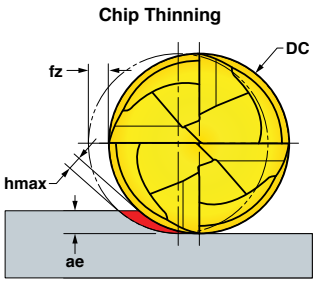
INDUSTRY 4.0 UPDATE PRODUCT ANNOUNCEMENT 2022

CHIPSURFER™

OPERATING GUIDELINES: 90° END MILLS



When ae is less than 25% DC, recommend use of Chip Thinning Calculator to ensure hmax is within fz range.

Materials				Cutting Speed SFM	DC Cutting Dia. (inch)	fz* Feed per Tooth (inch)	Harder <--------> Tougher			Coolant
ISO	Material Group	Type	Examples				IN2006	IN055	IN2505 IN2205 IN2005	
P	1-5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.062-.094	.0005-.0020	2		1	No
					.125-.250	.0007-.0030				
					.312-.500	.0010-.0045				
					.625-.750	.0010-.0070				
					1.00-1.25	.0010-.0080				
	6-9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700	.062-.094	.0005-.0020				
					.125-.250	.0007-.0030				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0060				
					1.00-1.25	.0010-.0070				
	10-11	High-alloy Steel	H13, A2, D2, M2, T1	300-600	.062-.094	.0005-.0015				
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
M	12-13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.062-.094	.0005-.0015			1	Yes
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550	.062-.094	.0005-.0015				May not be required at high speeds
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
K	15-16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.062-.094	.0005-.0020			1	No
					.125-.250	.0007-.0030				
					.312-.500	.0010-.0045				
					.625-.750	.0010-.0070				
					1.00-1.25	.0010-.0080				
	17-20	Nodular Cast Iron	"60-40-18, 100-70-03"	400-800	.062-.094	.0005-.0015				
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
N	21-30	Aluminum	7075, 6061	1000-3000	.062-.094	.0005-.0025		1		Yes
					.125-.250	.0007-.0040				
					.312-.500	.0010-.0060				
					.625-.750	.0010-.0080				
					1.00-1.25	.0010-.0090				
S	31-35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.062-.094	.0005-.0015			1	Yes
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
	36-37	Titanium Alloys	"6Al-4V, 5Al-5Mo-5V-3Cr"	85-200	.062-.094	.0005-.0015				
					.125-.250	.0007-.0025				
					.312-.500	.0010-.0040				
					.625-.750	.0010-.0050				
					1.00-1.25	.0010-.0060				
H	38-39	Hardened Steel >48	A2, O1, D2	130-250	.062-.094	.0005-.0010	1		2	No
					.125-.250	.0007-.0015				
					.312-.500	.0010-.0020				
					.625-.750	.0010-.0030				
					1.00-1.25	.0010-.0040				

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.