

## 5 & 6-Flute, Finishing Endmills, Standard, Neck Relief & Chip Control, 45 Degree Helix, Extra High Performance Endmills



- RedLine 6-flute Finishers are the 1st choice for milling a wide variety of difficult to machine alloys. Our high performance AlTiNX coating allows you to run our tools wet or dry in many materials with excellent tool life.
- These Extra High Performance tools can be found on pages 81-83.

**Note:** For added tool life apply tools with a corner radius. Do not use tools with Weldon Flats in milling chucks or collet chucks for high speed applications.

6-Flute Finishers Speeds & Feeds														
						Feed by Endmill Diameter (IPT)								
			Axial	Radial		1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
Material	Grades	Cut Type	DOC	DOC	SFM	(.1250)	(.1875)	(.2500)	(.3125)	(.3750)	(.5000)	(.6025)	(.7500)	(1.000)
P - Steels														
High Strength Tool Steel	Hardness < 36 HRC A2, D2, P20, H11, H13, S2, 01	Rough	1 x D	.1 x D	600	.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080
		Finish Rough	2 x D 1 x D	.01 x D	450 600	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
	Hardness 36 - 42 HRC A2, D2, P20, H11, H13, S2, 01	Finish	2 x D	.01 x D	450	.0010	.0008	.0020	.0023	.0030	.0020	.0030	.0030	.0040
	Hardness 43 - 50 HRC	Rough	1 x D	.08 x D	500	.0006	.0009	.0012	.0014	.0017	.0023	.0029	.0034	.0046
	A2, D2, P20, H11, H13, S2, 01	Finish	2 x D	.015 X D	400	.0003	.0005	.0007	.0007	.0010	.0014	.0018	.0020	.0023
	Hardness 51 - 63 HRC	Rough	1 x D	.08 x D	350	.0004	.0007	.0010	.0013	.0015	.0020	.0025	.0030	.0040
	A2, D2, S2, 01	Finish	2 x D	.015 X D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020
M - Stainless St	eels	D I	N1/A	N//A	N1/A	11/0	D1/0	N/A	D1/0	21/2	. N/A	N/A	L 11/0	AL/A
Austenitic	301-304L, 310, 316L, 321, 347	Rough <10,000	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	301 307E, 310, 310E, 321, 347	Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
		Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Martensitic	403, 410, 416, 420, 430, 431, 440	Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
Precipitation Hardening	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.015 x D	400	.0003	.0005	.0007	.0007	.0010	.0014	.0018	.0020	.0023
N - UdSt IIUIIS	A536, J434, 60-40-18	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ductile		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
Gray	A48, A436, A319, Class 20, G4000	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
Malleable	A220, A602, J158	Rough 10 000	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
		Rough <10,000 Finish	2 x D	.015 X D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020
N - Non-Ferrous		Tillion	ZXD	.010 K B	300	.0000	.0004	.0005	.0000	.0007	.0010	.0010	.0010	.0020
Brass/Bronze	Aluminum Bronze Low Silicon Bronze	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
Composites	G-10, Fiberglass, Graphite, Graphite Epoxy, Plastics	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000 Finish	N/A 2 x D	.01 x D	N/A 450	N/A .0005	N/A .0008	N/A .0010	N/A .0013	N/A .0015	N/A .0020	N/A .0025	N/A .0030	N/A .0040
		Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
Magnesium		Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C. High Town Al	Heure	Finish	2 x D	.01 x D	450	.0005	.0008	.0010	.0013	.0015	.0020	.0025	.0030	.0040
S - High Temp Al	lloys	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt Base	Stellite, HS-21, Haynes 25/188, X40, L605	Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.015 X D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020
	Incoloy 800-802, Multmet N-155, Timkin 16-25-6, Carpenter 22-b3	Rough	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron Base		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	· ·	Finish	2 x D	.015 X D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020
Nickel Base	Inconel 625/718, Inco 700, 713C, 718, Monel 400-401, 404, K401, Rene, Rene 41 & 95 Hastelloy, Waspoloy, Udimet 500 & 700	Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Finish	2 x D	.015 X D	300	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0015	.0020
Titanium	Commercially Pure, 6AI-4V, ASTM 1/2/3, 6AI-25N-4Zr-2Mo-Si, Ti-8AI-1Mo, Ti-8AI-4Mo	Rough <10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Rough <10,000 Finish	N/A 2 x D	N/A .015 x D	N/A 400	N/A .0003	N/A .0005	N/A .0007	N/A .0007	N/A .0010	N/A .0014	N/A .0018	N/A .0020	N/A .0023
		1 1111511	ZXU	UXCIU.	400	.0003	.0005	.0007	.0007	.0010	.0014	.0010	.0020	0023

D = tool diameter. Reduce feed rates by 20% when using long length tools. Starting parameters shown. NOTE: Speeds and Feeds listed are estimated and will vary by application.

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