

Speeds & Feeds

Product Table: End Mills for Plastics - Finishers - Ball Upcut - 3 Flute - Slow Helix

Characteristics: 3x Length of Cut

Series: 8087xx, 8088xx

Туре	Hardness	SFM	Chip Load (IPT) By Cutter Diameter														Depth	Depth of Cut		
				.015	.031	.047	.062	.078	.093	.125	.187	.250	.312	.375	.500	.625	.750	1.000	Radial	Axial
Unfilled	50 < 100 Rr, 55 < 85 Shore D	1200 - 1600	Semi-Roughing	.00040	.00083	.00126	.00167	.00210	.00250	.00336	.00503	.00673	.00714	.00858	.01144	.01430	.01716	.02287	.35 x Dia	1 x Dia
Polyurethane, PTFE, Rulon, Teflon, UHMW			Finishing	.00022	.00046	.00069	.00091	.00115	.00137	.00184	.00276	.00369	.00391	.00470	.00627	.00783	.00940	.01253	.10 x Dia	3 x Dia
Acrylic, Acetal, Delrin, Lucite, Nylon 6, Nylon 6/6, PAI, PI, PEEK, Plexiglas, PS, PSU, Torlon 4203, Ultem 1000	100 > 150 Rr	800 - 1200	Semi-Roughing	.00038	.00078	.00118	.00156	.00196	.00234	.00315	.00471	.00629	.00667	.00802	.01069	.01337	.01604	.02139	.35 x Dia	1 x Dia
			Finishing	.00021	.00043	.00065	.00085	.00108	.00128	.00172	.00258	.00345	.00366	.00439	.00586	.00732	.00879	.01172	.10 x Dia	3 x Dia
Lubricant Filled	50 < 100 Rr, 55 < 85 Shore D	1200 - 1600	Semi-Roughing	.00040	.00083	.00126	.00167	.00210	.00250	.00336	.00503	.00673	.00714	.00858	.01144	.01430	.01716	.02287	.35 x Dia	1 x Dia
Teflon, PTFE)			Finishing	.00022	.00046	.00069	.00091	.00115	.00137	.00184	.00276	.00369	.00391	.00470	.00627	.00783	.00940	.01253	.10 x Dia	3 x Dia
Nyoil, Nylatron, Plavis MS, Torlon 4301	100 > 150 Rr	800 - 1200	Semi-Roughing	.00038	.00078	.00118	.00156	.00196	.00234	.00315	.00471	.00629	.00667	.00802	.01069	.01337	.01604	.02139	.35 x Dia	1 x Dia
			Finishing	.00021	.00043	.00065	.00085	.00108	.00128	.00172	.00258	.00345	.00366	.00439	.00586	.00732	.00879	.01172	.10 x Dia	3 x Dia
Carbon/Glass Filled 5% < 20%	100 > 150 Rr	600 - 800	Semi-Roughing	.00038	.00078	.00118	.00156	.00196	.00234	.00315	.00471	.00629	.00667	.00802	.01069	.01337	.01604	.02139	.35 x Dia	1 x Dia
			Finishing	.00021	.00043	.00065	.00085	.00108	.00128	.00172	.00258	.00345	.00366	.00439	.00586	.00732	.00879	.01172	.10 x Dia	3 x Dia
Carbon/Glass Filled 21% < 40%	100 > 150 Rr	500 - 700	Semi-Roughing	.00031	.00064	.00097	.00128	.00161	.00191	.00257	.00385	.00515	.00546	.00656	.00875	.01094	.01312	.01750	.35 x Dia	1 x Dia
			Finishing	.00017	.00035	.00053	.00070	.00088	.00105	.00141	.00211	.00282	.00299	.00359	.00479	.00599	.00719	.00959	.10 x Dia	3 x Dia
Carbon/Glass Fiber	100 > 150 Pr		Semi-Roughing	.00038	.00078	.00118	.00156	.00196	.00234	.00315	.00471	.00629	.00667	.00802	.01069	.01337	.01604	.02139	.35 x Dia	1 x Dia
5% < 20%	300 - 700	Finishing	.00021	.00043	.00065	.00085	.00108	.00128	.00172	.00258	.00345	.00366	.00439	.00586	.00732	.00879	.01172	.10 x Dia	3 x Dia	
Carbon/Glass Fiber		300 - 400	Semi-Roughing	.00031	.00064	.00097	.00128	.00161	.00191	.00257	.00385	.00515	.00546	.00656	.00875	.01094	.01312	.01750	.35 x Dia	1 x Dia
21% < 40%	100 × 150 KI		Finishing	.00017	.00035	.00053	.00070	.00088	.00105	.00141	.00211	.00282	.00299	.00359	.00479	.00599	.00719	.00959	.10 x Dia	3 x Dia
	Unfilled Unfilled Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Carbon/Glass Filled 5% < 20% Carbon/Glass Filled 21% < 40% Carbon/Glass Fiber 5% < 20%	Unfilled 50 < 100 Rr, 55 < 85 Shore D Unfilled 100 > 150 Rr Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Carbon/Glass Filled 5% < 20% Carbon/Glass Filled 21% < 40% Carbon/Glass Fiber 5% < 20% Carbon/Glass Fiber 5% < 20% Carbon/Glass Fiber 100 > 150 Rr	Unfilled 50 < 100 Rr, 55 < 85 Shore D 1200 - 1600 Unfilled 100 > 150 Rr 800 - 1200 Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) 1200 - 1600 Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) 100 > 150 Rr 800 - 1200 Carbon/Glass Filled 5% < 20% 100 > 150 Rr 600 - 800 Carbon/Glass Filled 21% < 40% 100 > 150 Rr 500 - 700 Carbon/Glass Fiber 5% < 20% 100 > 150 Rr 500 - 700	Unfilled 50 < 100 Rr, 55 < 85 Shore D	Unfilled	Unfilled 50 < 100 Rr, 55 < 85 Shore D 1200 - 1600 Unfilled 100 > 150 Rr 800 - 1200 Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Carbon/Glass Filled 5% < 20% Carbon/Glass Filled 21% < 40% Carbon/Glass Fiber 5% < 20% Lubricant Filled (Oil, Moly, Graphite, Teflon, PTFE) Too > 150 Rr Semi-Roughing	Unfilled 100 > 150 Rr 1200 - 1600	Unfilled	Unfilled	Unfilled SFM 1200 - 1600 Semi-Roughing .00040 .00083 .00126 .00167 .00210 .00250 .00137 .00210 .00250 .00040 .00083 .00126 .00167 .00210 .00250 .00137 .00137 .00137 .00137 .00137 .00138 .00078 .00118 .00156 .00196 .00234 .00167 .00210 .00234 .00167 .00234 .00334	Type Hardness SFM 3.015 .031 .047 .062 .078 .093 .125 .125 .100 Rr .55 < 85 Shore D .1200 - 1600 .1200 - 1200 .1200 - 1600 .1200 - 1200 .1200 - 1200 .1200 - 1200 .1200 - 1200 .1200 - 1200 .1200 - 1200 .1200 - 1200 .1200 - 1200 - 1200 .1200 .1200 - 1200	Type Hardness SFM	Type Hardness SFM	Type Hardness SFM SFM	Marchaes SFM 100 150 Rr 10	Type Hardness SFM SFM	Mardiness SFM SFM	Marchinese Hardness SFM Finishing Marchinese Marchinese	Type Hardness SFM SFM	Type Hardness SFM

Product Notes:

Plastics are typically discussed in 3 basic ways:

Unfilled - virgin plastic with no additives, fillers or reinforcement

Filled - virgin plastic with lubricating additives or strengthening particle fill

Fiber Reinforced - virgin plastic with reinforcing strands of fiber laid in either a random or engineered way

Since the melting point varies greatly from plastic to plastic, the speed (RPM) 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 (IPT) 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. Chip loads reflect uncoated cutters and may be increased, remain unchanged or even decreased if coated.

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@harveyperformance.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.