



3-Flute Standard, Neck Relief and Ball End, 37 Degree Helix, Extra High Performance Endmills for Milling Aluminum and Non-Ferrous Materials.

- RedLine 3 Flute, Standard and Neck Relief Extra High Performance End Mills are designed for Roughing, Finishing or Slotting in Aluminum and Non-Ferrous materials.
- The ZrN coated tools allow for higher speeds, better tool life with a low affinity for Aluminum.
- Use for straight line and helical ramping.
- These Extra High Performance tools can be found on pages 18-22, 24-25.

Aluminum & Non-Ferrous Speeds & Feeds

Material	Grades	Cut Type	Axial DOC	Radial DOC	# of Flutes	SFM	Feed by Endmill Diameter (IPT)							
							1/8	1/4	5/16	3/8	1/2	5/8	3/4	1
							(.1250)	(.2500)	(.3125)	(.3750)	(.5000)	(.6250)	(.7500)	(1.000)
N - Non-Ferrous														
Aluminum Alloys	6061, 7075, 2024	Slotting	1 x D	1 x D	3	800	.0015	.0030	.0038	.0045	.0060	.0075	.0090	.0120
		Peripheral - Rough	<=2 x D	.5 x D	3	1000	.0020	.0040	.0050	.0060	.0080	.0100	.0120	.0160
			>2-3 x D	.5 x D	3	1000	.0019	.0038	.0047	.0056	.0075	.0094	.0113	.0150
			>3-4 x D	.45 x D	3	900	.0016	.0033	.0041	.0049	.0065	.0081	.0098	.0130
			>4-5 x D	.4 x D	3	800	.0015	.0029	.0036	.0044	.0058	.0073	.0087	.0116
		Finish	2.5 x D	.015 x D	3	1200	.0007	.0014	.0017	.0020	.0027	.0034	.0041	.0054
*Helical Ramp Angle 3.0 deg.				800	.0012	.0024	.0030	.0036	.0048	.0060	.0072	.0096		
Aluminum High Silicon	A380, A390	Slotting	.75 x D	1 x D	3	500	.0011	.0023	.0028	.0034	.0045	.0056	.0068	.0090
		Peripheral - Rough	<=2 x D	.4 x D	3	700	.0014	.0029	.0036	.0043	.0057	.0071	.0086	.0114
			>2-3 x D	.4 x D	3	700	.0014	.0028	.0034	.0041	.0055	.0069	.0083	.0110
			>3-4 x D	.375 x D	3	600	.0012	.0024	.0030	.0036	.0048	.0060	.0072	.0096
			>4-5 x D	.35 x D	3	500	.0010	.0020	.0025	.0030	.0040	.0050	.0060	.0080
		Finish	2.5 x D	.015 x D	3	900	.0006	.0013	.0016	.0019	.0025	.0031	.0038	.0050
*Helical Ramp Angle 2.5 deg.				500	.0009	.0018	.0023	.0027	.0036	.0045	.0054	.0072		
Magnesium Alloys		Slotting	1 x D	1 x D	3	800	.0015	.0030	.0038	.0045	.0060	.0075	.0090	.0120
		Peripheral - Rough	<=2 x D	.5 x D	3	1000	.0020	.0040	.0050	.0060	.0080	.0100	.0120	.0160
			>2-3 x D	.5 x D	3	1000	.0019	.0038	.0047	.0056	.0075	.0094	.0113	.0150
			>3-4 x D	.45 x D	3	900	.0016	.0033	.0041	.0049	.0065	.0081	.0098	.0130
			>4-5 x D	.4 x D	3	800	.0015	.0029	.0036	.0044	.0058	.0073	.0087	.0116
		Finish	2.5 x D	.015 x D	3	1200	.0007	.0014	.0017	.0020	.0027	.0034	.0041	.0054
*Helical Ramp Angle 3.0 deg.				800	.0012	.0024	.0030	.0036	.0048	.0060	.0072	.0096		
Copper Alloys, Brass		Slotting	.75 x D	1 x D	3	500	.0009	.0019	.0023	.0028	.0037	.0046	.0056	.0074
		Peripheral - Rough	<=2 x D	.4 x D	3	600	.0012	.0023	.0029	.0035	.0046	.0058	.0069	.0092
			>2-3 x D	.4 x D	3	600	.0011	.0023	.0028	.0034	.0045	.0056	.0068	.0090
			>3-4 x D	.375 x D	3	500	.0010	.0020	.0024	.0029	.0039	.0049	.0059	.0078
			>4-5 x D	.35 x D	3	450	.0008	.0017	.0021	.0025	.0033	.0041	.0050	.0066
		Finish	2.5 x D	.015 x D	3	650	.0005	.0011	.0013	.0016	.0021	.0026	.0032	.0042
*Helical Ramp Angle 2.5 deg.				500	.0007	.0015	.0019	.0022	.0030	.0037	.0044	.0059		
Bronze		Slotting	.75 x D	1 x D	3	500	.0009	.0018	.0022	.0026	.0035	.0044	.0053	.0070
		Peripheral - Rough	<=2 x D	.4 x D	3	600	.0011	.0022	.0028	.0033	.0044	.0055	.0066	.0088
			>2-3 x D	.4 x D	3	600	.0011	.0021	.0026	.0032	.0042	.0053	.0063	.0084
			>3-4 x D	.375 x D	3	500	.0009	.0018	.0022	.0026	.0035	.0044	.0053	.0070
			>4-5 x D	.35 x D	3	450	.0007	.0015	.0018	.0022	.0029	.0036	.0044	.0058
		Finish	2.5 x D	.015 x D	3	650	.0005	.0010	.0012	.0014	.0019	.0024	.0029	.0038
*Helical Ramp Angle 2.0 deg.				500	.0007	.0014	.0018	.0021	.0028	.0035	.0042	.0056		
Composites, Plastic, Fiberglass		Slotting	.75 x D	1 x D	3	500	.0011	.0023	.0028	.0034	.0045	.0056	.0068	.0090
		Peripheral - Rough	<=2 x D	.4 x D	3	700	.0014	.0029	.0036	.0043	.0057	.0071	.0086	.0114
			>2-3 x D	.4 x D	3	700	.0014	.0028	.0034	.0041	.0055	.0069	.0083	.0110
			>3-4 x D	.375 x D	3	600	.0012	.0024	.0030	.0036	.0048	.0060	.0072	.0096
			>4-5 x D	.35 x D	3	500	.0010	.0020	.0025	.0030	.0040	.0050	.0060	.0080
		Finish	2.5 x D	.015 x D	3	900	.0006	.0013	.0016	.0019	.0025	.0031	.0038	.0050
*Helical Ramp Angle 3.0 deg.				500	.0009	.0018	.0023	.0027	.0036	.0045	.0054	.0072		

*Straight line Ramp Angle= Helical Ramp Angle x 5 for entry up to 1 x D.