

# SPECIAL USE CARBIDE END MILLS

## 2 FLUTE • DOUBLE END CORNER ROUNDERS

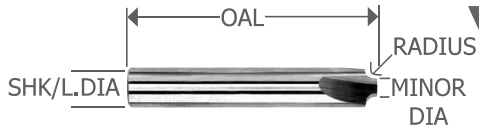


Carbide	2	0°	Bright ALTiN	+0.01 -0.01 radius	Corner Round	HRC <48	P M K S N
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### SERIES: BRMG

RADIUS	MINOR DIA	SHK/ LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
0.010	0.047	1/8	1-1/2	stub	<b>BRMG-4010-S</b>	11178	51178
0.010	0.105	1/8	1-1/2	std	<b>BRMG-4010</b>	16293	56293
0.015	0.047	1/8	1-1/2	stub	<b>BRMG-4015-S</b>	11179	51179
0.015	0.095	1/8	1-1/2	std	<b>BRMG-4015</b>	16294	56294
0.020	0.047	1/8	1-1/2	stub	<b>BRMG-4020-S</b>	11181	51181
0.020	0.085	1/8	1-1/2	std	<b>BRMG-4020</b>	16295	56295
0.025	0.075	1/8	1-1/2	std	<b>BRMG-4025</b>	16296	56296
0.030	0.047	1/8	1-1/2	stub	<b>BRMG-4030-S</b>	11703	51703
0.031	0.047	1/8	1-1/2	stub	<b>BRMG-4031-S</b>	11182	51182
0.031	0.063	1/8	1-1/2	std	<b>BRMG-4031</b>	16297	56297
0.035	0.055	1/8	1-1/2	std	<b>BRMG-4035</b>	16298	56298
0.039	0.047	1/8	1-1/2	std	<b>BRMG-4039</b>	16299	56299
0.047	0.047	3/16	2	stub	<b>BRMG-6047-S</b>	11183	51183
0.047	0.094	3/16	2	std	<b>BRMG-6047</b>	16300	56300
0.050	0.088	3/16	2	std	<b>BRMG-6050</b>	16301	56301
0.055	0.078	3/16	2	std	<b>BRMG-6055</b>	16302	56302
0.062	0.047	3/16	2	stub	<b>BRMG-6062-S</b>	11185	51185
0.062	0.064	3/16	2	std	<b>BRMG-6062</b>	16303	56303
0.072	0.106	1/4	2-1/2	std	<b>BRMG-8072</b>	16304	56304
0.078	0.047	1/4	2	stub	<b>BRMG-8078-S</b>	11186	51186
0.078	0.094	1/4	2-1/2	std	<b>BRMG-8078</b>	16305	56305
0.093	0.064	1/4	2-1/2	std	<b>BRMG-8093</b>	16306	56306
0.094	0.047	1/4	2	stub	<b>BRMG-8094-S</b>	11187	51187
0.100	0.050	1/4	2-1/2	std	<b>BRMG-8100</b>	16307	56307
0.109	0.095	5/16	2-1/2	std	<b>BRMG-10109</b>	16308	56308
0.118	0.077	5/16	2-1/2	std	<b>BRMG-10118</b>	16309	56309
0.125	0.063	5/16	2-1/2	std	<b>BRMG-10125</b>	16310	56310
0.140	0.095	3/8	2-1/2	std	<b>BRMG-12140</b>	16311	56311
0.156	0.063	3/8	2-1/2	std	<b>BRMG-12156</b>	16312	56312

# SPECIAL USE CARBIDE END MILLS



## 3 FLUTE • CORNER ROUNDING END MILLS

Carbide **Bright ALTiN**  $\pm .001$   $-.001$  radius HRC <48

### SERIES: RMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/16	2	std	RMG-601	16092	56092
1/16	1/8	1/4	2-1/2	std	RMG-802	16093	56093
3/32	3/16	3/8	2-1/2	std	RMG-1203	16094	56094
1/8	1/4	1/2	3	std	RMG-1604	16095	56095
5/32	5/16	5/8	3-1/2	std	RMG-2005	16096	56096
3/16	3/8	3/4	4	std	RMG-2406	16097	56097
1/4	1/2	1	4	std	RMG-3208	16098	56098

## 4 FLUTE • CORNER ROUNDING END MILLS

Carbide **Bright ALTiN**  $\pm .001$   $-.001$  radius HRC <48

### SERIES: RCMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/16	2	std	RCMG-601	16099	56099
1/16	1/8	1/4	2-1/2	std	RCMG-802	16100	56100
3/32	3/16	3/8	2-1/2	std	RCMG-1203	16101	56101
1/8	1/4	1/2	3	std	RCMG-1604	16102	56102
5/32	5/16	5/8	3-1/2	std	RCMG-2005	16103	56103
3/16	3/8	3/4	4	std	RCMG-2406	16104	56104
1/4	1/2	1	4	std	RCMG-3208	16105	56105

## 4 FLUTE • CORNER ROUNDING END MILLS

Carbide **Bright ALTiN**  $\pm .025\text{mm}$   $-.025\text{mm}$  radius HRC <48

### SERIES: RCMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1mm	4mm	6mm	63mm	std	RCMG-M6M1	13632	53632
1.5mm	3mm	6mm	63mm	std	RCMG-M6M1.5	13633	53633
2mm	4mm	8mm	63mm	std	RCMG-M8M2	13634	53634
3mm	6mm	12mm	76mm	std	RCMG-M12M3	13635	53635
4mm	8mm	16mm	89mm	std	RCMG-M16M4	13636	53636

# TECHNICAL INFORMATION

## General Purpose Carbide End Mills

### SERIES: General Purpose Carbide End Mills

MATERIAL	CONDITIONS	CUTTING DIAMETER											
		1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	CHIP PER TOOTH			
		Under 32 HRc	Over 32 HRc										
<b>STAINLESS STEELS ISO-M</b>													
<b>Precipitation</b> 13-8, 15-5, 17-4PH	Slotting .5 x Dia.	110-200	80-115	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	110-200	80-115	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
<b>Austenitic</b> 302, 303, 304L, 316L	Slotting .5 x Dia.	150-275	80-180	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046		
	Profiling ≤ .5 x Dia.	150-275	80-180	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060		
<b>Martensitic</b> 403, 410, 416	Slotting .5 x Dia.	200-400	80-160	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046		
	Profiling ≤ .5 x Dia.	200-400	80-160	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060		
<b>HIGH TEMP ALLOYS ISO-S</b>													
<b>Cobalt Base</b> Stellite, Haynes 25, 188, X-40, L-605	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
<b>Nickel Base</b> Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Incoly 600	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
<b>Iron Base</b> Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030		
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
<b>STEELS ISO-P</b>													
<b>High Strength Steels</b> 4140, 4340, 52100	Slotting .5 x Dia.	150-300	80-180	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	150-300	80-180	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
<b>High Alloy Steels - Mold &amp; Die</b> A-2, P20, 01, 02, D2, H-13	Slotting .5 x Dia.	150-275	80-185	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	150-275	80-185	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
<b>Medium Alloy Steels</b> 200, 250, 300	Slotting .5 x Dia.	175-350	100-225	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004		
	Profiling ≤ .5 x Dia.	175-350	100-225	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005		
<b>Low Alloy Steels-Maraging</b> 10XX, 11XX, 13XX	Slotting .5 x Dia.	200-450	100-250	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.005		
	Profiling ≤ .5 x Dia.	200-450	100-250	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.006		
<b>CAST IRONS ISO-K</b>													
<b>Ductile Iron</b> Ductile Cast Iron	Slotting .5 x Dia.	120-325	80-140	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	120-325	80-140	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
<b>Cast Iron</b> Grey Cast Iron	Slotting .5 x Dia.	250-425	125-285	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	250-425	125-285	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
<b>TITANIUMS ISO-S</b>													
<b>Titanium Alloys</b> 6AL-4V, ASTM 1, 2, 3, 6AL-2S <small>For 5553, decrease SFM and IPM by 25%</small>	Slotting .5 x Dia.	140-200	90-145	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040		
	Profiling ≤ .5 x Dia.	140-200	90-145	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050		
<b>ALUMINUM ISO-N</b>													
<b>Aluminum Alloys</b> 6061-T6, 7075	Slotting .5 x Dia.	600-1000	NA	0.0006	0.0012	0.0015	0.0018	0.003	0.005	0.006	0.0080		
	Profiling ≤ .5 x Dia.	600-1000	NA	0.0007	0.0014	0.0018	0.0025	0.0035	0.006	0.0068	0.0100		

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

# SPEED & FEED INFORMATION

## Calculations

End mill speed & feed formulas are the various individual equations that determine the proper overall machining setup or more specifically the speed of the cutting tool and the rate which it is fed into the work piece. Each individual formula is distinct in what it determines but coordinates with the others to ensure successful cutting tool application. You can visit the TECHNICAL section on [www.melintool.com](http://www.melintool.com) for more information.

### INCH

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{3.82 \times \text{SFM} / \text{Tool Dia}}$$

$$\text{SFM} = \frac{\text{Surface Foot Per Minute}}{.262 \times \text{RPM} \times \text{Tool Dia}}$$

$$\text{CPT or IPT} = \frac{\text{Chip-Load Per Tooth}}{\text{IPM} / \text{RPM} / \text{No. Of Flutes}}$$

$$\text{IPM} = \frac{\text{Inches Per Minute}}{\text{CPT} \times \text{RPM} \times \text{No. Of Flutes}}$$

$$\text{MRRCI} = \frac{\text{Metal Removal Rate Cubic Inches}}{\text{IPM} \times \text{Axial Doc} \times \text{Radial Woc}}$$

$$\text{IPR} = \frac{\text{Inches Per Revolution}}{\text{IPM} / \text{RPM}}$$

### METRIC

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{1000 \times \text{M/MIN} / (3.14 \times \text{D})}$$

$$\text{M/MIN} = \frac{\text{Meters Per Minute}}{(3.14 \times \text{D} \times \text{RPM}) / 1000}$$

$$\text{Fz OR CPT} = \frac{\text{Chip-Load Per Tooth}}{\text{Feedrate (mm) per MIN} / (\text{Z} \times \text{RPM})}$$

$$\text{VF OR FPM} = \frac{\text{Feedrate (mm) Per Minute}}{\text{Feedrate (mm) per Tooth} \times \text{Z} \times \text{RPM}}$$

D = Cutter Dia.  
Z = No. Of Teeth.

## EQUIVALENTS & CONVERSIONS:

### ABBREVIATIONS

RPM	Revolutions Per Minute
SFM	Surface Feet Per Minute
CPT	Chip Load Per Tooth
IPM	Inches Per Minute
V <sub>f</sub>	Millimeters Per Minute
ae	Radial Width of Cut
ap	Axial Depth of Cut
Vc	Surface Meters Per Minute
Fz	Metric Chip Load Per Tooth

$$N, n \text{ or } \text{Min}^{-1} = \text{RPM}$$

$$Vc \text{ or } \text{M/MIN} = \text{SFM}$$

$$Fz \text{ or } \text{mm/TOOTH} = \text{CPT}$$

$$V_f \text{ or } \text{mm/MIN} = \text{IPM}$$

$$\text{SFM} / 3.281 = \text{M/MIN}$$

$$\text{M/MIN} \times 3.281 = \text{SFM}$$

$$\text{mm/MIN} / 25.4 = \text{IPM}$$

$$\text{mm/TOOTH} / 25.4 = \text{CPT}$$



IMPERIAL                      METRIC

$$\text{Inch} \times 25.4 = \text{Millimeter}$$

$$\text{Millimeter} \times .03937 = \text{Inch}$$