	12.00	11935	2270	45°
16	2	450	0.110	2.40	2.40	16.00	8955	1970	45°



Material

Wrought aluminum alloys Si < 6%

d1 [mm]	f1	Speed [m/min]	FPT [mm]	ADOC [mm]	RDOC [mm]	d _{eff} [mm]	RPM [min ⁻¹]	Feed [mm/min]	β [°]
2	2	900	0.035	0.12	0.12	1.92	60000	4200	45°
3	2	900	0.040	0.15	0.15	2.83	60000	4800	45°
4	2	900	0.055	0.17	0.17	3.73	60000	6600	45°
5	2	900	0.055	0.20	0.20	4.64	60000	6600	45°
6	2	900	0.055	0.22	0.22	5.53	51805	5700	45°
8	2	900	0.065	0.24	0.24	7.25	39515	5135	45°
10	2	900	0.070	0.27	0.27	8.98	31905	4465	45°
12	2	900	0.075	0.30	0.30	10.71	26750	4015	45°
16	2	900	0.090	0.34	0.34	14.10	20320	3660	45°

Unalloyed copper

2	2	650	0.030	0.12	0.12	1.92	60000	3600	45°
3	2	650	0.035	0.15	0.15	2.83	60000	4200	45°
4	2	650	0.050	0.17	0.17	3.73	55470	5545	45°
5	2	650	0.050	0.20	0.20	4.64	44590	4460	45°
6	2	650	0.050	0.22	0.22	5.53	37415	3740	45°
8	2	650	0.060	0.24	0.24	7.25	28540	3425	45°
10	2	650	0.065	0.27	0.27	8.98	23040	2995	45°
12	2	650	0.070	0.30	0.30	10.71	19320	2705	45°
16	2	650	0.080	0.34	0.34	14.10	14675	2350	45°

Thermoplastics

2	2	1200	0.035	0.12	0.12	1.92	60000	4200	45°
3	2	1200	0.040	0.15	0.15	2.83	60000	4800	45°
4	2	1200	0.055	0.17	0.17	3.73	60000	6600	45°
5	2	1200	0.055	0.20	0.20	4.64	60000	6600	45°
6	2	1200	0.055	0.22	0.22	5.53	60000	6600	45°
8	2	1200	0.065	0.24	0.24	7.25	52685	6850	45°
10	2	1200	0.070	0.27	0.27	8.98	42535	5955	45°
12	2	1200	0.075	0.30	0.30	10.71	35665	5350	45°
16	2	1200	0.090	0.34	0.34	14.10	27090	4875	45°

Cast aluminum Si 6%-15%

2	2	550	0.025	0.12	0.12	1.92	60000	3000	45°
3	2	550	0.030	0.15	0.15	2.83	60000	3600	45°
4	2	550	0.040	0.17	0.17	3.73	46935	3755	45°
5	2	550	0.040	0.20	0.20	4.64	37730	3020	45°
6	2	550	0.040	0.22	0.22	5.53	31660	2535	45°
8	2	550	0.045	0.24	0.24	7.25	24150	2175	45°
10	2	550	0.050	0.27	0.27	8.98	19495	1950	45°
12	2	550	0.055	0.30	0.30	10.71	16345	1800	45°
16	2	550	0.065	0.34	0.34	14.10	12415	1615	45°