HARVEY TOOL

Speeds & Feeds

Product Table: Diamond End Mills for Non-Ferrous Materials - PCD Diamond - Ball
Characteristics: 1 & 2 Flutes
Series: 120xx

MATERIAL	SFM	Chip Load (IPT) By Cutter Diameter													Depth of Cut	
			.062	.078	.093	.125	.187	.250	.312	.375	.500	.625	.750	1.000	Radial	Axial
ALUMINUM ALLOYS 0% - 5% Silicon (2xx, 3xx, 4xx, 5xx, 7xx, 8xx, A3xx, A4xx, B4xx, C3xx, 1xxx, 2xxx, 3xxx, 5xxx, 6xxx, 7xxx, 8xxx)	1500 - 3000	Roughing	.00076	.00095	.00113	.00152	.00228	.00305	.00380	.00457	.00610	.00762	.00914	.01219	.65 x Dia	.45 x Dia
		Finishing	.00088	.00111	.00132	.00178	.00266	.00356	.00444	.00533	.00711	.00889	.01067	.01422	.15 x Dia	1.5 x Dia
5%-8% Silicon (3xx, A3xx, C3xx, 4xx, A4xx, B4xx, 4xxx)	1500 - 3000	Roughing	.00068	.00086	.00102	.00137	.00205	.00274	.00342	.00411	.00549	.00686	.00823	.01097	.65 x Dia	.45 x Dia
		Finishing	.00079	.00100	.00119	.00160	.00239	.00320	.00399	.00480	.00640	.00800	.00960	.01280	.15 x Dia	1.5 x Dia
8%-12% Silicon (3xx, A3xx, C3xx, 4xx, A4xx, B4xx, 4xxx)	1100 - 2200	Roughing	.00057	.00071	.00085	.00114	.00171	.00229	.00285	.00343	.00457	.00572	.00686	.00914	.65 x Dia	.45 x Dia
		Finishing	.00066	.00083	.00099	.00133	.00199	.00267	.00333	.00400	.00533	.00667	.00800	.01067	.15 x Dia	1.5 x Dia
12%-16% Silicon (3xx, A3xx, C3xx, 4xx, A4xx, B4xx)	750 - 1500	Roughing	.00045	.00057	.00068	.00091	.00137	.00183	.00228	.00274	.00366	.00457	.00549	.00732	.65 x Dia	.45 x Dia
		Finishing	.00053	.00067	.00079	.00107	.00160	.00213	.00266	.00320	.00427	.00533	.00640	.00853	.15 x Dia	1.5 x Dia
MAGNESIUM ALLOYS	1500 - 3000	Roughing	.00076	.00095	.00113	.00152	.00228	.00305	.00380	.00457	.00610	.00762	.00914	.01219	.65 x Dia	.45 x Dia
ZINC ALLOYS		Finishing	.00088	.00111	.00132	.00178	.00266	.00356	.00444	.00533	.00711	.00889	.01067	.01422	.15 x Dia	1.5 x Dia
COPPER ALLOYS High Coppers - 90%+ (C1xxxx) Phosphor Bronzes (Copper Tin alloys, C5xxxx) Copper Nickels, Nickel Silvers (Copper Nickel alloys, C7xxxx)	500 - 1000	Roughing	.00060	.00076	.00091	.00122	.00182	.00244	.00304	.00366	.00488	.00610	.00732	.00975	.65 x Dia	.45 x Dia
Brass (Copper Zinc alloys, C2xxxx, C3xxxx, C4xxxx, C66400-C69800) Aluminum Bronzes (Copper Aluminum alloys, C60600-C64200) Silicon Bronzes (Copper Silicon alloys, C64700-C66100) Cast Copper Alloys (C83300-C86200, C86400-C87900, C92200-C95800, C97300-C97800, C99400-C99700)	1100 - 2200	Finishing	.00071	.00089	.00106	.00142	.00213	.00284	.00355	.00427	.00569	.00711	.00853	.01138	.15 x Dia	1.5 x Dia
PLASTICS Unfilled	750 - 1500	Roughing	.00079	.00100	.00119	.00160	.00239	.00320	.00399	.00480	.00640	.00800	.00960	.01280	.65 x Dia	.45 x Dia
		Finishing	.00093	.00116	.00139	.00187	.00279	.00373	.00466	.00560	.00747	.00933	.01120	.01494	.15 x Dia	1.5 x Dia
5% - 20% Filled or Fiber Reinforced	550 - 1100	Roughing	.00072	.00090	.00108	.00145	.00217	.00290	.00361	.00434	.00579	.00724	.00869	.01158	.65 x Dia	.45 x Dia
		Finishing	.00084	.00105	.00126	.00169	.00253	.00338	.00422	.00507	.00676	.00845	.01013	.01351	.15 x Dia	1.5 x Dia
21% - 40% Filled or Fiber Reinforced	400 - 750	Roughing	.00064	.00081	.00096	.00130	.00194	.00259	.00323	.00389	.00518	.00648	.00777	.01036	.65 x Dia	.45 x Dia
		Finishing	.00075	.00094	.00112	.00151	.00226	.00302	.00377	.00453	.00605	.00756	.00907	.01209	.15 x Dia	1.5 x Dia
GRAPHITE POCO 3	600 - 1200	Roughing	.00087	.00109	.00130	.00175	.00262	.00351	.00437	.00526	.00701	.00876	.01052	.01402	.85 x Dia	.60 x Dia
		Finishing	.00101	.00128	.00152	.00204	.00306	.00409	.00510	.00613	.00818	.01022	.01227	.01636	.20 x Dia	1.5 x Dia
GREEN CARBIDE & GREEN CERAMICS	100 - 750	Roughing	.00079	.00100	.00119	.00160	.00239	.00320	.00399	.00480	.00640	.00800	.00960	.01280	.85 x Dia	.60 x Dia
		Finishing	.00093	.00116	.00139	.00187	.00279	.00373	.00466	.00560	.00747	.00933	.01120	.01494	.20 x Dia	1.5 x Dia

Product Notes:

To optimize machining, keep the following in mind:

Since the melting point varies greatly from plastic to plastic, the speed used should be closely supervised

Fiber Reinforced Plastics can be challenging as they encompass multiple variations. Please consider the following:
- An additional reduction in RPM may be necessary to avoid excessive fraying, splitting and tear out of fibers.
- There may be high density areas or "hard spots" (especially in random/whisker reinforcement) in which speeds & feeds should be reduced.
- Aramid fibers are more ductile and less abrasive than glass and carbon fibers allowing increased Chip Loads in these materials.
- When machining woven/cloth layered materials, use an oscillating program to help avoid heavy, localized wear on the cutter.

General Notes:

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. In cases where starting parameters are not given, traditional carbide speeds & feeds may be substituted (diamond is not suited for ferrous materials or materials with low machinability).

If you require additional information, Harvey Tool has a team of technical experts available to assist you through even the most challenging applications.
Please contact us at **800-645-5609** or **Harveytech@harveyperforance.com**.

WARNING: Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.